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MHD 14/T-5, 6	18-01-2012

TECHNICAL COMMITTEE: Hospital Planning Sectional Committee MHD 14

ADDRESSED TO:

1. All Members of Hospital Planning Sectional Committee MHD 14
2. All Members of Medical Equipment and Hospital Planning Division Council (MHDC)
3. All others interested

Dear Madam(s)/Sir(s),

Please find enclosed the following documents :

1) DOC: MHD 14 (0191)

TITLE Draft Indian Standard –**Basic Requirements for Hospital Planning Part 1 Upto 30 bedded Hospital (first Revision of IS 12433(Part 1):1988)**

2) DOC: MHD 14 (0192)

TITLE Draft Indian Standard - **Basic Requirements for Hospital Planning Part 2Upto 100 bedded Hospital (first Revision of IS 12433(Part 1):2001)**

Kindly examine the draft Indian Standard and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standards .

Last date for comments: 15 - 04 - 2012

Comments if any may please be made in the format enclosed and mailed to the undersigned at the above address. In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case of comments of technical in nature are received then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional committee for further necessary action if so desired by the Chairman, Sectional Committee. This document is available on BIS web site www.bis.org.in.

Thanking you,

Yours faithfully,

(Rakesh Kumar)
Scientist'F' & Head(MHD)
email – hmhd@bis.org.in

Encl: As Above

BUREAU OF INDIAN STANDARDS

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Draft Indian Standard

**Basic Requirements for Hospital Planning
Part 2 Upto 100 bedded Hospital
(first revision)**

Last date of receipt of comments is

Hospital Planning Sectional Committee, MHD 14

NATIONAL FOREWORD

(Formal clause of adoption will be added later)

This draft Indian Standard IS 12433(Part 2) (first revision) was adopted by the Bureau of Indian Standards after the draft finalized by Hospital Planning Sectional Committee.

This draft Indian Standard was first published in 2001. This revision is being undertaken to modify certain requirements based on experience gained over the period of time.

This draft Indian Standard is published in 2 parts. The other part of this standard is:
Part 1: Upto 30 bedded Hospital

This standard comprises of the following sections describing seven fundamental aspects of hospital planning, namely:

Section1	Medical programme
Section2	Functional programme
Section3	Area requirements
Section4	Work flow
Section5	Manpower requirements
Section 6	Instruments, Equipments and Furniture requirements
Section 7	Building Requirements

There is no ISO/IEC standard on the subject. This standard has been prepared based on practices prevalent in the field in India.

Indian standard

BASIC REQUIREMENTS FOR HOSPITAL PLANNING

PART 2 UP TO 100 BEDDED HOSPITALS

1 SCOPE

- 1.1 This standard (Part 2) covers basic requirements for planning 100 bedded general hospitals in respects of medical programme, functional programme, area requirements, manpower requirements, instruments, equipment and furniture requirements and work flow. Certain essential requirements for building. Services and environment have also been covered.
- 1.2 It is envisaged that no single standard can meet the requirements of different regions in our country representing plains, islands and hilly terrains with diverse geo-climatic variations. However, attempt has been made in this standard to cover basic needs of 100 bedded hospitals which could be suitably adjusted to meet specific needs and priorities of a particular region or a community. Suitable reduction and increase needs to be carried out for hospital with varied bed complements than 100 beds.

2 REFERENCES

- 2.1 The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standard are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS NO.</i>	<i>Title</i>
SP 30: 2011	National electrical code
732: 1989	Code of practice for electrical wiring installation <i>(third revision)</i>
1474: 1959	Commercial refrigerators
1475: 2005	Self-contained drinking water coolers <i>(second revision)</i>
1742: 1983	Code of practice for building drainage <i>(second revision)</i>
2064: 1993	Selection, installation and maintenance of sanitary appliances- Code of practice <i>(second revision)</i>
2065: 1983	Code of practice for water supply in buildings <i>(second revision)</i>
2189: 2008	Code of practice for selection, installation and maintenance of automatic fire detection and alarm system <i>(second revision)</i>
2190: 2010	Selection installation and maintenance of first-aid fire extinguishers-code of practice <i>(second revision)</i>

2268:1994	Electric call bells and buzzers for indoor use (<i>second revision</i>)
2309: 1989	Protection of buildings and allied structures against lightning –Code of practice (<i>second revision</i>)
2440: 1975	Code of practice for day lighting of buildings (<i>second revision</i>)
3362: 1977	Code of practice for natural ventilation residential buildings (<i>first revision</i>)
4347: 1967	Code of practice for hospital lighting
5329: 1983	Code of practice for sanitary pipe work above ground for buildings (<i>first revision</i>)
7662(Part 1) : 1974	Recommendations for orientation of buildings: Part 1 Non-industrial buildings
8030: 1976	Luminaries for hospitals
10905(Part 1): 1984	Recommendations for basic requirements of general hospital building: Part 1 Administrative and hospital services department buildings

SECTION 1 MEDICAL PROGRAMME

3 MEDICAL PROGRAMME

3.1 Hospital should have the following facilities grouped as under:

Group 1: Medical and Allied Disciplines

Code	Nomenclature	Including
1.01.1	Anaesthesiology	
1.08	Blood Storage facility	
1.14	Critical Care Medicine	
1.14.1	Emergency Medicine	
1.15	Dentistry	
1.16	Dermatology and Venereology (optional)	Skin and VD
1.29	General Medicine	Internal Medicine
1.30	General Surgery	
1.37	Hospital Administration	Health Administration
1.55	Neonatology (optional)	
1.64	Obstetrics and Gynaecology	
1.67	Ophthalmology	
1.68	Orthopaedics	
1.69	Oto-Rhino-Laryngology	ENT
1.72	Paediatrics	
1.74	Pathology	
1.77	Physical Medicine (Optional)	Rehabilitation

1.82	Psychiatry (optional)	
1.85	Pulmonary Medicine	Chest Disease/TB
	(Optional)	
1.86	Radiology & Imaging	

Group 2: Health and Allied Services

2.20	Family Welfare	
2.25	Health Education	
2.40	Maternal and Child Health	
2.50	Nutrition	

Group 3: Nursing, Paramedical, Technical and Allied Services

3.05	Dental Technology	Dental Hygiene
3.10	Dietetics and Therapeutics	Catering
3.15	Drugs and Pharmacy	
3.20	ECG Technology	
3.25	ECG Technology (optional)	
3.30	Imaging Technology	
3.35	Laboratory Technology (Optional)	
3.40	Laundry Technology (Optional)	
3.45	Medical Record Technology	
3.47	Medical Social Work	
3.50	Nursing Services	
3.55	Operating Theatre Technology	
3.60	Ophthalmic Technology	
3.70	Physiotherapy (optional)	
3.90	Sterilization and Disinfection	CSSD Technology

Group 4: Engineering and Allied Services

4.05	Building Maintenance	
4.10	Electric Supply	Power Generation and Stabilization
4.15*	Fire Protection	Alