

MINISTRY OF EDUCATION AND HIGHER EDUCATION  
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT FOR IMPROVEMENT OF THE EDUCATIONAL  
EQUIPMENT FOR THE FACULTY OF MEDICAL SCIENCES  
UNIVERSITY OF SRI JAYWARDENEPURA  
IN  
THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA**

MARCH 1997

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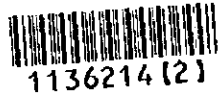
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INTERNATIONAL TOTAL ENGINEERING CORPORATION (ITEC)

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## PREFACE

In response to a request from the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a basic design study on the Project for Improvement of the Educational Equipment for the Faculty of Medical Sciences, University of Sri Jayewardenepura and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Sri Lanka a study team from October 6 to November 2, 1996.

The team held discussions with the officials concerned of the Government of Sri Lanka, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Sri Lanka in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Democratic Socialist Republic of Sri Lanka for their close cooperation extended to the teams.

March, 1997



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Kimio FUJITA  
President

Japan International Cooperation Agency

March, 1997

## **LETTER OF TRANSMITTAL**

We are pleased to submit to you the basic design study report on the Project for Improvement of the Educational Equipment for the Faculty of Medical Sciences, University of Sri Jayewardenepura in the Democratic Socialist Republic of Sri Lanka.

This study was conducted by International Total Engineering Corporation, under a contract to JICA, during the period from September 25, 1996 to March 31, 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Sri Lanka and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



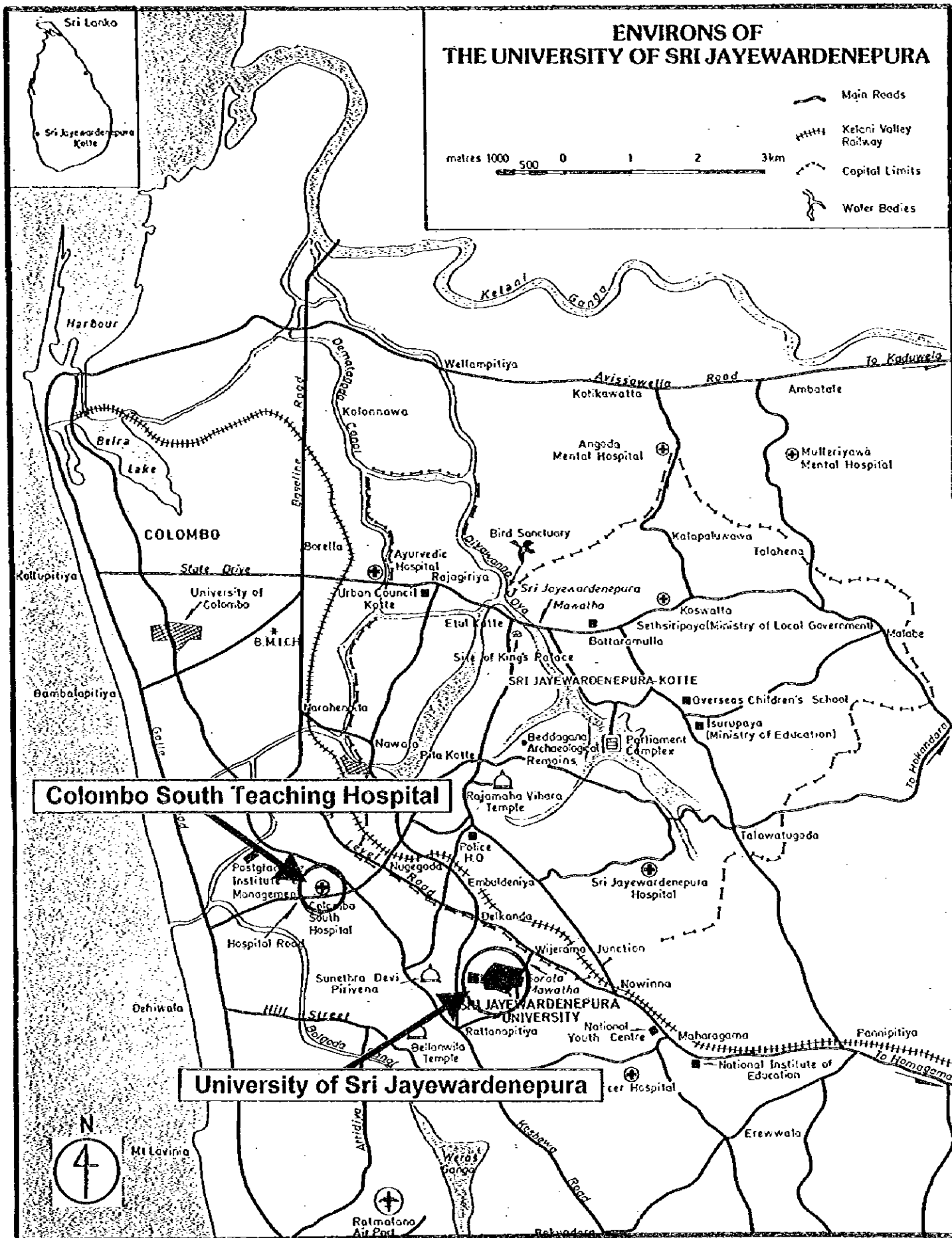
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Zenichi Ando  
Project manager,  
Basic design study team on  
the Project for Improvement of the Educational  
Equipment for the Faculty of Medical Sciences  
University of Sri Jayewardenepura

International Total Engineering Corporation



# Location Map



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## **Chapter 1 Background of the Project**

## 2019-2020 Academic Year

# **Chapter 1 Background of the Project**

## **1-1 Background of the Project**

The Democratic Socialist Republic of Sri Lanka is situated at  $5.5^{\circ} \sim 9.5^{\circ}$  of northern latitude and  $80^{\circ} \sim 81.5^{\circ}$  of eastern longitude with mere 29 kilometers from the southern tip of India. This island country measures 65,000 square kilometers, making it a little smaller than Hokkaido, the northern island of Japan. It has a population of approximately 17,838 million (1993). Although the climate is tropical, a mountain range in the center of the island means that the climate is not uniform. While the southwestern part is humid and the soils are fertile, the north and east regions of the country are rather dry. There are two rainy seasons each year, and the rainfall varies with the season. The GNP per capita is US\$600 (1993). In the national election held in August 1994, the People's Alliance won the election with the major party in the Alliance being the Sri Lankan Liberal Party. This marked the start of the Kumaratunga regime. This regime has maintained a dialog with the Liberation Tigers of Tamil Eelam (LTTE), who was the major opposite of an ethnic war. In January 1995, they agreed to cease fire. However, this agreement was broken down when LTTE attacked a naval base, and fighting resumed. The Kumaratunga regime promoted economic activities, but the ethnic war caused an increase in military expenditure, and this has been putting significant pressure on national economy.

Looking at the health and welfare situation in Sri Lanka, the average life expectancy at birth, is 70 years for men and 74 years for women, with a mortality rate of 6/1,000. The infant mortality rate in 17/1,000. These figures are quite good compared to those of neighboring countries such as Pakistan and India. However, in 1995 there was only one doctor for every 4,707 persons. This ratio was nearly half that of Pakistan (2,122:1) and India (2,075:1). The major diseases are those common to developing countries, and include contagious parasitic diseases, respiratory diseases, and malnutrition. Therefore, the promotion of preventative medicine is an important issue.

However, the lack of doctors and paramedicals means that adequate measures cannot be taken to promote preventative medicine or to rectify regional differences in the number of doctors. There are medical faculties only at five universities in Sri Lanka, at Colombo, Peradeniya, Jaffna, Ruhuna, and Kelaniya. To improve this situation, the Government of Sri Lanka establish a new Faculty of Medical Sciences at the University of Sri Jayewardenepura in 1993 as part of its Medical Personnel Reinforcement Policy, which aimed to establish a system that would ensure one doctor for every 1,000 people by the year 2002. Also, because the education level at existing paramedical training facilities is not of the quality required for an academic degree, a Medical Education Department was set up within the Faculty of Medical Sciences at the University of Sri Jayewardenepura to deal with education and training for this quality. The first

medical students were admitted to the Faculty of Medical Sciences in 1993, and there are now approximately 130 students for each academic year. Facilities were provided to accommodate the students by renovating the Central Library (3rd and 4th floors) at the University. However, the limited space of the facilities and the lack of equipment has hindered educational activities. For this reason, the Government of Sri Lanka is currently preparing to provide new facilities in five stages. The overall plan includes the provision of two new buildings for the Faculty of Medical Sciences at the University of Sri Jayewardenepura, building of Family Practice Centre, building of other facilities, and the building of the University Professorial Unit at the Colombo South Teaching Hospital.

As of January 1997, the first stage of construction at the University (First Building) was already completed. The construction of the University Professorial Unit at the Colombo South Teaching Hospital and the new building at the University (Second Building), which is of the second stage, have begun.

However, due to lack of budget, the Government of Sri Lanka has not been able to allocate funds for experimental equipment in classrooms, equipment for the preparation of teaching materials, or clinical equipment. Therefore, lectures constitute the main activity in the classroom, and the education cannot be properly implemented in conformity with the curriculum.

Therefore, the Government of Sri Lanka has approached Japan requesting grant aid for the procurement of educational equipment for the Faculty of Medical Sciences at University of Sri Jayewardenepura.

## 1-2 Contents of Request

The contents of the request are shown below:

### (1) Equipment for Faculty of Medical Sciences, University of Sri Jayewardenepura

| No. | Department        | Main Equipment  |
|-----|-------------------|---|
| 1   | Anatomy           | Biological Microscope, Body Preservation Locker, Dissecting Instrument set, Microtome, etc..      |
| 2   | Physiology        | Spectrophotometer, Electronic Balance, Centrifuge, pH meter, EEG, etc..                           |
| 3   | Biochemistry      | Research Microscope, Chest freezer, Electrophoresis, etc..  |
| 4   | Pathology         | Hot air oven, Automated Slide Stainer, Tissue Processing machine, Paraffin Trowel, etc..          |
| 5   | Microbiology      | Liquid N2 storage vessels, Safety Cabinet, Microtitre Plate Reader, etc..                         |
| 6   | Parasitology      | Chest freezer, Incubator, pH meter, Electronic Balance, Oven, etc..                               |
| 7   | Pharmacology      | Auto(water) Still, Melting Point Apparatus, Tablet Friability and Friction Tester, etc..          |
| 8   | Forensic Medicine | Auto(water) Still, Dissecting Instrument set, Shaker for tissue Fixation, Etc..                   |
| 9   | Medicine          | Portable Echocardiographe, EEG, Examination Table, Defibrillator, etc..                           |
| 10  | Surgery           | Binocular Microscope, Refrigerator, Centrifuge, Orbital shaker, Diagnostic set for Surgery, etc.. |

| No. | Department                           | Main Equipment   |
|-----|--------------------------------------|--|
| 11  | Paediatric                           | Skinfold Thickness Calliper, Phototherapy Unit, Infant Resuscitator, Apena Monitor, etc..  |
| 12  | Obstetrics & Gynaecology             | Hysteroscope, Colposcope, Cryo-cautery, Cardio-toco-graph, etc..   |
| 13  | Psychiatry                           | Diagnostic set, Camera set, Observation TV and Camera set with VCR, Diagnostic set for Psychiatry, etc..   |
| 14  | Family medicine & Community Medicine | Spectrophotometer, Centrifuge, Examination Table, Surgical Bed for Minor Surgery, Diagnostic set for Community and Family Medicine, Blood Cell Counting Chamber, etc.. |
| 15  | Medical Education                    | Anatomical Models and Simulators set, etc..  |

**(2) Equipment for Colombo South Teaching Hospital Central Services**

| Related Faculty Department    | Hospital Department      | Main Equipment  |
|-------------------------------|--------------------------|---|
| Surgery                       | Operation Theatre        | Electrosurgical unit, Operation Table, Suction Unit, Surgical Instrument sets etc.. |
| Surgery                       | Accidental Emergency     | Operation Table, Patient Monitor, Surgical Instrument set, etc..                    |
| Surgery                       | Surgical unit            | Rigid Cystoscope, Bronchoscope, Examining Lamp, Sterilizer(boiling), etc..          |
| Surgery                       | Maxillo Facial surgery   | Dental Unit, Maxillo-facial plate fixing instrument set, etc..                      |
| Surgery                       | Blood Bank               | Refrigerated Centrifuge, Blood Bank Refrigerator                                    |
| Medicine                      | Medical unit             | Patient Monitor, External Heart Pacing Equipment, Suction Unit, etc..               |
| Medicine                      | Medical emergency        | Suction Unit, Ambu Bag, Laryngoscope, Matchintosh, etc..                            |
| Medicine                      | Dermatology              | Cryosurgery Unit, UV Hand Lamp, Punch Biopsy set, metal, etc..                      |
| Medicine                      | Neurology                | Working Frame, Diagnostic set, etc..  |
| Paediatric                    | Paediatric               | Height Scale, Nebuliser, Ambu Bag etc..   |
| Obst. & Gyne                  | Obstetric and Gynecology | Vacuum extractor, Cardiotocograph, Surgical Instrument set, etc..                   |
| Surgery, Medicine, Obst.&Gyne | ICU                      | Ventilator, Ventilator for Paediatrics, ICU Bed, Syringe Pump, Infusion Pump, etc.. |
| All Clinical Departments      | Clinical Pathology       | Spectrophotometer, Flamephotometer, Biochemical Analyser, etc..                     |
| All Clinical Departments      | Radiology                | X-ray Fluoroscopic with Bucky Stand, Film Processor, etc..                          |
| All Clinical Departments      | Rehabilitation           | Electrical Stimulator, Traction Bed, Exercise Table, etc..                          |
| Forensic Medicine             | Forensic Medicine        | Water Bath, X-ray Film Viewer, UV Hand Lamp, etc..                                  |





## **Chapter 2 Content of the Project**

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## **Chapter 2 Content of the Project**

### **2-1 Objectives of the Project**

A special work shop was established in 1992 at the request of the president to lay out a national health plan. The resulting national health plan functions as a basic guideline for those who are engaged in health service and health education, including political, administrative and medical and paramedical staff, both in governmental agencies and in the private sector. Based upon this guideline, the Ministry of Education and Higher Education compiled the following political goals as specific policy.

- 1) To train a sufficient number of doctors so that there will be one doctor for very 1000 persons in the general population by the year 2000.  
(As of 1995, the ratio of doctors to the general population is at 1 /4707, i.e., a shortage of 13,318 doctors)
- 2) To train more paramedical personnel

These reinforcement plans to increase the number of medical and paramedical staff have been established to ensure that the goal "health care for everyone by the year 2000" is achieved.

This project as outlined in this paper constitutes a project for improvement of the educational equipment at the Faculty of Medical Sciences at the University of Sri Jayewardenepura, which was newly founded in 1993, as per the reinforcement plans described above to increase the number of the medical and paramedical staff. Its direct objective is to provide the students at this Faculty with a quality education in medical sciences equal to that offered at faculties of medical sciences at other universities in Sri Lanka. Furthermore, its ultimate objective is to improve and maintain the quality of medical and Paramedical staff fostered by this University.

It is to be noted that in order to clarify the objectives of this project, both direct and ultimate, a meeting of consensus work shop, which was comprised with the basic design mission and members of the Faculty of Medical Sciences was held and adopted the PCM (Project Cycle Management) method. At the meeting, specifications of the project, its objectives and goals were clearly defined and abstracts thereof were recorded in the minutes. Its contents are as follows.

**GOAL (the project purpose is to be aimed to)**

**To improve and sustain the improved quality of health personnel produced by the University of Sri Jayewardenapura .**



**PROJECT PURPOSE (the project is intended to accomplish)**

**Internationally standardized medical/paramedical training is provided to all students of Faculty of Medical Sciences of University of Sri Jayewardenapura.**



**OUTPUT (the project aims to achieve)**

- 1) Physical facilities for all departments is provided by University of Sri Jayewardenapura(USJW).**
- 2) Modern facilities(equipment/instrument) for teaching, teaching-related research and clinical activities are provided by Japanese Government/JICA.**
- 3) Maintenance and administrative functions of the Faculty of Medical Sciences(FMS), USJW are strengthened further in order to meet the requirement of newly introducing equipment / instrument.**
- 4) Academic, non-academic staff are secured enough to carry out the teaching, teaching-related research and clinical activities under the improved condition of physical facilities.**
- 5) Improvement of curriculum and teaching methods is further advanced in order to meet the requirement of the Project.**

## 2-2 Basic concept of the Project

What must be achieved through the execution of this project is the procurement of educational equipment for the Faculty of Medical Sciences, University of Sri Jayewardenepura, which was newly established by the Government of Sri Lanka, based upon the reinforcement plans to increase the number of medical and paramedical staff.

### (1) Facility Construction Plans

The overall facility construction plans for this university, which have been set forth by the government of Sri Lanka, consist of the following five stages.

|         |  |
|---------|--|
| Stage 1 | New medical faculty building (Stage 1) - a 4 story building, and other facility (Family Practice Centre and Animal House), Improve and construction of University Professorial Unit at Colombo South Teaching Hospital |
| Stage 2 | Construction of New medical faculty building (Stage 2) - a 3-story building  |
| Stage 3 | Second and third floors of the Central Library : Relocation and interior renovation  |
| Stage 4 | Add third and fourth floors on top of the new medical faculty building (Stage 2).  |
| Stage 5 | Relocate from the second and third floors of the Central Library   |

The requirement imposed upon this project is to execute the plan up to the third stage of the entire construction plan, for which the budget has been allotted.

### (2) Facilities required to be equipped and specific items of equipment to be provided

The required items of equipment are to be installed in facilities that are currently being constructed and in those that are scheduled to be constructed.

| Facility                       | Present condition  | Present departments            | After completion                      |
|--------------------------------|--|--------------------------------|---------------------------------------|
| New Faculty Building (Stage 1) | Anatomy, Pharmacology, Auditorium                                | New Faculty Building (Stage 1) | Anatomy, Pharmacology, Auditorium     |
| New Faculty Building (Stage 2) | Under Construction It will be finished by the end of June, 1998) | New Faculty Building (Stage 2) | Pathology, Parasitology, Microbiology |

| Facility   | Present condition  | Present departments   | After completion  |
|--|--|---|---|
| Central Library Building, 2 <sup>nd</sup> floor  | Exist  | Pathology, Parasitology, Microbiology, Psychiatry, Medicine, Surgery, Paediatrics, Obstetric & Gynaecology, Forensic medicine, Administration, Library of Medical Faculty, Family medicine & Community Medicine | Medicine, Surgery, Paediatrics, Obst & Gynaecology, Psychiatry, Forensic Medicine, Administration, Print & Illustration Unit, Library of Medical Faculty Maintenance Unit |
| Central Library Building, 3 <sup>rd</sup> floor  | Exit   | Biochemistry, Physiology  | Biochemistry, Physiology, Print & Illustration unit   |
| Family Practice Centre                           | Under construction (It will be completed by April, 1997)             |   | Family Medicine & Community Medicine  |
| Animal House                                     | Construction will be started and be finished by the end of May, 1997 |   | Animal House Operation Responsible department is Biochemistry.  |
| University Professorial Unit                     | Under construction (It will be completed by June, 1997.)             |   | Medicine, Surgery, Paediatrics, Obstetric & Gynaecology   |
| Colombo South Teaching Hospital Central Services | Exist  | Operation theatre, CSSD, Radiology, Clinical Pathology, ICU, Forensic medicine, Medical unit, Surgical unit, Out-patient Department, etc..  | Same as present, and Psychiatry, Family medicine and community medicine   |

### (3) Deliberation of Requirements

#### 1) Facilities

- At present, all classes at the Faculty of Medical Sciences, University of Sri Jayewardenepura are held at New Medical Faculty Building Stage 1 and the Central Library (second and third floors), and lack of space in the facility is presenting serious problems and hindering educational activities. In order to improve the current situation, the Government of Sri Lanka is in the process of providing the university with more facilities. It is expected that when this improvement process at the university facilities is completed, a satisfactory environment for full educational activities will be achieved.

- Colombo South Teaching Hospital, which is under the administration of the Ministry of Health, was designated as a teaching hospital in 1993. It has been 35 years since this hospital was opened and therefore its equipment has become obsolete. As a result, not only its function as a teaching hospital but also its function as a general hospital is not being fulfilled at present. In order to deal with this situation and to ensure the grade-up of its function as a teaching hospital, the Ministry of Health and the Ministry of Education and Higher Education have decided to establish a University Professorial Unit, which are actual clinical education is held, within Colombo South Teaching Hospital with the current hospital facilities to be partially renovated and new additional facilities to be constructed. The two ministries jointly deliberated on the required renovation of the current facilities and construction of new facilities for the University Professorial Unit. It was concluded that the Ministry of Health would be responsible for the renovation of the existing facilities, for the construction of new facilities and for equipping them with basic items such as beds and that the Ministry of Education and Higher Education would be responsible for equipping the facilities with other medical equipment. However, due to lack of funds available to the Ministry of Education and Higher Education, it has not been possible to furnish the University Professorial Unit and the Central Services where the students receive practical training with the required equipment. Consequently, the University Professorial Unit and the Central Services have not been able to fulfil their function for clinical education for medical and paramedical students. The objectives of this project cannot be fully achieved without equipping Colombo South Teaching Hospital, where the most important clinical education is offered to trainees at the final stage of their training, with necessary equipment.

For the reasons stated above, the sites of this project shall be the Faculty of Medical Sciences, University of Sri Jayewardenepura and the Colombo South Teaching Hospital.

Regarding the equipment to be installed in Colombo South Teaching Hospital, the departments of clinical education course of the faculty are designated to be in charge of the management of equipment since the equipments are for educational purpose.

## 2) Equipment

At present, there is very little variety of equipment at the Faculty of Medical Sciences and in each classroom, education consists mainly of lectures.

This lack of equipment for training, for preparation of teaching materials and for clinical education in the classroom is making it impossible to provide an education in conformity with the curriculum.

Most of the required equipment are those deemed necessary to improve this situation, and the criteria for the selection of the equipment to be provided are as follows.

- Equipment required for training doctors and paramedicals
- Equipment that will ensure financial independence and growth
- Equipment that are appropriate to meet with the construction condition of facilities and the purpose of facilities
- Equipment that can be meet with present technical level of the users
- Equipment that ensure similar level to other teaching hospitals

Through deliberating upon the above points, the basic aim of this project has been determined; to provide the Faculty of Medical Sciences, University of Sri Jayewardenepura and Colombo South Teaching Hospital with educational equipment so that an education in medical sciences for fostering medical personnel can be provided at a quality that meets international standards.



## **2-3 Basic Design**

### **2-3-1 Design Concept**

The design work is to be implemented in conformity with the following guidelines, in consideration of the specific details of educational curriculum, the number of staffs at the Faculty of Medical Sciences, the frequency of use of the equipment and the construction status of facilities.

#### **(1) Concept related to selection of equipment**

1) Basic equipment that are required for training doctors and paramedicals

2) The equipment to be provided for basic research in medical sciences shall be limited.

While basic medical science research at university level is essential in order to maintain and improve the quality of university education, it must be borne in mind that a number of special equipment and expensive equipment, which constantly require replenishment of consumable are involved in such research. A specific plan for the acquisition of such equipment is to be made through thorough deliberation of the research expertise, performance and experience of staffs requiring those equipment. Furthermore, the equipment for acquisition shall be limited to those that can be maintained in Sri Lanka with permissible maintenance expenses in consideration of the technical expertise available for maintenance of the equipment and the costs.

3) Quantities of equipment

The quantities of equipment for acquisition shall be adjusted taking into consideration the number of students, the relevant curriculum, the feasibility with respect to available facilities and the frequency of use thereof. Those equipment that are deemed to be provided in excess quantities are to be shared among the departments of the Faculty.

4) Equipment that necessitate changes in facilities

The specifications of equipment that would necessitate major changes in the design of the facilities and for additional financial outlay on the side of Sri Lanka, or the installation of equipment which seem to be difficult in view of the current state of the facilities are to be revised so that any work that would further add to the burden on the part of Sri Lanka (ensuring handling route and space when equipment are carried in the subsequent restoration) will be reduced.

5) Equipment scheduled to be provided at Colombo South Teaching Hospital

The equipment scheduled to be allocated to Colombo South Teaching Hospital shall be installed in the University Professorial Unit and the

Central Services such as Central Operation Dept., Radiology Dept., I.C.U., Clinical Examination Dept. and Out-patient Dept. etc. where the students receive clinical education.

**(2) Concepts related to maintenance and management**

**1) Maintenance Unit shall be newly established at the Faculty of Medical Sciences, University of Sri Jayewardenepura**

By selecting equipment that are similar to those procured by Japanese Grant Aid in the past and are currently maintained by BES, it shall be ensured that the necessary know-how for maintenance that has been accumulated at BES of Ministry of Health can be utilised by the Faculty Maintenance Unit.

**2) Reduction of maintenance costs**

In order to reduce the cost of maintenance, equipment that do not require any special reagents or large quantities of consumable and require only reagents and consumable that can be easily obtained in Sri Lanka shall be provided.

**(3) Concepts related to equipment procurement**

The procurement of equipment for this project is, in principle, to be carried out in Japan since Japanese products are already in use in Sri Lanka through previous Japanese Grant Aid projects with the result that there exist already manufacturer's distribution agents through which the manufacturers can provide good maintenance. However, the equipment that require daily replenishment of consumable and daily or periodic maintenance and are already widely used in Sri Lanka (computers, printers, OHP and the like) are to be procured from third countries through their local agents.

In addition, those equipment manufactured in third countries, such as England and etc., and the handling of which is fully familiar to most of the users because of their experience of having studied and used in these countries, may be procured from the third countries.

**(4) Concepts related to implementation schedule of works**

As has become clear through studying the facility construction plans prepared by Sri Lanka, it is not possible to provide all the equipment within one fiscal year. Therefore, the project will be implemented over two phases. The rough details of the equipment to be provided in the individual phase are as follows. For further detail, see the "Review Result of the Equipment requested" (mentioned later).

**First Phase:**

**New medical faculty building (stage 1):**

Equipment for Anatomy Department, Pharmacology Department

**Central Library, Second floor:**

Microscopes, centrifuges and small equipment for Microbiology, Parasitology and Pathology Department. And equipment for Psychiatry Department, Forensic Medicine Department, printing units, Administration Department, and Maintenance Unit.

**Central Library, third floor:**

Equipment excluding large equipment for Physiology Department and Biochemistry Department

**Animal house : Equipment for Animal House**

**Family Practice Centre :**

Equipment for Family Medicine & Community Medicine Department.

**Colombo South Teaching Hospital:**

Equipment for Medicine Department, Surgery Department, Paediatrics Department, Obstetrics and Gynaecology Department

**Second Phase:**

**New medical faculty building (stage 2):**

Large equipment for Microbiology Department, Parasitology Department and Pathology Department

**Central Library Second floor:**

Clinical examination equipment for Medicine Department, Surgical Department, Paediatrics Department, Obstetrics and Gynaecology Department, and Forensic Medicine Department

**Central Library, Third floor:**

Large equipment for Physiology Department and Biochemistry Department

## 2-3-2 Basic Design

### (1) Overall Plan

The target facilities of this project include the existing facilities and new facilities which are currently under construction. The individual statuses and the items of equipment to be installed in those facilities are as follows.

#### 1) The Faculty of Medical Sciences, University of Sri Jayewardenapura

| Facility                       | Floor   | Department   | Construction Situation   |
|--------------------------------|---|--|--|
| Central Library                | 2 <sup>nd</sup><br><br>3 <sup>rd</sup>                    | Medicine, Surgery, Paediatrics<br>Obstetric & Gynaecology<br>Psychiatry, Medical Education,<br>Administration,<br>Print & Illustration Unit,<br>Biochemistry, Physiology | Building is existed.<br>After completion of<br>construction of New faculty<br>building(stage2), relocation<br>work will be done. |
| New Faculty Building (Stage 1) | GF, 1 <sup>st</sup><br>2 <sup>nd</sup><br>3 <sup>rd</sup> | Anatomy<br>Anatomy, Pharmacology<br>Pharmacology, Auditorium   | Building is existed.<br>(already used )  |
| Animal House                   | One floor   | (Operation responsible<br>department is Biochemistry)  | Under construction<br>and completed by May, 1997   |
| Family Practice Centre         | One floor   | Family Medicine &<br>Community Medicine  | Under construction.<br>Construction will be<br>completed by April, 1997.   |
| New Faculty Building (Stage 2) | GF<br>1 <sup>st</sup><br>2 <sup>nd</sup>                  | Pathology<br>Parasitology<br>Microbiology  | Under construction and<br>completed by June, 1998.   |

#### 2) Colombo South Teaching Hospital

| Facility                              | Floor                           | Department  | Construction situation   |
|---------------------------------------|---------------------------------|---|--|
| Paediatrics ward<br>Professorial Unit | 1 <sup>st</sup><br>Prenatal     | Paediatrics<br>Paediatrics  | Existed  |
| Urgency<br>Professorial Unit          | 1 <sup>st</sup>                 | Surgical ward(Male)   | Under expansion work<br>and will be completed by<br>June 1997.     |
| Professorial Unit<br>Building         | 4 floor<br>Diagnostic<br>& ward | Medicine, Surgery,<br>Paediatrics, Obs&Gyne<br>(Diagnostic & ward)  | Under construction. The<br>work will be completed by<br>June 1997. |
| Central Services                      |                                 | Central Operation Dept., C.S.S.D.,<br>I.C.U., Patient ward, Physiotherapy<br>Dept., Radiology Dept., Outpatient<br>Dept., Accident Emergency Dept.,<br>Clinical Examination Dept. | Already exist  |

### **3) Installation Locations**

Sufficient installation space for new equipment will definitely be available when the facilities that are currently under construction or that are scheduled for construction are completed. Based upon past experience of building the facilities in the new medical faculty building stage 1, which was completed and is already in use, it can be safely assumed that once the construction work starts, it will be completed more or less on schedule.

### **4) State of infrastructure**

- In regard to power supply, the records of voltage fluctuations obtained by the survey (during the rainy season) were analysed and the results of the analysis show that few fluctuations were observed and there were very few instances of power outage. However, since power outages and voltage fluctuations occur frequently during the dry season, small power generators for cadaver refrigerators, reagent refrigerators and freezers are needed in addition to the voltage stabilisers and uninterruptible power supply units that were requested.
- In regard to the water situation, tap water was sampled in the university faculty building for analysis and the water was verified to be soft water, to approximately the same degree as that of tap water in Japan, with sufficient degree of transparency. Thus, it will not be necessary to perform pre-treatment or the like on the water.
- Waste liquid is sterilised with hypochlorous acid, since the culturing and examination of bacteria and parasites are performed at the Microbiology Department and the Parasitology Department, therefore there is no need for concern in regard to pollution.

## **(2) Equipment plan**

The details, scale and the like of the equipment plan in this project are to be defined by taking into consideration the functions and roles to be fulfilled by the Faculty of Medical Sciences, University of Sri Jayewardenepura, the level of technical expertise of the staff, the curriculum offered at the university, the frequency of use of individual equipment, the capacity for fulfilling financial obligations, the capability of carrying out maintenance, the state of facilities and the like. Based upon this plan, the following criteria for selecting specific equipment to be provided have been confirmed through discussions between Sri Lanka side and the survey mission.

### **1) Principle of priority**

- a) Basic equipment required for training doctors and paramedical
- b) Simple equipment that can be easily maintained
- c) Equipment which need to replace because of deterioration and equipment that are in serious shortage

**2) Principle of exclusion**

- a) Equipment that are not directly required for educational activities
- b) Facilities equipment
- c) Consumable, spare parts
- d) Equipment that require a large outlay in running costs and maintenance expenses and are, therefore, expected to be a financial burden to Sri Lanka
- e) Equipment that require an advanced level of technology
- f) Equipment that greatly affect the environment and for which it is difficult to provide appropriate facilities
- g) Equipment that require large scale modifications or extensions of existing facilities and that are judged to be not technically feasible

**3) Equipment proposed to be installed in the University Professorial Unit at Colombo South Teaching Hospital**

Equipment that are to be installed at Colombo South Teaching Hospital are to be selected in accordance with the following criteria:

- a) Basic equipment that are directly employed for diagnosis and treatment of patients
- b) Simple equipment that can be easily maintained
- c) Equipment which need to replace because of deterioration and equipment in serious shortage
- d) Equipment that will ensure the same level of equipment as in other teaching hospitals

**4) Equipment proposed to be installed at the Central Services of Colombo South Teaching Hospital**

These are equipment additionally requested at the time of the explanation of draft basic design report.

Equipment are to be selected in accordance with the criteria described above 3)

Equipment to be excluded from the selection for acquisition will be determined in conformance to the same criteria given in 2) above.

Confirmation of equipment requested was conducted with the Faculty personnel based upon the criteria described above. In order to file the final request, the required equipment were graded through three levels of priority. The specific details of those grades, i.e., A, B and C are as follows:

- A :** Equipment that are indispensable for justifiable reason and are expected to constitute a vital part of the project. However, planned quantities for acquisition are to be decided based upon future analysis.
- B :** Equipment for which the justification for acquisition thereof is to be

determined through further survey and based upon future analysis.

**C : Equipment for which the justification for acquisition thereof is not sufficient and which are deemed not essential for this project.**

Based upon the order of priority for acquiring those equipment described above, which were agreed upon between Sri Lanka and the survey mission and also based upon the additional information on the details and required quantities of equipment which became available during individual discussions with individual department personnel after exchanging Minutes of Discussion. The justification and the degree of need in detail were further deliberated in Japan. Final integrated overall evaluation of equipment to be acquired were carried out in conformance to the following criteria.

Moreover, priority order of the equipment additionally requested to the Central Services of Colombo South Teaching Hospital is the order of priority proposed by Sri Lanka side and differs from the contents of the order of priority described above.

**[Criteria for evaluation]**

**1. Study of the degree of need**

**O:** Equipment required for training doctors and paramedicals and equipment that are directly employed for diagnosing and treating patients

**X:** Equipment that are not directly employed in educational activities or diagnosing and treating patients and advanced basic research equipment

**2. Study of the level of technical expertise required**

**O:** Equipment that are technically equal to the level as those employed at other medical faculties

**X:** Equipment that are not currently in use at other medical schools and equipment that may be substituted with other equipment of simple specifications

**3. Study of maintenance system**

**O:** Equipment that can be easily maintained; equipment that can be maintained with the expertise available from the local agents of the manufacturers

**X:** Equipment that may cause problems related to maintenance after installation because large sums of money are required for maintenance and advanced maintenance capability are required

**4. Study of quantities**

**O:** Equipment of which distribution is appropriately planned and the quantities required are deemed justifiable

**X: Equipment of which quantity must be adjusted in view of the location of use of the equipment and the curriculum in which they are required**

**{Overall evaluation}**

**O: Equipment that are deemed appropriate through studies of the details of the requirements and are to be included in the plan**

**X: Equipment which are not to be included in the plan after studying the details of the requirements**

The results of deliberations that were carried out for the individual equipment based upon the criteria for the selection of equipment for acquisition described above are shown in Table 2-1 "the Review Results of the Equipment Requested". It is to be noted that the final itemized "Equipment Distribution List" (Appendix-4), the "Equipment List by Department" (Appendix-5) and the "Specifications of Main Equipment" (Appendix-6) are attached in Appendices.

**(3) Revisions on equipment for acquisition**

Although the following equipment seemed appropriate for acquisition at the time of the local survey, they are excluded from the scope of the plan, as the result of the final analysis which performed in Japan.

**1) Equipment required by the Department of Pharmacology**

| Request No. | Description  |
|-------------|--|
| 198         | Planetary mixer-pilot scale capacity 5kg                       |
| 199         | Oscillating granulator-pilot scale capacity 5kg                |
| 200         | Drum mixer-pilot scale capacity 10kg                           |
| 201         | Tray drying oven-pilot scale capacity 5kg                      |
| 202         | Tableting machine  |
| 203         | Punches for tableting machine, 10mm flat / bevelled brake line |
| 204         | Punches for tableting machine, 6mm double concave              |
| 205         | Coating pan-sugar-pilot scale capacity 5kg                     |
| 206         | Capsule filling machine-manual; 100 caps per fill              |

These are equipment employed for manufacturing drugs and were requested in order to demonstrate drug manufacturing methods to the students. However, they are large equipment normally installed at drug manufacturing plants and, since it will be extremely difficult to provide sufficient installation space and satisfactory maintenance, they are excluded from the scope of the plan.

**2) Equipment for animal house**

| Request No. | Description                    |
|-------------|--------------------------------|
| 274         | Equipment for animal house set |

The automatic feed preparing machine, which is included in the requested item and is employed in order to prepare feed for lab animals,



is an advanced device for which it will be extremely difficult to provide appropriate maintenance. Thus, the automatic feed preparing machine are excluded from the plan.

### 3) Vehicles

Request No. Description  
292 Transport vehicle

While this vehicle is to be used for transporting teaching staff to perform family and community medical service, since it is not eligible in the system of Japanese Grant Aid, it is excluded from the plan.

### 4) Revision at the time of explanation of the Draft Basic Design Report

Revision was requested of the following equipment. Revision will be duly made since the necessity and appropriateness was confirmed as the result of mutual discussion.

| Department   | Item No. | Description                                       | Q'ty | Remarks                              |
|--------------|----------|---|------|--------------------------------------|
| Physiology   | M-021    | Diagnostic sets(Auroscope & Ophthalmoscope)       | 4    | Additional                           |
| Biochemistry | L-053    | Automatic Pipettes set                            | 1    | Additional                           |
|              | L-075    | Microwave Oven                                    | 1    | Additional                           |
|              | L-089    | Washing Machine for Pipettes and Test Tube        | 1    | Additional                           |
| Animal House | L-147    | Add Manual type Feed machine instead of Automatic | 1    | Changed specifications               |
| Pathology    | L-010    | Binocular Microscope                              | 40   | Instead of L-11, As original request |
|              | L-011    | Biological Microscope                             | -40  | Cancel                               |
|              | L-020    | Cryostat with knife                               | 1    | Can't share with Forensic Medicine   |
| Microbiology | L-022    | Chest freezer(-80C)                               | 1    |                                      |
|              | L-028    | Bench Cooler upto -30deg. C                       | -2   | Change Item to L-039                 |
|              | L-039    | Cold Incubator(Temp.-20 to 30 C), 150L            | 2    | Add 2 units instead of L-028         |
|              | L-038    | Floor standing Incubators(250L)                   | -2   | Change Item to L-037                 |
|              | L-037    | Incubator(150L)                                   | 4    | Add 4 units instead of L-038         |
|              | L-072    | Hot Air Oven(250L)                                | -2   | Change Item to L-079                 |
|              | L-079    | Top Loading Autoclave                             | 2    | Add 2 units instead of L-072         |
| Parasitology | L-041    | Safety cabinet, Class II                          | 1    |                                      |
|              | L-068    | Transfer Apparatus for gel                        | -1   | Cancel                               |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin No. | Item No. | Description   | Requested Qty |    |   | Evaluation |   |   |   | Plan Phase | Remarks |   |  |
|------------|----------|---|---------------|----|---|------------|---|---|---|------------|---------|---|--|
|            |          |   | A             | B  | C | TTL        | 1 | 2 | 3 |            |         | 4 | Over   |
|            | 1        | L-001 Teaching Microscope with 5 teaching attachment                  | 1             | 2  |   | 3          | 0 | 0 | 0 | 0          | 1       | 1 | Changed to item No.2 except Pathology                        |
|            | 2        | CCTV System with 8 monitor, video camera, deck                        | 5             |    |   | 5          | 0 | 0 | 0 | 0          | 0       | 2 | Changed Specifications                                       |
|            |          | L-002 CCTV System with 3 monitor, VCR                                 |               |    |   |            |   |   |   |            | 2       | 2 |  |
|            |          | L-003 CCTV System with 4 monitor, VCR                                 |               |    |   |            |   |   |   |            | 2       | 2 |  |
|            |          | L-004 CCTV System with 5 monitor, VCR                                 |               |    |   |            |   |   |   |            | 2       | 2 |  |
|            |          | L-005 CCTV System with 6 monitor, VCR                                 |               |    |   |            |   |   |   |            | 4       | 2 | Added one unit to Forensic Medicine                          |
|            | 3        | L-006 Research Microscope, binocular with CCTV attachment             | 3             |    |   | 3          | 0 | 0 | 0 | 0          | 4       | 1 |  |
|            | 4        | L-007 Research Microscope (F.L. Ph/C, Pol Attach) with Photo system   | 12            |    |   | 12         | 0 | 0 | 0 | 0          | 12      | 1 |  |
|            | 5        | L-008 Inverted Tissue Culture Microscope                              | 6             | 2  |   | 8          | 0 | 0 | 0 | 0          | 8       | 1 |  |
|            | 6        | L-009 Inverted Tissue Culture Research Microscope with CCTV adaptor   | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 1 |  |
|            | 7        | L-010 Binocular Microscopes   | 72            | 92 |   | 164        | 0 | 0 | 0 | 0          | 114     | 1 |  |
|            | 8        | L-011 Biological Microscope   | 60            |    | 6 | 66         | 0 | 0 | 0 | 0          | 40      | 1 |  |
|            | 9        | L-012 Stereoscopic Zoom Microscope                                    | 5             |    |   | 5          | 0 | 0 | 0 | 0          | 5       | 1 |  |
|            | 10       | L-013 Double Beam Spectrophotometer, 200-1000nm                       | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Responsible common use depts. are Biochemistry and Pathology |
|            | 11       | L-014 Single Beam, Visible Light Spectrophotometer                    | 1             | 4  |   | 5          | 0 | 0 | 0 | 0          | 5       | 2 |  |
|            | 12       | L-015 Single Beam, Visible Light Spectrophotometer, with auto sampler | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 1 | Added 1 unit to Biochemistry                                 |
|            | 13       | L-016 Digital Flame Photometer  | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 2 | Responsible depts. are Biochemistry and Pathology            |
|            | 14       | L-017 IR Spectrophotometer  | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 1 | Changed specifications to item L-015                         |
|            | 15       | L-018 Autoanalyzer for Blood Metabolites                              | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 1 |  |
|            | 16       | L-019 Fully Automatic Random Access Analyzer                          | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 1 | Planned manual type equipment                                |
|            | 17       | L-020 Automated Coulter, Full Blood Analyzer                          | 4             |    |   | 4          | 0 | 0 | 0 | 0          | 4       | 1 | Combined in item 96  |
|            | 18       | L-021 Apparatus for Deionising Water                                  | 1             | 3  |   | 4          | 0 | 0 | 0 | 0          | 4       | 2 |  |
|            | 19       | L-022 Electronic Precision balance (Readability 0.01g)                | 7             |    |   | 7          | 0 | 0 | 0 | 0          | 7       | 1 |  |
|            | 20       | L-023 Electronic Balance (Range 0.01mg-100mg)                         | 8             | 1  |   | 9          | 0 | 0 | 0 | 0          | 10      | 1 | Added 1 unit to Biochemistry                                 |
|            | 21       | L-024 Cryostat with Knife   | 1             | 2  |   | 3          | 0 | 0 | 0 | 0          | 3       | 1 |  |
|            | 22       | L-025 Ultralow Freezer (-80C)   | 1             | 1  |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Excluded 1 unit from Pathology                               |
|            | 23       | L-026 Chest Freezer (-30C)  | 4             |    |   | 4          | 0 | 0 | 0 | 0          | 4       | 2 | Added 1 to Microbiology on DBD mission                       |
|            | 24       | L-027 Freezers (-30C)   | 4             |    |   | 4          | 0 | 0 | 0 | 0          | 4       | 2 |  |
|            | 25       | L-028 Refrigerator (Double Door)                                      | 6             |    |   | 6          | 0 | 0 | 0 | 0          | 6       | 2 |  |
|            | 26       | L-029 Refrigerator (150L)   | 14            |    |   | 14         | 0 | 0 | 0 | 0          | 14      | 2 |  |
|            | 27       | L-030 Spark Free Refrigerator (100L)                                  | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 2 |  |
|            | 28       | L-031 Bench Top Cooler upto 2.5C                                      | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Changed Item L-039 of Microbiology on DBD mission            |
|            | 29       | L-032 Bench Cooler upto -30C  | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Responsible depts. are Biochemistry and Microbiology         |
|            | 30       | L-033 Ice Flake Maker   | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Changed specification of Pharmacology to the below           |
|            | 31       | L-034 Dewars for Specimen Storage in Liquid N2                        | 6             |    |   | 6          | 0 | 0 | 0 | 0          | 6       | 2 |  |
|            | 32       | L-035 Liquid N2 Storage Vessels (on Stand with Castors)               | 5             |    |   | 5          | 0 | 0 | 0 | 0          | 5       | 2 | Responsible dep. is Microbiology                             |
|            | 33       | L-036 Liquid N2 Storage Vessels (Portable for transportation)         | 6             |    |   | 6          | 0 | 0 | 0 | 0          | 6       | 2 | Included in the above item                                   |
|            | 34       | L-037 Freeze Dryer  | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Pharmacology will share with other depts                     |
|            | 35       | L-038 Manifolds for Flasks  | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 2 |  |
|            | 36       | L-039 Vacuum Concentrator   | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 |  |
|            | 37       | L-040 Incubator (200L, Double Door)                                   | 2             |    |   | 2          | 0 | 0 | 0 | 0          | 2       | 2 | Microbiology, Added 4 instead of L-038 on DBD mission        |
|            | 38       | L-041 Incubator (150L)  | 5             | 7  |   | 12         | 0 | 0 | 0 | 0          | 14      | 2 | Microbiology, Changed item to L-037 on DBD mission           |
|            | 39       | L-042 Floor Standing Incubators (250L)                                | 2             | 1  |   | 3          | 0 | 0 | 0 | 0          | 3       | 2 | Microbiology, Added 2 on DBD                                 |
|            | 40       | L-043 Cold Incubators (Temp -20C to 30C), 150L                        | 1             |    |   | 1          | 0 | 0 | 0 | 0          | 1       | 2 | Not manufacturing, changed to the below                      |
|            | 41       | L-044 CO2 Incubator with HEPA Filtration System                       | 2             | 2  |   | 4          | 0 | 0 | 0 | 0          | 4       | 2 | Added to Microbiology  |
|            | 42       | L-045 CO2 Incubator (150L, S-50C)                                     | 3             | 2  |   | 5          | 0 | 0 | 0 | 0          | 5       | 2 | Excluded except Microbiology and Parasitology                |
|            | 43       | L-046 Safety Cabinet, Class II  | 8             | 6  |   | 14         | 0 | 0 | 0 | 0          | 14      | 2 | Excluded Pharmacology  |
|            | 44       | L-047 Tissue Culture Glove Box  | 1             | 1  |   | 2          | 0 | 0 | 0 | 0          | 2       | 1 |  |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin<br>No. | Item<br>No. | Description   | Requested Qty     |     |  | Evaluation |   |   |   | Plan<br>Phase | Remarks |  |
|---------------|-------------|---|-------------------|-----|--|------------|---|---|---|---------------|---------|--|
|               |             |   | Priority<br>A B C | TTL |  | 1          | 2 | 3 | 4 |               |         | Over   |
| 44            | L-043       | Fume Hood (Draft chamber)                               | 3                 | 1   |  | 4          | 0 | 0 | 0 | 0             | 2       | Combined with item 191<br>Changed specifications to the below                  |
| 45            | L-044       | Ultracentrifuge, 30000-150000 rpm                       |                   |     |  | 1          | X | 0 | 0 | X             | 2       |  |
| 46            | L-045       | Ultracentrifuge, 60000 rpm                              |                   |     |  | 1          | X | 0 | 0 | 0             | 2       |  |
| 47            | L-046       | Micro-Ultracentrifuge, 120000 rpm                       |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       | Changed specifications to item 50  |
| 48            | L-047       | Centrifuge, Cold, High Speed                            |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       | Common equip. except Microbiology (Responsible is Microbiology)                |
| 49            | L-048       | Centrifuge, Refrigerated                                |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       | Common equip. except Microbiology (Responsible is Pathology)                   |
| 50            | L-049       | Refrigerated Microtuge with Rotors                      |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 51            | L-050       | Microtuge   |                   |     |  | 4          | 0 | 0 | 0 | 0             | 1       |  |
| 52            | L-051       | Centrifuge, Bench                                       |                   |     |  | 14         | 0 | 0 | 0 | 0             | 1       |  |
| 53            | L-052       | Microtitre Plate Reader                                 |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 54            | L-053       | Automatic Microtitre Plate Washer                       |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 55            | L-054       | Microtitre Plate Shaker                                 |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 56            | L-055       | Microtitre Plate Incubator                              |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 57            | L-056       | Automatic Pipettes Set                                  |                   |     |  | 20         | 0 | 0 | 0 | 0             | 2       | Added 1 unit to Biochemistry on DBD mission                                    |
| 58            | L-057       | Multi-channel Pipettes (8 channel) with Stand Set       |                   |     |  | 9          | 0 | 0 | 0 | 0             | 1       |  |
| 59            | L-058       | Automatic Volume Dispensers Set                         |                   |     |  | 3          | 0 | 0 | 0 | 0             | 3       |  |
| 60            | L-059       | Dilutors  |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       | Responsible dep. is Biochemistry   |
| 61            | L-060       | Test tube Mixers  |                   |     |  | 9          | 0 | 0 | 0 | 0             | 9       |  |
| 62            | L-061       | pH Meters   |                   |     |  | 13         | 0 | 0 | 0 | 0             | 13      | Added 1 unit to Biochemistry   |
| 63            | L-062       | Hand held pH Meters                                     |                   |     |  | 3          | 0 | 0 | 0 | 0             | 3       |  |
| 64            | L-063       | Shaking Water Bath                                      |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 65            | L-064       | Water Bath 12-16L                                       |                   |     |  | 16         | 0 | 0 | 0 | 0             | 16      |  |
| 66            | L-065       | Thermal Cycler  |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 67            | L-066       | UV Transilluminator with Photographic Attachment        |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 68            | L-067       | Electrophoresis Apparatus, Horizontal, Gel Tank         |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 69            | L-068       | Mini Gel Apparatus with dryer and stainher              |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 70            | L-069       | Electrophoresis for Protein, Vertical Gel Apparatus     |                   |     |  | 3          | 0 | 0 | 0 | 0             | 3       | Changed Spec. of Biochemistry and Pathology to O-067<br>Cellulose acetate type |
| 71            | L-070       | Electrophoresis for Protein with densitometer           |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 72            | L-071       | Sequencing apparatus with Power Pack (3000V)            |                   |     |  | 1          | X | 0 | 0 | 0             | 1       | Not necessary for Pathology and Parasitology                                   |
| 73            | L-072       | Transfer Apparatus for Gels                             |                   |     |  | 4          | 0 | 0 | 0 | 0             | 4       |  |
| 74            | L-073       | Vacuum blotting Apparatus                               |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 75            | L-074       | X-ray Film Processor                                    |                   |     |  | 1          | X | 0 | 0 | 0             | 1       | Changed to manual type   |
| 76            | L-075       | Dot-Blot Apparatus                                      |                   |     |  | 1          | X | 0 | 0 | 0             | 1       |  |
| 77            | L-076       | Southern Blot Apparatus                                 |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 78            | L-077       | Blotting Apparatus (large)                              |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 79            | L-078       | Hybridization Oven with Shaking Platform and Rotisserie |                   |     |  | 1          | X | 0 | 0 | 0             | 1       |  |
| 80            | L-079       | Vacuum Oven with Vacuum Pump (30L)                      |                   |     |  | 2          | X | 0 | 0 | 0             | 2       |  |
| 81            | L-080       | Hot Air Oven (250L)                                     |                   |     |  | 12         | 0 | 0 | 0 | 0             | 12      | Microbiology, Changed item to L-079 on DBD mission                             |
| 82            | L-081       | Drying Oven (50L Ambient, 150C)                         |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |
| 83            | L-082       | Drying Cabinet for Glassware and Instruments            |                   |     |  | 3          | 0 | 0 | 0 | 0             | 3       |  |
| 84            | L-083       | Drying Cabinet for Glassware and Instruments            |                   |     |  | 6          | 0 | 0 | 0 | 0             | 6       | Added 1 unit to Biochemistry on DBD mission                                    |
| 85            | L-084       | Microwave Oven  |                   |     |  | 4          | 0 | 0 | 0 | 0             | 4       |  |
| 86            | L-085       | Dy Block  |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       | Combined with item 192   |
| 87            | L-086       | Muffle Furnace (600-1000C)                              |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 88            | L-087       | Hot Plate   |                   |     |  | 5          | 0 | 0 | 0 | 0             | 5       |  |
| 89            | L-088       | Boiling Sterilizer (100C)                               |                   |     |  | 6          | 0 | 0 | 0 | 0             | 6       |  |
| 90            | L-089       | Top Loading Autoclave                                   |                   |     |  | 6          | 0 | 0 | 0 | 0             | 6       | Microbiology, Added 2 instead of L-072 on DBD mission                          |
| 91            | L-090       | Front Loading Autoclave (50L)                           |                   |     |  | 4          | 0 | 0 | 0 | 0             | 4       |  |
| 92            | L-091       | Hand Held Short Wave (254nm) UV Light                   |                   |     |  | 1          | 0 | 0 | 0 | 0             | 1       |  |
| 93            | L-092       | UV-Rays Lamp  |                   |     |  | 2          | 0 | 0 | 0 | 0             | 2       |  |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin<br>No. | Item<br>No. | Description  | Requested Qty |   |   | Evaluation |   |   |   |   |      |  | Plan<br>Qty | Phase | Remarks  |
|---------------|-------------|--|---------------|---|---|------------|---|---|---|---|------|--|-------------|-------|--|
|               |             |  | A             | B | C | TTL        | 1 | 2 | 3 | 4 | Over |  |             |       |  |
| 91            | L-083       | Orbital Shakers (With Auto Reverse)                            | 10            |   |   | 10         |   |   |   |   |      |  |             | 2     | Combined with item 187                         |
| 92            | L-084       | Rocking Platform with Base                                     | 3             |   |   | 3          |   |   |   |   |      |  |             | 2     |  |
| 93            |             | Autoradiography Exposure Cassettes                             | 4             |   |   | 4          |   |   |   |   |      |  |             |       |  |
| 94            |             | Autoradiography Exposure and Analysis System                   | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 95            | L-085       | Gel Drying Apparatus   | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |
| 96            | L-086       | Reagent Grade Water System                                     | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     |  |
| 97            | L-087       | Auto(Water) Still  | 5             |   |   | 5          |   |   |   |   |      |  |             | 2     | Common use responsible depart. is Biochemistry |
| 98            | L-088       | Ultrasonic Pipette Washer                                      | 4             |   |   | 4          |   |   |   |   |      |  |             | 2     |  |
| 99            |             | Ultrasonic Cleaner   | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     | The above can be use                           |
| 100           | L-089       | Washing Machine for Pipettes and Tubes with Brushes            | 3             |   |   | 3          |   |   |   |   |      |  |             | 2     | Added 1 unit to Biochemistry on DBD mission    |
| 101           | L-090       | Parasite Somicator   | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |
| 102           | L-091       | Magnetic Stirrer with Hot Plate                                | 12            |   |   | 12         |   |   |   |   |      |  |             | 1     | Added 1 unit to Biochemistry                   |
| 103           | L-092       | Vacuum Pump  | 4             |   |   | 4          |   |   |   |   |      |  |             | 1     |  |
| 104           | L-093       | Filter Assembly for Pure water                                 | 3             |   |   | 3          |   |   |   |   |      |  |             | 2     |  |
| 105           |             | Programmable Cell Harvester                                    | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 106           | M-001       | Portable Echocardiograph                                       | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 107           | M-002       | ECG Machine, 3CH   | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     | Combined with item 211                         |
| 108           |             | Cardiac Bedside Monitor  | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 109           |             | Treatment Carriage   | 3             |   |   | 3          |   |   |   |   |      |  |             |       |  |
| 110           | L-094       | Mixer for Small Container                                      | 12            |   |   | 12         |   |   |   |   |      |  |             | 1     |  |
| 111           |             | HPLC System  | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 112           |             | Blood chemical concentration analyzer                          | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 113           |             | Solvent System   | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 114           | M-003       | Hand Grip Dynamometer/Ergograph for Isometric Exercise Testing | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 115           | M-004       | Ultrasonic blood flow detector (Plethysmograph)                | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 116           | M-005       | Tilting Table, Manual  | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 117           | M-006       | Electroencephalogram   | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     |  |
| 118           | M-007       | Electroneurogram with Visual Evoked Potentials and EMG         | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     |  |
| 119           | M-008       | Perimeter, Goldman   | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 120           | M-009       | Audiometer, Screening  | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 121           | M-010       | Automated Spirometer   | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     | Combined with item 211                         |
| 122           | M-011       | Treadmill for Exercise Testing                                 | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 123           | M-012       | Stethograph with Blorite                                       | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 124           |             | Physiograph  | 1             |   |   | 1          |   |   |   |   |      |  |             |       |  |
| 125           | L-095       | Automatic Body Embalment System                                | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 126           | L-096       | Body Preservation Locker For 10 Bods                           | 2             |   |   | 2          |   |   |   |   |      |  |             | 1     |  |
| 127           | L-097       | Dissecting Instrument Set                                      | 10            |   |   | 10         |   |   |   |   |      |  |             | 1     |  |
| 128           | L-098       | X-ray Film Cabinet   | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     |  |
| 129           | L-099       | X-ray Viewer (Large)   | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |
| 130           | L-100       | X-ray Viewer (Illuminator) - Standard                          | 3             |   |   | 3          |   |   |   |   |      |  |             | 2     | Separated from item 293-297                    |
| 131           | L-101       | Portable X-ray Unit  | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     |  |
| 132           | L-102       | X-ray Accessories  | 5             |   |   | 5          |   |   |   |   |      |  |             | 2     | Made complete set                              |
| 133           | L-103       | Cassette with intensifying screen                              | 9             |   |   | 9          |   |   |   |   |      |  |             | 2     |  |
| 134           |             | X-ray Protection Screen with Lead Glass                        | 1             |   |   | 1          |   |   |   |   |      |  |             | 2     | Changed to Protective aprons                   |
| 135           | L-104       | X-ray Protection apron set                                     | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |
| 136           | L-105       | Developing Tank  | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |
| 137           | L-106       | Automated Slide Stainer  | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 137           | L-107       | Tissue-Tek Embedding Centre                                    | 1             |   |   | 1          |   |   |   |   |      |  |             | 1     |  |
| 138           | L-108       | Tissue Processing Machine                                      | 2             |   |   | 2          |   |   |   |   |      |  |             | 2     |  |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin<br>No. | Item<br>No. | Description                                  | Requested Qty |   |   | Evaluation |   |   |   | Plan<br>Qty | Phaso | Remarks |   |
|---------------|-------------|--|---------------|---|---|------------|---|---|---|-------------|-------|---------|---|
|               |             |  | A             | B | C | 1          | 2 | 3 | 4 |             |       |         | Over  |
| 139           | L-109       | Paraffin Trowel                              | 2             |   |   | 3          | 0 | 0 | 0 | 0           | 2     | 1       |   |
| 140           | L-110       | Shaker for Tissue Fixation                   | 1             |   |   | 2          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 141           | L-111       | Paraffin Oven                                | 2             |   |   | 3          | 0 | 0 | 0 | 0           | 2     | 1       |   |
| 142           | L-112       | Slide Warmer                                 | 5             |   |   | 6          | 0 | 0 | 0 | 0           | 7     | 2       |   |
| 143           |             | Microscopic Slide and Tissue Block Cabinet   |               |   |   | 3          | X | 0 | 0 | 0           | X     |         |   |
| 144           | L-113       | Microtome with Knives Set                    | 6             |   |   | 6          | 0 | 0 | 0 | 0           | 6     | 1       |   |
| 145           | L-114       | Automatic Microtome Knife Sharpener          | 3             |   |   | 3          | 0 | 0 | 0 | 0           | 3     | 1       |   |
| 146           | L-115       | Stop Watch Clock                             | 17            |   |   | 17         | 0 | 0 | 0 | 0           | 28    | 1       |   |
| 147           | L-116       | Interval Timers                              | 23            |   |   | 23         | 0 | 0 | 0 | 0           | 23    | 1       |   |
| 148           |             | Slide Book                                   |               |   |   | 6          | X | 0 | 0 | 0           | X     |         |   |
| 149           |             | Electronic Dry Housing for Microscopes       |               |   |   | 75         | 0 | 0 | 0 | 0           | X     |         |   |
| 150           | L-117       | Digital Haemoglobinometer                    | 1             |   |   | 1          | 2 | 0 | 0 | 0           | 1     | 2       |   |
| 151           | M-013       | Blood Gas Analyzer                           | 3             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Responsible dep. is Padiatic                                      |
| 152           | L-118       | Haematocrit Centrifuge                       | 3             |   |   | 4          | 0 | 0 | 0 | 0           | 3     | 1       |   |
| 153           | M-014       | Silicon Resuscitation Bags                   | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 14    | 1       | Separated from item 293-297                                       |
| 154           | M-015       | Length Scale                                 | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 10    | 1       | Added same qty of item 157  |
| 155           | M-016       | Instrument Tray Table with Castors           | 5             |   |   | 5          | 0 | 0 | 0 | 0           | 13    | 1       | Separated from item 293-297                                       |
| 156           | M-017       | Examination Table                            | 7             |   |   | 7          | 0 | 0 | 0 | 0           | 15    | 1       | Separated from item 293-297                                       |
| 157           |             | Measuring Lod For Height                     | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 1     | 1       | Changed to item 154   |
| 158           | M-018       | Infant Length Scale                          | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 2     | 1       |   |
| 159           | M-019       | Electronic Weighing Scale                    | 3             |   |   | 3          | 0 | 0 | 0 | 0           | 13    | 1       | Combined with item 216  |
| 160           | M-020       | Infant Weighing Scale                        | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 2     | 1       |   |
| 161           | M-021       | Diagnostic Sets (Auroscope & Ophthalmoscope) | 3             |   |   | 3          | 0 | 0 | 0 | 0           | 15    | 1       | Separated from item 293-297. Added 4 to Physiology on DBD mission |
| 162           | M-022       | Skinfold Thickness Callipers                 | 2             |   |   | 2          | 0 | 0 | 0 | 0           | 2     | 1       |   |
| 163           | M-023       | Bilirubin Analyzer                           | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 164           | M-024       | Hysteroscope with Resection Equipment        | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 165           | M-025       | Coiposcope                                   | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 166           | M-026       | Cryo-cautery                                 | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Responsible dep. is Surgery                                       |
| 167           | M-027       | Laparoscope with Video Unit                  | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 168           | M-028       | Bipolar Diathermy                            | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 169           | M-029       | Doppler Fetal Heart Monitor (Portable)       | 3             |   |   | 3          | 0 | 0 | 0 | 0           | 4     | 1       | Combined with item 233  |
| 170           | M-030       | Cardio-toco-graph                            | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 3     | 1       |   |
| 171           | M-031       | Ultrasound Machine with Color Doppler        | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 172           | M-032       | Video Endoscopy System                       | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Responsible depts. are Obstetrics                                 |
| 173           | M-033       | Gastrointestinal Fiberscope, Neonatal        | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Responsible depts. are Surgery & Medicine                         |
| 174           | L-119       | Melting Point Apparatus                      | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Responsible dep. is Surgery                                       |
| 175           | L-120       | Disintegration Testing System                | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 176           | L-121       | Tablet Friability and Friction Tester        | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 177           | L-122       | Hardness Tester of Tablets                   | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 178           | L-123       | Sieve Shaker                                 | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 179           | L-124       | Sieve  | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 180           | L-125       | Moisture Content Measuring Equipment         | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 181           | L-126       | Small Grinding Mill                          | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 182           | L-127       | Electric Ball Mill                           | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 183           | L-128       | Mill for Analysis                            | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 184           | L-129       | Oil Bath                                     | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 185           | L-130       | Trough                                       | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 186           | L-131       | Shaker for Separating Funnel                 | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       |   |
| 187           |             | Shaker                                       | 1             |   |   | 1          | 0 | 0 | 0 | 0           | 1     | 1       | Combined with item 91   |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin<br>No. | Item<br>No. | Description   | Requested Qty |   |   | Evaluation |   |   |   | Plan<br>Phase<br>Qty | Remarks |  |
|---------------|-------------|---|---------------|---|---|------------|---|---|---|----------------------|---------|--|
|               |             |   | A             | B | C | 1          | 2 | 3 | 4 |                      |         | Over   |
| 188           | L-132       | Mantel Heater   |               |   |   |            |   |   |   |                      |         |  |
| 189           | L-133       | Aspirator   |               |   |   |            |   |   |   |                      |         |  |
| 190           | L-134       | Volt Slider   |               |   |   |            |   |   |   |                      |         |  |
| 191           |             | Draft Chamber   | 1             |   |   |            |   |   |   |                      |         | Combined with item 44                          |
| 192           | L-135       | Electric Furnace  |               |   |   |            |   |   |   |                      |         | Combined with item 84                          |
| 193           | L-136       | Polarimeter   |               |   |   |            |   |   |   |                      |         |  |
| 194           | L-137       | Refractometer   |               |   |   |            |   |   |   |                      |         |  |
| 195           |             | Air Compressors   |               |   | 2 |            |   |   |   |                      |         |  |
| 196           | L-138       | Colony Counter  |               |   |   |            |   |   |   |                      |         | Combined with item 268                         |
| 197           | L-139       | Thermal Hygograph With Recorder                             |               |   |   |            |   |   |   |                      |         |  |
| 198           |             | Planetary Mixer - Pilot Scale Capacity 5kg                  |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 199           |             | Oscillating Granulator - Pilot Scale Capacity 5kg           |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 200           |             | Drum Mixture - Pilot Scale Capacity 10L                     |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 201           |             | Tray Drying Oven - Pilot Scale Capacity 5kg                 |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 202           |             | Tableting Machine   |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 203           |             | Punches for Tableting Machine 10mm Flat/Beveled/Bracketline |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 204           |             | Punches for Tableting Machine 6mm Double Concave            |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 205           |             | Coating Pan - Sugar - Pilot Scale Capacity 5kg              |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 206           |             | Capsule filling Machine - Manual 100 Caps per Fill          |               |   |   |            |   |   |   |                      |         | Only for industrial model, Maintenance Problem |
| 207           |             | Volt Slider   |               |   |   |            |   |   |   |                      |         | Combined with item 110                         |
| 208           | L-140       | Viscometer  |               |   |   |            |   |   |   |                      |         |  |
| 209           | M-034       | Ophthalmoscope  |               |   |   |            |   |   |   |                      |         |  |
| 210           | M-035       | Defibrillator with monitor                                  |               |   |   |            |   |   |   |                      |         | Combined with item 227                         |
| 211           |             | Portable Vitalograph Machine                                |               |   |   |            |   |   |   |                      |         | Combined with item 121                         |
| 212           | M-036       | Pulse Oximeter  |               |   |   |            |   |   |   |                      |         | Combined with item 289                         |
| 213           | M-037       | Infusion Pump   | 3             |   |   |            |   |   |   |                      |         | Combined with item 275                         |
| 214           |             | Oesophageal pH Monitor                                      |               |   |   |            |   |   |   |                      |         |  |
| 215           | M-038       | Patient monitor(ECG and BP)                                 |               |   |   |            |   |   |   |                      |         | Combined with item 284                         |
| 216           |             | Weighing Machines   |               |   |   |            |   |   |   |                      |         | Combined with item 159                         |
| 217           | M-039       | Examination Bed For Gynecology                              |               |   |   |            |   |   |   |                      |         | Separated from item 293-297                    |
| 218           | M-040       | Surgical Bed for Minor Surgery, Manual                      |               |   |   |            |   |   |   |                      |         |  |
| 219           | M-041       | Small Operating Theatre Lamp Mobile                         |               |   |   |            |   |   |   |                      |         |  |
| 220           | M-042       | Hand Lamp   | 4             |   |   |            |   |   |   |                      |         |  |
| 221           | M-043       | Angle Poised Lamp   | 2             |   |   |            |   |   |   |                      |         | Separated from item 293-297                    |
| 222           | M-044       | Diagnostic Set For Community and Family Medicine            | 3             |   |   |            |   |   |   |                      |         | Separated from item 293-297                    |
| 223           |             | Foetal Heart Detector (Doppler)                             |               |   |   |            |   |   |   |                      |         |  |
| 224           | M-045       | Proctoscope with Light Source                               |               |   |   |            |   |   |   |                      |         | Combined with item 169                         |
| 225           | M-046       | Suction unit  |               |   |   |            |   |   |   |                      |         |  |
| 226           | M-047       | Nebuliser   |               |   |   |            |   |   |   |                      |         | Combined with item 283                         |
| 227           |             | Portable Defibrillator                                      |               |   |   |            |   |   |   |                      |         | Combined with item 276                         |
| 228           | M-048       | Electric Cautey For Skin                                    |               |   |   |            |   |   |   |                      |         | Combined with item 210                         |
| 229           | M-049       | Infrira Red Lamp  |               |   |   |            |   |   |   |                      |         |  |
| 230           | O-001       | Camera Set  | 4             |   |   |            |   |   |   |                      |         |  |
| 231           | O-002       | Illustration Making Set                                     |               |   |   |            |   |   |   |                      |         |  |
| 232           | O-003       | Magnifying Glass with Handle (Hand Type)                    | 15            |   |   |            |   |   |   |                      |         |  |
| 233           | O-004       | Teaching Video Making Set                                   |               |   |   |            |   |   |   |                      |         |  |
| 234           | O-005       | Computer Facility for Slide Making                          |               |   |   |            |   |   |   |                      |         |  |
| 235           | O-006       | Audio Visual Set For Auditorium                             |               |   |   |            |   |   |   |                      |         |  |
| 236           | O-007       | Observation TV and Camera Set With VCR                      | 2             |   |   |            |   |   |   |                      |         |  |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Origin<br>No. | Item<br>No. | Description  | Requested Qty |   |   | Evaluation |   |   |   | Plan |     | Phase | Remarks |  |
|---------------|-------------|--|---------------|---|---|------------|---|---|---|------|-----|-------|---------|--|
|               |             |  | A             | B | C | 1          | 2 | 3 | 4 | Over | Qty |       |         |  |
|               | 237         | O-008 Educational TV and VCR Set                         | 11            |   |   |            |   |   |   |      |     | 5     | 1       | Changed qty as common equip., Library 3, New biggs 2 units                             |
|               | 238         | O-009 Slide Projector                                    | 6             |   |   |            |   |   |   |      |     | 5     | 1       | Changed qty as common use, responsible is administration                               |
|               | 239         | O-010 Overhead Projector                                 | 11            |   |   |            |   |   |   |      |     | 5     | 1       | Changed qty as common use, responsible is administration                               |
|               | 240         | O-011 Projector Screens                                  | 12            |   |   |            |   |   |   |      |     | 5     | 1       | Changed qty as common use, responsible is administration                               |
|               | 241         | O-012 Laptop Computer                                    | 5             |   |   |            |   |   |   |      |     | 7     | 1       | Added 2 units to Community medicine, others are for Administ.                          |
|               | 242         | O-013 Color Video Projector                              | 1             |   |   |            |   |   |   |      |     | 1     | 2       | Responsible dep. is Administration   |
|               | 243         | O-014 Laser Pointer                                      | 7             |   |   |            |   |   |   |      |     | 7     | 1       |  |
|               | 244         | O-015 Desk Top Computer Set                              | 23            |   |   |            |   |   |   |      |     | 28    | 1       |  |
|               | 245         | O-016 Laser Printer                                      | 18            |   |   |            |   |   |   |      |     | 18    | 1       |  |
|               | 246         | O-017 Bubble Jet Color printer                           | 2             |   |   |            |   |   |   |      |     | 2     | 1       | Responsible dep. is Administration   |
|               | 247         | O-018 Dot Matrix Printer 24 Pin                          | 3             |   |   |            |   |   |   |      |     | 3     | 1       | Responsible dep. is Administration   |
|               | 248         | O-019 Photocopying Machine                               | 5             |   |   |            |   |   |   |      |     | 7     | 1       | 1 each for Admini, Library, Family, Bioch&Phisio, Clinical, Anat&Patho, Micro&Parasito |
|               | 249         | O-020 Photocopying Machine with sorting unit             | 5             |   |   |            |   |   |   |      |     | 5     | 1       | illust unit(3 units for Library, 2 units for New Bldg.)                                |
|               | 250         | O-022 Electronic Type Writer with Memory (English)       | 15            |   |   |            |   |   |   |      |     | 15    | 1       |  |
|               | 251         | O-023 Slide Viewer                                       | 6             |   |   |            |   |   |   |      |     | 6     | 1       | Item 234 can be used for this  |
|               | 252         | O-024 Electronic Stencil Scanning Machine                | 5             |   |   |            |   |   |   |      |     | 5     | 1       |  |
|               | 253         | O-024 Blinding Machine (binding)                         | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 254         | O-025 Laminating machine                                 | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 255         | O-028 Paper Guillotine                                   | 2             |   |   |            |   |   |   |      |     | 6     | 1       |  |
|               | 256         | O-028 Paper Shredder                                     | 4             |   |   |            |   |   |   |      |     | 4     | 1       |  |
|               | 257         | O-027 Epiliascope  | 1             |   |   |            |   |   |   |      |     | 5     | 1       |  |
|               | 258         | O-028 Dictaphone and Recorders                           | 6             |   |   |            |   |   |   |      |     | 6     | 1       |  |
|               | 259         | O-029 Magiborads   | 28            |   |   |            |   |   |   |      |     | 28    | 1       |  |
|               | 260         | O-030 Fax Machines                                       | 5             |   |   |            |   |   |   |      |     | 5     | 1       | Responsible department is Administration   |
|               | 261         | O-031 Split-Type Airconditioners                         | 2             |   |   |            |   |   |   |      |     | 2     | 2       |  |
|               | 262         | O-032 Dehumidifier                                       | 9             |   |   |            |   |   |   |      |     | 10    | 1       |  |
|               | 263         | O-033 Polaroid camera                                    | 2             |   |   |            |   |   |   |      |     | 2     | 2       |  |
|               | 264         | L-141 Bone Marrow Trepphine Biopsy Needles               | 3             |   |   |            |   |   |   |      |     | 3     | 2       |  |
|               | 265         | L-142 Bone Marrow Aspiration Needles                     | 3             |   |   |            |   |   |   |      |     | 3     | 2       |  |
|               | 266         | O-034 Uninterrupted Power Supply (UPS)                   | 40            |   |   |            |   |   |   |      |     | 49    | 1       | Responsible department is Administration   |
|               | 267         | O-035 Stabilizers  | 84            |   |   |            |   |   |   |      |     | 89    | 1       | Responsible department is Administration   |
|               | 268         | Automated Electronic Colony Counter                      | 1             |   |   |            |   |   |   |      |     | 1     | 2       | Combined with item 196   |
|               | 269         | L-143 Rotary Inoculator                                  | 1             |   |   |            |   |   |   |      |     | 1     | 2       |  |
|               | 270         | O-036 Audio Cassette Player with Speakers                | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 271         | L-144 Fully Automatic Computer Blood Culture             | 1             |   |   |            |   |   |   |      |     | 1     | 2       |  |
|               | 272         | L-145 Blood Cell Counting Chamber (WBC,RBC) with counter | 5             |   |   |            |   |   |   |      |     | 6     | 1       |  |
|               | 273         | L-146 Glassware Set                                      | 14            |   |   |            |   |   |   |      |     | 14    | 1       |  |
|               | 274         | L-147 Equipment For Animal House Set                     | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 275         | O-037 Anatomical Models and Simulators Set               | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 276         | Ultrasonic Nebulizers                                    | 2             |   |   |            |   |   |   |      |     | 2     | 1       | Combined with item 226   |
|               | 277         | M-050 Phototherapy Unit                                  | 3             |   |   |            |   |   |   |      |     | 3     | 1       |  |
|               | 278         | Automatic Infusion Pumps                                 | 3             |   |   |            |   |   |   |      |     | 3     | 1       | Combined with item 213   |
|               | 279         | M-051 Syringe Infusion Pumps                             | 3             |   |   |            |   |   |   |      |     | 3     | 1       |  |
|               | 280         | M-052 Infant Resuscitator and Accessories                | 1             |   |   |            |   |   |   |      |     | 1     | 1       |  |
|               | 281         | M-053 Infant Transport Incubators                        | 2             |   |   |            |   |   |   |      |     | 2     | 1       |  |
|               | 282         | M-054 Oxygen Hood  | 2             |   |   |            |   |   |   |      |     | 2     | 1       |  |
|               | 283         | Suction Apparatus  | 2             |   |   |            |   |   |   |      |     | 2     | 1       | Combined with item 225   |

Table 2-1 Review Result of the Equipment Requested Faculty of Medical Sciences

| Original No. | Item No. | Description                                | Requested Qty |            |            | Evaluation |   |   |   | Plan Qty | Phase | Remarks |                        |                               |                                |
|--------------|----------|--|---------------|------------|------------|------------|---|---|---|----------|-------|---------|------------------------|-------------------------------|--------------------------------|
|              |          |  | Priority A    | Priority B | Priority C | TTL        | 1 | 2 | 3 |          |       |         | 4                      | Over                          |                                |
| 284          |          | Cardiac Monitor                            | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 1       | Combined with Item 215 |                               |                                |
| 285          | M-055    | Apnea Monitor                              | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 2       | 1                      |                               |                                |
| 286          | M-056    | Infant Examination Table                   | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 2       | 1                      |                               |                                |
| 287          | M-057    | Infant Pressure Cycled Ventilator          | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 2       | 1                      |                               |                                |
| 288          | M-058    | Oxygen Analyzer                            | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 2       | 1                      |                               |                                |
| 289          |          | Pulse Oximeter                             | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 1       |                        | Combined with Item 212        |                                |
| 290          | M-059    | Liver & Kidney biopsy set                  | 2             |            |            | 2          | 0 | 0 | 0 | 0        | 0     | 2       | 1                      |                               |                                |
| 291          | M-060    | Mini-bus 20 to 30 sheets capacity          | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 292          |          | Transport vehicle                          | 1             |            |            | 1          | X | 0 | 0 | 0        | 0     | 0       |                        | Excluded (for teaching staff) |                                |
| 293          | M-061    | Diagnostic set for Psychiatry              | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 294          | M-062    | Diagnostic set for Surgery                 | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 295          | M-063    | Diagnostic set for Medicine                | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 296          | M-064    | Diagnostic set for Paediatrics             | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 297          | M-065    | Diagnostic set for Obstetrics & Gynecology | 1             |            |            | 1          | 0 | 0 | 0 | 0        | 0     | 1       | 1                      |                               |                                |
| 298          | O-038    | Maintenance tool set                       |               |            |            |            | 0 | 0 | 0 | 0        | 0     | 0       | 0                      |                               |                                |
|              | O-039    | Portable generator                         |               |            |            |            | 0 | 0 | 0 | 0        | 0     | 10      | 1                      |                               | Added (Prevent long power-cut) |



Table 2-1 Review Result of the Equipment Requested CSTH

| Related Facility | Destination          | Item No. | Description   | Requested Qty | Priority | Exist. Equip. | Repl. Add. tional | New | 1 | 2 | 3 | 4 | Over | Qty | Phase | Remarks       |
|------------------|----------------------|----------|---|---------------|----------|---------------|-------------------|-----|---|---|---|---|------|-----|-------|---------------|
| Surgery          | Operation Theatre    | M-066    | Autoclave, 150L   | 2             | A        | 4             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Operation Theatre    | M-067    | Linen washing and dryer                                 | 1             | A        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | L-024    | Refrigerator  | 1             | B        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |               |
| Surgery          | Operation Theatre    | M-048    | Electrological unit                                     | 2             | B        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Operation Theatre    | M-068    | Nerve stimulator  | 1             | C        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | M-088    | Cupboard for instrument                                 | 1             | C        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | M-046    | Suction unit  | 4             | B        | 3             | 3                 | 1   | 0 | 0 | 0 | 0 | 0    | 4   | 1     |               |
| Surgery          | Operation Theatre    | M-035    | Defibrillator   | 1             | B        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | M-076    | Instrument trolley                                      | 10            | C        | 7             | 6                 | -   | 0 | 0 | 0 | 0 | 0    | 6   | 1     |               |
| Surgery          | Operation Theatre    | M-069    | Autoclave high speed                                    | 3             | A        | 0             | -                 | 3   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |               |
| Surgery          | Operation Theatre    | L-078    | Sterilizer(boiling)                                     | 5             | B        | 3             | 3                 | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |               |
| Surgery          | Operation Theatre    | M-089    | Stretcher with IV Oxygen                                | 3             | A        | 3             | 3                 | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |               |
| Surgery          | Operation Theatre    |          | Cupboard for students                                   | 2             | B        | 0             | -                 | -   | x | 0 | 0 | 0 | x    | 0   | 1     |               |
| Surgery          | Operation Theatre    | M-106    | Laryngoscope set, matchintosh(0-5)                      | 1             | B        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | M-051    | Syringe pump  | 1             | C        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Operation Theatre    | M-070    | Surgical instrument set for abdominal                   | 2             | A        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Operation Theatre    | M-071    | Surgical instrument set for Chest                       | 2             | A        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Operation Theatre    | M-072    | Surgical instrument set for Gastroscopy                 | 2             | A        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Operation Theatre    |          | Laparoscope, operative                                  | 1             | B        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 0     | Same as M-027 |
| Surgery          | Operation Theatre    | M-040    | Operation table   | 3             | A        | 3             | 3                 | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |               |
| Surgery          | Accidental Emergency | M-073    | Universal Operation table with orthopedics accessory    | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-046    | Suction unit  | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-038    | Patient monitor   | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-048    | Electrological unit                                     | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-074    | Plaster table   | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-029    | Doppler plus detector                                   | 1             | A        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-075    | Air tourniquets, adult & child                          | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-076    | Surgical instrument set for tracheotomy                 | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-077    | Surgical instrument set for plaster cutting             | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-078    | Surgical instrument set for emergency open chest        | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-079    | Surgical instrument set for Bone fracture               | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Accidental Emergency | M-080    | Bone drill set  | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Surgery Unit 1       | M-108    | Rigid cystoscope for adult                              | 1             | A        | 1             | 1                 | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Surgery Unit 1       | M-109    | Broncho fibroscope with biopsy for adult dia. 5mm, 90cm | 1             | A        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |               |
| Surgery          | Surgery Unit 1       | M-049    | Examination lamp  | 2             | B        | 1             | 1                 | 1   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 1       | L-078    | Sterilizer(boiling)                                     | 2             | B        | 1             | 1                 | 1   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 1       | M-051    | Syringe pump  | 2             | B        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 1       | M-047    | Nebuliser   | 2             | B        | 0             | -                 | 2   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 1       |          | Ultrasound apparatus, Doppler                           | 1             | C        | 0             | -                 | -   | - | - | - | - | x    | 0   | 1     | Same as M-001 |
| Surgery          | Surgery Unit 1       | M-046    | Suction unit  | 2             | C        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 1       | M-110    | Surgical instrument set for minor operation             | 2             | A        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | M-043    | Examination lamp  | 2             | C        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | L-078    | Sterilizer(boiling)                                     | 2             | A        | 0             | -                 | 2   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | M-111    | Wheel chair   | 2             | B        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | M-051    | Syringe pump  | 2             | A        | 0             | -                 | 1   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | M-046    | Suction unit  | 2             | A        | 2             | 2                 | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |
| Surgery          | Surgery Unit 2       | M-047    | Nebuliser   | 2             | C        | 1             | 1                 | 1   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |               |

Table 2-1 Review Result of the Equipment Requested CSTH

| Related Facility    | Destination       | Item No. | Description   | Requested Qty | Priority | Existing Equip | Replacement | Addition | New | 1 | 2 | 3 | 4 | Over | Q'ty | Phase | Remarks               |                |
|---------------------|-------------------|----------|---|---------------|----------|----------------|-------------|----------|-----|---|---|---|---|------|------|-------|-----------------------|----------------|
| Clinical Department |                   |          |   |               |          |                |             |          |     |   |   |   |   |      |      |       |                       |                |
| Surgery             | Surgery Unit 2    | L-024    | Refrigerator  | 2             | C        | 1              | 1           | -        | -   | 0 | 0 | 0 | Δ | 0    | 1    | 2     |                       |                |
| Surgery             | Surgery Unit 2    | M-110    | Surgical instrument set for minor operation             | 2             | A        | 2              | 2           | -        | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-121    | Dental unit   | 2             | A        | 6              | 2           | -        | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-122    | Light cure unit   | 2             | A        | 0              | -           | -        | 2   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-123    | Maxillo-facial plate fixing instrument set              | 1             | A        | 0              | -           | -        | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-124    | Dental drill set  | 1             | A        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-125    | Dental scale remover                                    | 2             | B        | 0              | 2           | -        | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-069    | Autoclave high speed                                    | 1             | C        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-046    | Suction unit  | 1             | C        | 0              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-126    | Surgical instrument for maxillo-facial                  | 1             | B        | 0              | -           | -        | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Maxillo facial    | M-043    | Examination lamp  | 1             | B        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Blood bank        | L-045    | Refrigerated centrifuge, 500ml                          | 1             | A        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Surgery             | Blood bank        | L-028    | Blood bank refrigerator                                 | 1             | B        | 2              | -           | -        | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Glucocemeter  | 4             | A        | 1              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       | Possible in Pathology |                |
| Medicine            | Medical Unit      |          | Blood gas analyzer                                      | 1             | A        | 0              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       | Same as M-013         |                |
| Medicine            | Medical Unit      |          | Electrolyte Analyzer                                    | 1             | A        | 0              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       | Planned in ICU        |                |
| Medicine            | Medical Unit      |          | Hemoglobin Analyzer                                     | 1             | A        | 0              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       | Possible in Pathology |                |
| Medicine            | Medical Unit      |          | Analyzer for Urine(Keton bodies)                        | 1             | A        | 0              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       | Possible in Pathology |                |
| Medicine            | Medical Unit      | M-081    | Ventilator with EndCO2, O2 Analyzer                     | 4             | A        | 0              | -           | -        | 2   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      | M-085    | Respirometer  | 4             | A        | 0              | -           | -        | 2   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      | M-107    | Peak flow meter   | 4             | A        | 0              | -           | -        | 4   | 0 | 0 | 0 | 0 | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      | M-010    | Spirometer  | 1             | A        | 0              | -           | -        | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Medicine            | Medical Unit      | M-047    | Nebuliser   | 4             | A        | 0              | -           | -        | 2   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      | M-038    | Patient monitor   | 8             | A        | 8              | 2           | -        | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      | M-103    | External heart pacing equipment                         | 2             | A        | 0              | -           | -        | 1   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Ergometer and monitor                                   | 1             | A        | 0              | -           | -        | -   | X | 0 | 0 | - | X    | 0    |       |                       |                |
| Medicine            | Medical Unit      | M-117    | Emergency Cart with resuscitation set                   | 4             | A        | 0              | -           | -        | 2   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Defibrillator   | 1             | A        | 0              | -           | -        | -   | 0 | 0 | 0 | - | X    | 0    |       | Existed in ICU        |                |
| Medicine            | Medical Unit      | M-051    | Syringe pump  | 4             | A        | 3              | 3           | -        | -   | 1 | 0 | 0 | 0 | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      | M-046    | Suction unit  | 8             | A        | 2              | 2           | -        | -   | 0 | 0 | 0 | Δ | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Disposable interscostal tube set                        | 2             | B        | 0              | -           | -        | -   | 0 | 0 | 0 | - | X    | 0    |       | Consumables           |                |
| Medicine            | Medical Unit      | M-104    | Vacuum pump for intercostal tube removal                | 1             | B        | 0              | -           | -        | 1   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |                |
| Medicine            | Medical Unit      | M-109    | Broncho fibroscope with biopsy for adult dia. 5mm, 90cm | 1             | B        | 0              | -           | -        | -   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Seystake tubes  | 4             | B        | 0              | -           | -        | -   | 0 | 0 | 0 | - | X    | 0    |       | Consumables           |                |
| Medicine            | Medical Unit      | M-106    | Laryngoscope set, matchintosh(0-5)                      | 4             | B        | 1              | 1           | 3        | -   | 0 | 0 | 0 | 0 | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      | M-021    | Ophthalmoscope  | 4             | B        | 1              | 1           | 3        | -   | 0 | 0 | 0 | 0 | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      | M-014    | Ambu bag for adult                                      | 4             | B        | 1              | 1           | 3        | -   | 0 | 0 | 0 | 0 | 0    | 4    | 1     |                       |                |
| Medicine            | Medical Unit      | M-105    | Magi forceps  | 4             | B        | 2              | 2           | 2        | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |                |
| Medicine            | Medical Unit      |          | Water mattress  | 4             | C        | 0              | -           | -        | -   | 0 | 0 | X | - | X    | 0    |       |                       |                |
| Medicine            | Medical Unit      |          | Microscope, binocular                                   | 1             | B        | 1              | 1           | -        | -   | X | 0 | 0 | 0 | 0    | 0    | 1     |                       | Consumables    |
| Medicine            | Medical emergency | M-046    | Suction unit  | 1             | A        | 0              | -           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Medicine            | Medical emergency |          | Endo-tracheal tubes set                                 | 1             | A        | 0              | -           | -        | -   | - | 0 | 0 | 0 | 0    | 0    | 1     |                       | Consumables    |
| Medicine            | Medical emergency | M-014    | Ambu bag  | 1             | A        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Medicine            | Medical emergency |          | Oxygen supply   | 1             | C        | 0              | -           | -        | -   | - | 0 | 0 | 0 | 0    | 0    | 1     |                       | Facility       |
| Medicine            | Medical emergency | M-106    | Laryngoscope, matchintosh                               | 1             | A        | 1              | 1           | -        | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |
| Medicine            | Medical emergency |          | ECG monitor with Defibrillator                          | 1             | A        | 0              | -           | -        | -   | - | 0 | 0 | 0 | 0    | 0    | 1     |                       | Existed in ICU |
| Medicine            | Medical emergency | M-047    | Nebuliser   | 1             | B        | 0              | -           | -        | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |                |

Table 2-1 Review Result of the Equipment Requested CSTH

| Related Faculty | Destination       | Item No. | Description                           | Requested Qty | Priority | Existing Equip | Replacement | New | 1 | 2 | 3 | 4 | Over | Qty | Phase | Remarks               |
|-----------------|-------------------|----------|---------------------------------------|---------------|----------|----------------|-------------|-----|---|---|---|---|------|-----|-------|-----------------------|
| Medicine        | Medical emergency | M-107    | Peak flow meter                       | 1             | A        | 1              | 1           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Medicine        | Medical emergency | M-019    | Weighing scale                        | 1             | B        | 1              | 1           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Medicine        | Medical emergency | M-015    | Height scale                          | 1             | B        | 1              | 1           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Medicine        | Medical emergency | M-021    | Ophthalmoscope                        | 1             | A        | 1              | 1           | -   | - | - | - | - | -    | 1   | 1     | Use item in below     |
| Medicine        | Medical emergency | M-118    | Cryosurgery unit                      | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Medicine        | Dermatology       | L-081    | UV hand lamp                          | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 2     |                       |
| Medicine        | Dermatology       | M-119    | Punch biopsy set, metal               | 3             | B        | 0              | -           | -   | - | - | - | - | -    | 3   | 1     |                       |
| Medicine        | Dermatology       |          | Photochemotherapy system              | 1             | C        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Medicine        | Neurology         |          | EMG                                   | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     | Same as M-006         |
| Medicine        | Neurology         |          | EEG                                   | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     | Same as M-007         |
| Medicine        | Neurology         | M-120    | Working frame                         | 4             | C        | 2              | 2           | -   | - | - | - | - | -    | 2   | 1     |                       |
| Medicine        | Neurology         | M-021    | Diagnostic set                        | 5             | B        | 0              | -           | -   | - | - | - | - | -    | 5   | 1     |                       |
| Medicine        | Neurology         |          | ICU bed                               | 2             | C        | 0              | -           | -   | - | - | - | - | -    | 2   | 0     |                       |
| Medicine        | Neurology         |          | Water mattress                        | 2             | C        | 0              | -           | -   | - | - | - | - | -    | 2   | 0     |                       |
| Medicine        | Neurology         |          | Bed side toilet                       | 1             | C        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     |                       |
| Medicine        | Neurology         |          | Glucosemeter                          | 1             | C        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     | Possible in Pathology |
| Medicine        | Neurology         | L-100    | X-ray film viewer                     | 1             | B        | 1              | 1           | -   | - | - | - | - | -    | 1   | 2     |                       |
| Paediatrics     | Paediatrics       | M-015    | Height scale                          | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-019    | Weighing scale for child              | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-020    | Weighing scale for infant             | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-021    | Diagnostic set                        | 1             | C        | 2              | 1           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-047    | Nebuliser                             | 2             | B        | 0              | -           | -   | - | - | - | - | -    | 2   | 1     |                       |
| Paediatrics     | Paediatrics       | M-037    | Infusion pump                         | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       |          | Patient monitor                       | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     | Same as M-038         |
| Paediatrics     | Paediatrics       |          | Pulse oxymeter                        | 1             | C        | 0              | -           | -   | - | - | - | - | -    | 1   | 0     | Same as M-038         |
| Paediatrics     | Paediatrics       | M-059    | Liver biopsy set                      | 1             | C        | 1              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-014    | Resuscitation set for neonatal        | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | L-100    | X-ray film viewer                     | 1             | C        | 1              | -           | -   | - | - | - | - | -    | 1   | 2     |                       |
| Paediatrics     | Paediatrics       | M-117    | Emergency Cart with resuscitation set | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-051    | Syringe pump                          | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | L-141    | Bone marrow biopsy set                | 1             | C        | 0              | -           | -   | - | - | - | - | -    | 1   | 2     |                       |
| Paediatrics     | Paediatrics       | M-035    | Defibrillator for child and infant    | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       |          | Oxygen tent                           | 2             | A        | 0              | -           | -   | - | - | - | - | -    | 2   | 0     | Same as M-054         |
| Paediatrics     | Paediatrics       |          | Ultrasound scanner                    | 2             | A        | 0              | -           | -   | - | - | - | - | -    | 2   | 1     | Same as M-031         |
| Paediatrics     | Paediatrics       | M-112    | Vacuums extractor                     | 2             | A        | 0              | -           | -   | - | - | - | - | -    | 2   | 0     | Same as M-030         |
| Paediatrics     | Paediatrics       |          | Cardiotocography                      | 2             | A        | 1              | -           | -   | - | - | - | - | -    | 2   | 0     |                       |
| Paediatrics     | Paediatrics       | M-035    | Defibrillator                         | 1             | B        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-014    | Resuscitation set for neonatal        | 1             | A        | 0              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-113    | Laparoscope, operative                | 1             | B        | 1              | -           | -   | - | - | - | - | -    | 1   | 1     |                       |
| Paediatrics     | Paediatrics       | M-038    | Patient monitor                       | 3             | A        | 0              | -           | -   | - | - | - | - | -    | 3   | 1     |                       |
| Paediatrics     | Paediatrics       |          | Infusion pump                         | 4             | A        | 0              | -           | -   | - | - | - | - | -    | 4   | 0     | Same as M-037         |
| Paediatrics     | Paediatrics       | M-051    | Syringe pump                          | 4             | A        | 0              | -           | -   | - | - | - | - | -    | 4   | 1     |                       |
| Paediatrics     | Paediatrics       |          | Fetal detector                        | 3             | A        | 0              | -           | -   | - | - | - | - | -    | 3   | 0     | Same as M-029         |
| Paediatrics     | Paediatrics       | M-046    | Suction unit                          | 4             | A        | 2              | 2           | -   | - | - | - | - | -    | 2   | 1     |                       |
| Paediatrics     | Paediatrics       | M-066    | Obste & gyne diagnostic set           | 6             | A        | 0              | -           | -   | - | - | - | - | -    | 6   | 1     |                       |
| Paediatrics     | Paediatrics       | M-043    | Examination lamp                      | 4             | A        | 2              | 2           | -   | - | - | - | - | -    | 2   | 1     |                       |

Table 2-1 Review Result of the Equipment Requested CSTH

| Related Faculty      | Destination        | Item No. | Description                                  | Requested Qty | Prio rity | Existi ng Equip | Repla ce | Addi tion | New | 1 | 2 | 3 | 4 | Over | Q'ty | Phase | Remarks               |
|----------------------|--------------------|----------|--|---------------|-----------|-----------------|----------|-----------|-----|---|---|---|---|------|------|-------|-----------------------|
| Clinical Department  |                    |          |  |               |           |                 |          |           |     |   |   |   |   |      |      |       |                       |
| Obste & Gyne         | Obste & Gyne       | M-002    | ECG  | 2             | B         | 0               | -        | -         | 1   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |
| Obste & Gyne         | Obste & Gyne       | M-020    | Glucocometer                                 | 2             | A         | 0               | -        | -         | -   | 0 | 0 | X | - | X    | 0    | 0     | Planned in Pathology  |
| Obste & Gyne         | Obste & Gyne       | M-021    | Ophthalmoscope                               | 2             | A         | 0               | -        | -         | 2   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |
| Obste & Gyne         | Obste & Gyne       | M-114    | Transport incubator                          | 2             | A         | 0               | -        | -         | -   | - | - | - | - | -    | 0    | 0     | Same as M-053         |
| Obste & Gyne         | Obste & Gyne       | M-115    | Surgical instrument set for vaginal delivery | 2             | A         | 2               | 2        | -         | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |
| Obste & Gyne         | Obste & Gyne       | M-115    | Surgical instrument set for hysterectomy     | 2             | A         | 2               | 2        | -         | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |
| Obste & Gyne         | Obste & Gyne       | M-116    | Surgical instrument set for Cesarean         | 2             | A         | 2               | 2        | -         | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-081    | Ventilator with EndCO2 O2 Analyzer           | 1             | A         | 4               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-057    | Ventilator for pediatrics                    | 1             | A         | 0               | -        | -         | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-082    | Defibrillator                                | 1             | C         | 3               | -        | -         | -   | X | 0 | 0 | 0 | X    | 0    | 0     | Existed               |
| Surg., Med.          | Ob&C ICU           | M-083    | ICU bed for adult                            | 5             | A         | 6               | 5        | -         | -   | 0 | 0 | 0 | 0 | 0    | 5    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-083    | ICU bed for infant                           | 1             | A         | 0               | -        | -         | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-084    | Sphygmomanometer wall type                   | 10            | A         | 6               | 6        | -         | -   | 0 | 0 | 0 | Δ | 0    | 6    | 1     | Possible in Pathology |
| Surg., Med.          | Ob&C ICU           | M-085    | Glucocometer                                 | 1             | B         | 0               | -        | -         | -   | 0 | 0 | X | - | X    | 0    | 0     | Possible in Pathology |
| Surg., Med.          | Ob&C ICU           | M-085    | Respirometer                                 | 1             | A         | 2               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     | Added into Ventilator |
| Surg., Med.          | Ob&C ICU           | M-051    | Humidifier                                   | 6             | A         | 3               | -        | -         | -   | - | - | - | - | -    | 0    | 0     |                       |
| Surg., Med.          | Ob&C ICU           | M-051    | Syringe pump                                 | 4             | A         | 0               | -        | -         | 4   | 0 | 0 | 0 | 0 | 0    | 4    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-037    | Infusion pump                                | 3             | B         | 1               | -        | -         | 3   | 0 | 0 | 0 | 0 | 0    | 3    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-086    | Central monitor                              | 1             | A         | 0               | -        | -         | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-087    | Patient monitor                              | 6             | A         | 3               | 3        | -         | -   | 0 | 0 | 0 | 0 | 0    | 6    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-046    | Suction unit                                 | 2             | C         | 4               | 2        | -         | -   | 0 | 0 | 0 | 0 | 0    | 2    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-088    | Instrument cabinet                           | 1             | C         | 0               | -        | -         | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| Surg., Med.          | Ob&C ICU           | M-088    | TV set                                       | 1             | C         | 0               | -        | -         | -   | X | 0 | 0 | 0 | X    | 0    | 0     |                       |
| Surg., Med.          | Ob&C ICU           | M-089    | Patient monitor                              | 1             | A         | 0               | -        | -         | -   | - | - | - | - | -    | 0    | 0     |                       |
| Surg., Med.          | Ob&C ICU           | M-089    | Stretcher with IV Oxygen                     | 1             | A         | 2               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-015    | Spectrophotometer                            | 5             | A         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-006    | Microscope, binocular                        | 10            | A         | 2               | 2        | -         | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-016    | Flamephotometer                              | 3             | A         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 2     |                       |
| All Clinical depart. | Clinical Pathology | L-019    | Balance, electric                            | 2             | B         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-060    | Electric counter                             | 4             | B         | 0               | -        | -         | -   | X | 0 | 0 | 0 | X    | 0    | 0     |                       |
| All Clinical depart. | Clinical Pathology | L-072    | Water bath                                   | 5             | A         | 2               | 2        | -         | -   | 0 | 0 | 0 | Δ | 0    | 2    | 2     |                       |
| All Clinical depart. | Clinical Pathology | L-048    | Hot air sterilizer                           | 5             | B         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 2     |                       |
| All Clinical depart. | Clinical Pathology | L-048    | Centrifuge                                   | 5             | C         | 2               | 2        | -         | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-085    | Stabilizer                                   | 5             | C         | 0               | -        | -         | 5   | 0 | 0 | 0 | 0 | 0    | 5    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-113    | Microtome                                    | 1             | A         | 2               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-114    | Microtome knife sharpener                    | 1             | A         | 1               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-108    | Tissue processor                             | 1             | A         | 1               | 1        | -         | -   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-118    | Centrifuge hematcrit                         | 1             | C         | 0               | -        | -         | -   | X | 0 | 0 | 0 | X    | 0    | 0     |                       |
| All Clinical depart. | Clinical Pathology | L-024    | Refrigerator                                 | 5             | B         | 2               | 2        | -         | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-021    | Deep freezer                                 | 2             | B         | 0               | -        | -         | 1   | 0 | 0 | 0 | Δ | 0    | 1    | 2     |                       |
| All Clinical depart. | Clinical Pathology | L-086    | Deionizer                                    | 2             | B         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 2     |                       |
| All Clinical depart. | Clinical Pathology | L-067    | Electrophoresis apparatus                    | 3             | B         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-079    | Teaching microscope                          | 1             | A         | 0               | -        | -         | -   | - | - | - | - | -    | 0    | 0     | Possible in Faculty   |
| All Clinical depart. | Clinical Pathology | L-053    | Autoclave vertical                           | 4             | C         | 1               | 1        | -         | -   | 0 | 0 | 0 | Δ | 0    | 1    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-150    | Micropipette set                             | 10            | B         | 2               | 2        | -         | -   | 0 | 0 | 0 | Δ | 0    | 2    | 1     |                       |
| All Clinical depart. | Clinical Pathology | L-150    | Densitometer                                 | 1             | B         | 0               | -        | -         | 1   | 0 | 0 | 0 | 0 | 0    | 1    | 1     |                       |

Table 2-1 Review Result of the Equipment Requested CSTH

| Related Faculty, Department | Destination        | Item No. | Description                         | Requested Qty | Priority | Existing Equip | Replac. Addition | New | 1 | 2 | 3 | 4 | Over | Qty | Phase | Remarks               |
|-----------------------------|--------------------|----------|-------------------------------------|---------------|----------|----------------|------------------|-----|---|---|---|---|------|-----|-------|-----------------------|
| All Clinical depart.        | Clinical Pathology | L-149    | Biochemical analyzer                | 1             | A        | 0              | -                | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Clinical Pathology | L-148    | Hematological analyzer              | 1             | A        | 0              | -                | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Clinical Pathology | L-058    | pH meter                            | 3             | C        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |
| All Clinical depart.        | Clinical Pathology | L-056    | Dispenser                           | 10            | C        | 2              | 2                | -   | 0 | 0 | 0 | 0 | 0    | 2   | 2     |                       |
| All Clinical depart.        | Clinical Pathology |          | Automatic pipette                   | 10            | C        | 2              | 2                | -   | x | 0 | 0 | 0 | 0    | 0   | 0     | Possible in Faculty   |
| All Clinical depart.        | Clinical Pathology |          | Biohazard cabinet                   | 1             | B        | 0              | -                | -   | x | 0 | 0 | 0 | x    | 0   | 0     |                       |
| All Clinical depart.        | Clinical Pathology | L-036    | Incubator                           | 1             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |
| All Clinical depart.        | Clinical Pathology |          | Blood gas analyzer                  | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Same as M-013         |
| All Clinical depart.        | Clinical Pathology | L-106    | Tissue embedding machine            | 1             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Clinical Pathology |          | Cryostat                            | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Same as L-020         |
| All Clinical depart.        | Clinical Pathology |          | Automatic staining machine          | 1             | C        | 0              | -                | -   | x | 0 | 0 | 0 | 0    | 0   | 0     |                       |
| All Clinical depart.        | Radiology          |          | Ultrasound scanner, color doper     | 1             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Same as M-001         |
| All Clinical depart.        | Radiology          | M-090    | X-ray fluoroscopic with bucky stand | 1             | A        | 2              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Radiology          | M-091    | Film processor                      | 1             | A        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Radiology          | M-092    | X-ray unit for simple tomography    | 1             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Radiology          | M-093    | X-ray unit for mammography          | 1             | B        | 0              | -                | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Radiology          | M-094    | X-ray film viewer, 12 film          | 1             | A        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Radiology          | L-104    | X-ray protective apron              | 4             | A        | 3              | 3                | 1   | 0 | 0 | 0 | 0 | 0    | 4   | 2     |                       |
| All Clinical depart.        | Radiology          | M-095    | X-ray protector for Thyroide        | 3             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |                       |
| All Clinical depart.        | Radiology          | M-096    | X-ray protective glove              | 3             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |                       |
| All Clinical depart.        | Radiology          | M-097    | X-ray protective glass              | 2             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 2   | 1     |                       |
| All Clinical depart.        | Radiology          | M-098    | X-ray protective curtain, 50m2      | 3             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 3   | 1     |                       |
| All Clinical depart.        | Physiotherapy      |          | Short-wave machine                  | 2             | C        | 4              | -                | -   | x | 0 | 0 | 0 | 0    | 0   | 0     |                       |
| All Clinical depart.        | Physiotherapy      | M-099    | Electrical stimulator               | 1             | A        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Physiotherapy      | M-100    | Traction bed                        | 1             | A        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Physiotherapy      | M-101    | Muscle stimulator                   | 1             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Physiotherapy      |          | Bench                               | 3             | C        | 0              | -                | -   | x | 0 | 0 | 0 | 0    | 0   | 0     |                       |
| All Clinical depart.        | Physiotherapy      | M-102    | Treatment bed                       | 2             | B        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| All Clinical depart.        | Physiotherapy      | M-005    | Exercise table                      | 1             | A        | 0              | -                | 1   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| Forensic Medicine           | Forensic Medicine  | L-101    | Portable X-ray unit                 | 1             | A        | 0              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     | Possible in Pathology |
| Forensic Medicine           | Forensic Medicine  |          | Tissue processor                    | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Possible in Pathology |
| Forensic Medicine           | Forensic Medicine  |          | Tissue embedding machine            | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Possible in Pathology |
| Forensic Medicine           | Forensic Medicine  |          | Microtome                           | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     | Possible in Pathology |
| Forensic Medicine           | Forensic Medicine  |          | Microtome knife sharpener           | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 0   | 0     |                       |
| Forensic Medicine           | Forensic Medicine  | L-060    | Water bath                          | 1             | A        | 0              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |
| Forensic Medicine           | Forensic Medicine  | L-072    | Hot air sterilizer                  | 1             | A        | 0              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |
| Forensic Medicine           | Forensic Medicine  | O-001    | Medical camera set                  | 1             | A        | 0              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 1     |                       |
| Forensic Medicine           | Forensic Medicine  | L-100    | X-ray film viewer                   | 1             | A        | 1              | 1                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |
| Forensic Medicine           | Forensic Medicine  | L-081    | UV hand lamp                        | 1             | A        | 0              | -                | -   | 0 | 0 | 0 | 0 | 0    | 1   | 2     |                       |



## **Chapter 3 Implementation Plan**

1. Welche Möglichkeiten gibt es, um die



## **Chapter 3 Implementation Plan**

### **3-1 Implementation Plan**

#### **3-1-1 Implementation Concept**

This project is to be implemented in conformance to the framework of the Grant Aid that is extended by the Government of Japan. The project is to be officially implemented after it is approved by the Government of Japan and Government of Sri Lanka and the Exchange of Notes (E/N) is concluded. Subsequently, the Government of Sri Lanka will select a Japanese consultant and detail design work for implementation of the project will commence. When the detail design documents are completed, equipment supplier who is incorporated in Japan and has been selected through tender will supply the equipment and install them.

It is to be noted that the basic points and matters that should be noted in regard to the implementation plan are as follows.

#### **(1) Implementation organization**

In implementing this project, the Ministry of Education and Higher Education in Sri Lanka will have the ultimate responsibility to perform overall management of the project and under its supervision, the Faculty of Medical Sciences, University of Sri Jayewardenepura will carry out the project.

#### **(2) Consultant**

After the Exchange of Notes (E/N) is concluded by the two governments, the Japanese consultant will immediately conclude a consultant agreement with the Ministry of Education and Higher Education in conformance to the procedural protocol imposed upon the Japanese Grant Aid system. This agreement will become valid after verification by the Government of Japan and, based upon the agreement, the consultant will carry out the following services.

##### **1) Detail design stage:**

Preparation of Tender document and specifications and other technical document

##### **2) Tendering stage:**

Assist in selecting equipment supplier and in preparing a supply contract

##### **3) Procurement stage:**

Supervision of equipment supplying work, installation and training in operation and maintenance

#### **(3) Equipment Supplier**

The equipment supplier will be selected through tendering and will sign a contract with the government of Sri Lanka. This contract, too, will become valid after verification by the Government of Japan and the Supplier will procure and deliver the required equipment based upon the contract. In addition, the Supplier will provide the recipient institution in Sri Lanka with technical training in regard to installation, operation and the maintenance of the equipment. Furthermore,

the Supplier will create a system that will ensure that spare parts, consumable and technical advice can be provided at a cost even after the equipment are delivered to the Site.

**(4) JICA (Japan International Cooperation Agency)**

The Grant Aid Project Management Department of JICA will extend guidance to the Consultant and the Supplier to ensure that this project is implemented correctly in conformance to the system of the Grant Aid. In addition, whenever necessity arises, it will hold talks with its main counterpart in the undertaking in Sri Lanka to promote the implementation of the project.

**(5) Implementation Plan**

During the terms of the implementation plan, the Consultant and those involved in the project in Sri Lanka will hold discussions based upon the implementation schedule given in this report to verify the specific time frames for starting various phases of work and the methods of specific items of work to be carried out under the responsibility of the Japanese side and under the responsibility of Sri Lanka side so that the individual work items to be carried out under the responsibilities of the two sides can be carried out smoothly. Especially for this project, the scope of work to be carried out by Sri Lanka side is important and must be completed preceding the start of installation of the equipment as per the schedule described in the "Minutes of Discussions of Basic Design Study" (Refer to page A- in Appendices) under the responsibility of Sri Lanka side.

**(6) Necessity for dispatching technical personnel**

It is of great importance that the university personnel learn and master the correct operating methods for the delivered equipment and the correct method for maintaining and managing them so that the procured the equipment operate correctly at all times after installation and will be used for training activities which are both appropriate and effective.

While the equipment that are planned to be procured through this project are those that can be operated well enough with the technical level of the users, they are still the products made to the latest specifications. In addition, since it is extremely important that the users perform daily maintenance and inspections to ensure normal operation of the equipment and also for the purpose of instructions of maintenance methods of the equipment among the technical personnel in the Maintenance Unit which is to be established by the Faculty, it will become necessary to dispatch technical personnel from the manufacturers or from the local dealerships.

**(7) Implementation plan and supervision**

The Consultant will carry out the detail design and supervision in this project in conformance to the agreement that will conclude with the Government of Sri Lanka. The detail design refers to the processes of determining the details of specifications of equipment based upon the basic design report and preparing tender documents consisting of tender instructions, a proposal for the equipment

supply contract and the equipment specifications. It also includes the calculation of the expenses of procurement of the equipment. The supervision in this context refers to the works of verifying that the responsibilities of the Supplier are carried out as per the contract and verifying that the contents of the contract are justly honored. In addition, in order to ensure sound implementation of the undertaking, the Consultant will extend guidance and advice and perform adjustment while maintaining a neutral and fair stance. The details of the obligation of the Consultant are constituted of the following:

- 1) Carrying out necessary clerical procedure required for the selection of the Supplier, implementing the tender and witnessing the Suppliers contract.
- 2) Inspecting and approving the working drawings, the equipment specifications and other documents submitted by the Supplier.
- 3) Inspecting and approving the quality and performance of the equipment to be delivered.
- 4) Supervising the supply of the equipment, the installation work and checking the installed equipment for proper installation and operation.
- 5) Reporting on the progress status of the work.
- 6) Being present when the project-related equipment are turned over to the recipient.

Apart from carrying out the responsibilities stated above, the consultant will report on the progress status of the project and the procedure to be taken in regard to payment and turning over of the whole project upon completion, to the relevant personnel in the Government of Japan.

### **3-1-2 Scope of Work**

#### **(1) Scope of work of Japanese side**

The Japanese side will be responsible for carrying out the following tasks in regard to the consulting and equipment procurement in this project.

##### **1) Consultant services**

- Preparation of Tender documents and tendering instructions with respect to the equipment within the scope of this project
- Selection of the equipment supplier and extending cooperation to ensure the smooth conclusion of the contract
- Supervision of work related to the procurement of the equipment

##### **2) Equipment procurement and installation**

- Procurement of the equipment within the scope of this project and transportation and delivery thereof to the Site
- Installation of, and guidance on the equipment within the scope of this project and adjustment thereof during test operations
- Providing instructions and guidance with respect to the operating methods and maintenance methods for the equipment within the scope of this project

#### **(2) Scope of work of Sri Lanka side**

The Sri Lanka side will carry out the works related to construction and renovation of facilities and installation of equipment that are not included within the Japanese Grant Aid. The details of the works to be assumed by the Sri Lanka side are as follows.

##### **1) Construction of facilities**

- Family Practice Center
- Animal house
- Colombo South Teaching Hospital, University Professorial Unit
- New medical faculty buildings (stage 2)
- Relocation from the Central Library and Renovation the Central Library

##### **2) Work related to installation of equipment**

- Relocation or removal of existing equipment
- Provision of temporary storage space for equipment within the site
- Securing equipment delivery path
- Preparing the installation locations
- Facility preparation work required for the installation of equipment (electrical wiring to the installation locations, water supply and waste water piping, outlets and exhaust vents)

### **3-1-3 Consultant Supervision**

Based upon the policy of the Japanese Grant Aid, the Consultant organizes a project team to ensure that the project is carried out in a smooth manner while being fully cognizant of the objectives of the basic design.

#### **[Consultant Supervision Guidelines]**

- (1) By establishing close communication with the relevant personnel involved in the project in the related agencies of both countries, the consultant will make the utmost effort to ensure prompt completion of equipment Supply.
- (2) The Consultant will extend prompt and appropriate guidance and advice to those who are involved in the actual installation work while maintaining a neutral and fair stance.
- (3) The Consultant will extend appropriate guidance and advice in regard to the maintenance of the equipment after installation and hand over.
- (4) The Consultant will verify that the equipment are installed properly and that all the requirements of the contract have been met and then the Consultant will witness the hand over of the equipment before completing his works by obtaining approval of receiving of the equipment from the Sri Lanka side.

### **3-1-4 Procurement Plan**

#### **(1) Methods for the selection of supplier and type of contract**

In order to select supplier who is to be responsible for the supply of the equipment, a public tender solicitation will be made for the participation of Japanese physical person(s) or juridical person(s) and the final selection will be made based on the evaluations of individual tender offers.

The contract will be one lot contract with the types of equipment specified in the contract. The responsibilities of the Supplier will encompass the entire range of work from supply, manufacture and delivery of the equipment in the contract, guidance in regard to installation, adjustment and test operation and technical guidance in regard to operation and maintenance.

#### **(2) Procurement of equipment**

In principle, the equipment that are to be acquired to execute this project will be procured in Japan. However, the requirements listed below will be fully deliberated in order to select equipment that are deemed better acquired locally or procured from third countries due to such factors as price, performance, ease of maintenance (locally available after-sales service, etc.) and familiarity of the users in Sri Lanka with respect to the operation thereof.

- 1) There are manufacturer dealerships or branches in Sri Lanka, India or Singapore

- 2) Maintenance and inspection can be performed as easy as in the case of Japanese products because after sales system is well established.
- 3) Procurement and delivery can be implemented within the term of E /N.

The equipment that are expected to be procured locally and from third countries in this project are listed in Table 3-1.

**Table 3-1 Equipment to be procured locally and from third countries**

| Item No. | Description                                  | Quantity |
|----------|--|----------|
| L-016    | Digital Flame Photometer                     | 2        |
| L-144    | Fully Automatic, Computer Blood Culture      | 1        |
| L-149    | Biochemistry analyzer                        | 1        |
| M-013    | Blood Gas analyzer                           | 1        |
| O-009    | Slide Projector                              | 5        |
| O-010    | Over Head Projector                          | 5        |
| O-012    | Laptop Computer                              | 7        |
| O-013    | Color Video Projector                        | 1        |
| O-014    | Laser Pointer                                | 7        |
| O-015    | Desk top Computer                            | 2 8      |
| O-016    | Laser Printer                                | 1 8      |
| O-017    | Bubble Jet Color Printer                     | 2        |
| O-018    | Dot Matrix Printer 24 Pin                    | 2        |
| O-019    | Photocopying Machine                         | 7        |
| O-020    | Photocopying Machine with sorting unit       | 1        |
| O-021    | Electric Duplicating Machine                 | 5        |
| O-022    | Electronic Type writer with Memory (English) | 1 5      |
| O-023    | Slide Viewer                                 | 6        |
| O-024    | Binding Machine (ring biding)                | 1        |
| O-025    | Laminating Machine                           | 1        |
| O-026    | Paper Guillotine                             | 6        |
| O-027    | Epidiascope                                  | 5        |
| O-028    | Dictaphone and Recorder                      | 6        |
| O-029    | Magi board                                   | 2 8      |
| O-030    | Fax Machine                                  | 1        |

### (3) Method of transportation

- 1) The equipment procured in Japan will be transported to Colombo in Sri Lanka by sea. They will be transported by vehicle from Colombo to the project site.
- 2) The equipment to be procured locally and/or procured from third countries will be transported directly to the project site.

### 3-1-5 Implementation schedule

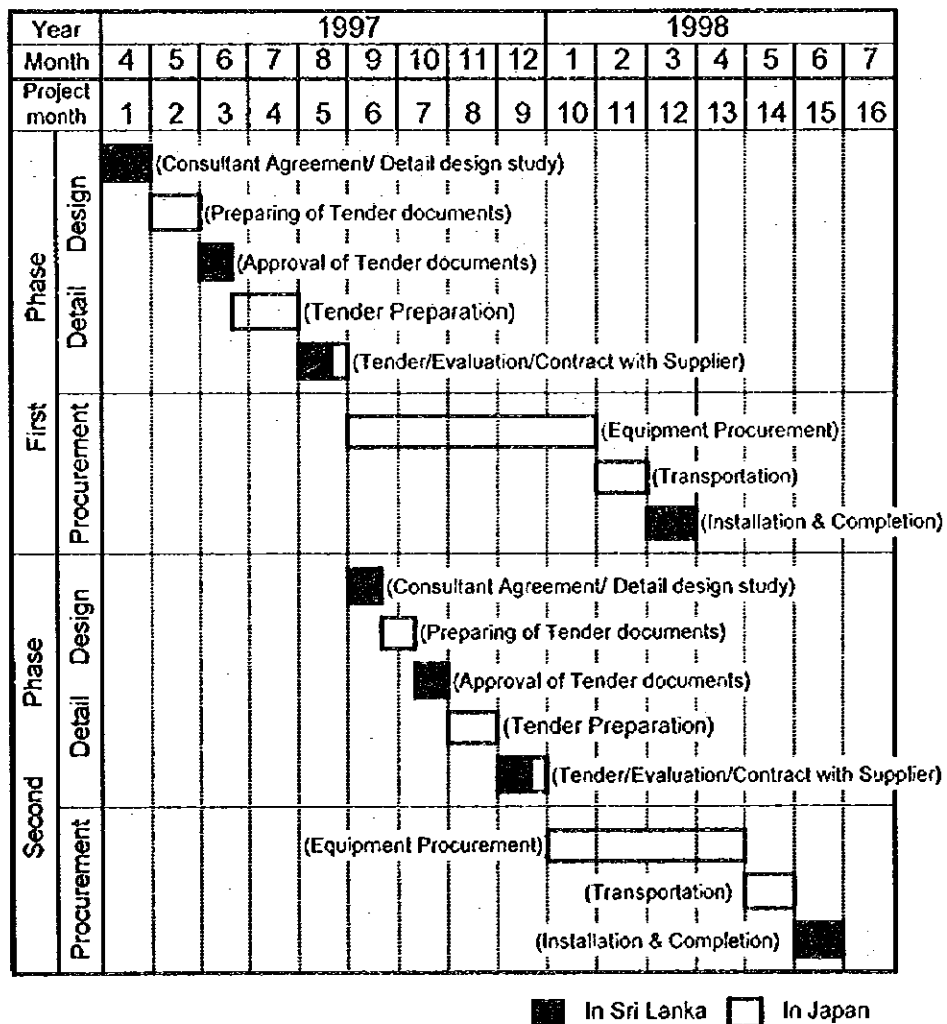
#### (1) Implementation schedule

This project will be executed over two phases to accommodate the facility construction plan that is to be carried out by the Sri Lanka side and the implementation periods for respective tasks after the Exchange of Notes (E/N) is concluded, are as follows.

|   | <u>First Phase</u> | <u>Second Phase</u> |
|---|--------------------|---------------------|
| 1) Detail design<br>(period after the conclusion of the Exchange of Notes until the tender) | <u>5 months</u>    | <u>4 months</u>     |
| 2) Procurement period<br>(from equipment procurement to installation, hand over)            | <u>7 months</u>    | <u>6 months</u>     |
| <b>Total</b>  | <b>12 months</b>   | <b>10 months</b>    |

#### (2) Implementation time table

**Table 3-3 Implementation Time table**



### **3-1-6 Obligation of Recipient Country**

- (1) To provide necessary reference material and information required for the execution of the project
- (2) To arrange the "Banking arrangement (B/A)" with an authorized foreign exchange bank in Japan and to pay commission related to the "Authorization to Pay (A/P)" .
- (3) To ensure prompt customs clearance and internal transportation in Sri Lanka of the equipment procured under the Grant .
- (4) To exempt Japanese nationals and third countries staffs customs duties, internal taxes and other fiscal levies which may be imposed in Sri Lanka with respect to the supply of the equipment and services under the verified contracts.
- (5) To accord Japanese nationals and third countries staffs whose services may be required in connection with the supply of the equipment and services under the verified contracts such facilities as may be necessary for their entry into Sri Lanka and stay therein for the performance of their work.
- (6) To issue all the required permits and licenses necessary for implementation of this project in conformance to the law of Sri Lanka.
- (7) To allocate the appropriate budgets and provide appropriate man power to ensure the current and effective use of the equipment procured to carry out this project and to ensure that they are well maintained.
- (8) To ensure that the equipment procured under the Grant be maintained and used properly and effectively for the execution of the Project.
- (9) To bear all the expenses, other than those covered by the Grant, necessary for the execution of the Project.



### 3-2 Project Cost for Sri Lanka side

| Description                           | Amount                  |
|---------------------------------------|-------------------------|
| (1) Construction of facilities        | Sub total Rp 46,000,000 |
| • Family Practice Centre              | Rp 3,000,000            |
| • Animal house                        | Rp 2,000,000            |
| • New faculty building (Stage 2)      | Rp 40,000,000           |
| • Relocation                          | Rp 1,000,000            |
| (2) Securing equipment carry-in route | Rp 60,000               |
| <b>Total</b>                          | <b>Rp 46,060,000</b>    |

Equivalent Japanese Yen = 92,120,000.-

#### Conditions of Estimation

- 1) Time of Estimation                      January 1997
- 2) Exchange Rate                            US \$ 1.- = ¥110
- 3) Implementation Schedule              This project will be implemented over 2 phases and time required for each phase is shown in Implementation Time Table (Table 3-3)
- 4) Others                                      This project is to be implemented in conformance to the frame work of the Grant Aid of the Government of Japan.

### **3-3 Operation and Maintenance Plan**

#### **(1) Operation and maintenance plan**

##### **1) Operation and maintenance system**

At present, University of Sri Jayewardenepura has a repair department to perform repairs on behalf of all the faculties. This repair department is responsible for repairing facilities but is not capable of repairing medical equipment. Consequently, maintenance and management of the equipment following the completion of the implementation of this project will be performed by a Maintenance Unit which will be newly founded within the Faculty of Medical Sciences. To staff this Maintenance Unit, 2 - 3 technicians will be employed in addition to one engineer who is a graduate of engineering and whose employment has already been determined. Furthermore, the Faculty of Medical Sciences is considering to obtain the full cooperation of the Faculty of Engineering of University of Moratuwa in Colombo for repair of equipment when necessary.

As for the Colombo South Teaching Hospital, which is under the administration of the Ministry of Health, maintenance of their equipment is currently performed by the Bio-Medical Engineering Service Department (BES) of the Ministry of Health. For the University Professorial Unit, which is currently under construction at Colombo South Teaching Hospital, this BES will perform maintenance. In addition, it will be necessary to request the assistance of agents of manufacturers for maintenance of some of the equipment.

Since there are two different administration categories of the facilities one of which is under the administration of Ministry of Education and Higher Education and the other is under the Ministry of Health, it was confirmed by joint meeting among the Ministry of Education and Higher Education, the Ministry of Health, BES, the Faculty of Medical Sciences of University of Sri Jayewardenepura and Basic Design Study Team of JICA that the maintenance of the equipment should be carried out as follows.

#### **① Equipment to be installed at the Faculty of the University of Sri Jayewardenepura**

Maintenance : In charge of the Maintenance Unit  
Operation Cost : To be borne by the Faculty of the University  
(Ministry of Education and Higher Education)

#### **② Equipment to be installed at Colombo South Teaching Hospital**

##### **The University Professorial Unit**

Maintenance : in charge of BES  
Operation Cost : To be borne by the Faculty of the University  
(Ministry of Education and Higher Education)

##### **The Central Services**

Maintenance : In charge of BES  
Operation Cost : To be borne by Ministry of Health

③ Assistance of BES given to the Maintenance Unit of the Faculty of Medical Sciences

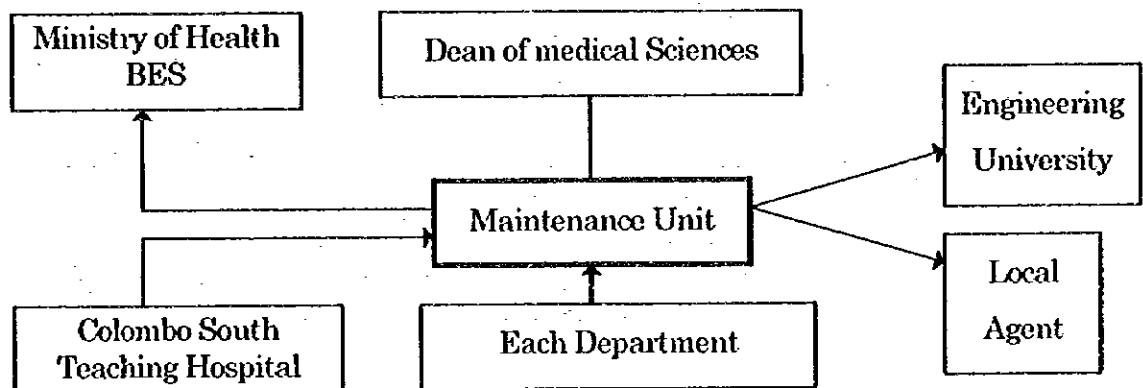
Ministry of Health agreed that BES will undertake the training of the personnel of the Maintenance Unit of the Faculty of Medical Sciences and advise for the structure of the Unit by such a way of having joint work shop.

Some sophisticated equipment, however, which can not be maintained by BES may be contracted to the local agents of the manufacturers.

Several different methods for maintenance of the equipment to be installed in this project are planned, as explained above.

However, since it is expected that there will be problems arising in management of the equipment maintenance if these various methods of maintenance are applied individually, it will be essential to establish a system of overall management of the equipment maintenance.

It will be desirable that the Maintenance Unit, which is to be newly established, will function as the center of this overall management of equipment maintenance as illustrated in the diagram below.



2) Functions of the Maintenance Unit

The Maintenance Unit, which is to be newly established, should fulfill the following functions:

1. Preparation and management of the equipment ledger
2. Preparation of spare parts ledger and management of parts based upon the ledger entries
3. Management of manuals and distribution thereof to users
4. Guidance extended to users for daily inspections
5. Preparation and management of equipment maintenance record ledger
6. Preventive periodic inspections
7. Issuing request for repair to BES, Ministry of Health (Colombo South Teaching Hospital)
8. Repair of equipment at the Faculty of Medical Sciences
9. Issuing a request for repair and inspection to manufacturer's agents
10. Issuing a request for repair to the University of Engineering

Thus, an important goal that the Maintenance Unit is expected to fulfill is the overall management of equipment. This includes maintaining a clear understanding of the statuses of the equipment, management of parts and manuals, issuing requests for repair to other organizations and extending guidance for the inspection of the equipment to the users as well as being responsible for repairing the equipment. This aspect of the role of the Maintenance Unit must be clearly understood by those who are engaged in medical education at the university, Because of this, the Maintenance Unit should rank as an organization that reports directly to the Dean of the Faculty of Medical Sciences.

### 3) Technical expertise in the Maintenance Unit

Considering the present situation in Sri Lanka, it may be difficult to employ engineers and technicians who are fully experienced as the staffs of the Maintenance Unit to be established. Accordingly, it will be desirable to plan a training course to be held at BES of the Ministry of Health with their full cooperation in order to achieve an improvement in technical expertise of the technical personnel to be employed at the Unit and also for them to learn the management techniques required for managing those equipment. Since BES has various types of ledgers in good order and since they have good management skills, their cooperation will ensure the training given at BES for the equipment to be procured by this project will be more than sufficient.

## (2) Operation and Maintenance Cost of the Faculty of Medical Sciences of the University of Sri Jayewardenepura

Since the facilities are not completed at the University of Sri Jayewardenepura, assumption of various expenses that will occur when the project is implemented is made as follows based upon the planned budget for 1996.

### 1) Wages:

Currently 101 teaching staffs are employed and since there will be 165 teaching staffs working at the Faculty after implementation of the project, the cost of wages is estimated to increase by a factor of 1.63.

### 2) Administration costs (clerical work, furniture and the like):

1.2 times the current figure

### 3) Utility costs:

Twice the current figure due to an increase in the scale of the facilities

### 4) Facilities operation and maintenance costs:

Twice the current figure due to an increase in the scale of the facilities

### 5) Expenses for reagents and consumable (for the current equipment):

Same as present

6) Operation and Maintenance costs for the equipment procured through this project : To be added

**Table 3-4 Estimated Operation and Maintenance costs**

Unit : Rp.

| Item                                | 1996              | After the Project |
|-------------------------------------|-------------------|-------------------|
| Wages                               | 13,503,000        | 22,010,000        |
| Administration costs                | 4,845,000         | 5,814,000         |
| Utility costs(Water, gas, etc.)     | 4,800,000         | 9,600,000         |
| Facility maintenance costs          | 4,064,000         | 8,128,000         |
| Reagents & consumable               | 2,775,000         | 2,775,000         |
| Increase in Operation & Maintenance |                   | 6,640,000         |
| <b>Total</b>                        | <b>29,987,000</b> | <b>54,967,000</b> |

As indicated above, an operation and maintenance cost of approximately 50 million rupees (about 100,000,000 yen per annum) will be required after the implementation of the project. This figure is approximately equal to the annual operation and maintenance cost allotted to the Faculty of Medicine, Colombo University and the Faculty of Medicine, Peradenia University. Thus, it can be assumed that, considering the scale of the Faculty of Medical Sciences, University of Sri Jayewardenepura, it will require approximately the same budget as these said universities.

The operation and maintenance costs of this university will be entirely provided by the Ministry of Education and Higher Education. Therefore the Ministry has confirmed to allot approximately the same budget to this Faculty as those for the faculties of medical faculty of other universities after the implementation of this project. It is to be noted that the details of the increase in the operation and maintenance costs which is to be provided for the equipment to be procured by this project are attached in the Appendix-7.

The operation and maintenance cost of Colombo South Teaching Hospital will be increased by Rp. 3.8 million per annum as a result of the installation of equipment necessary for education at Central Services.

This increase of Rp. 3.8 million is approximately 3% of total operation cost of the said hospital in 1995.

Therefore, the hospital is confident of bearing such increase. Furthermore it has confirmed that Ministry of Health would also allocate such necessary additional budget for this hospital.

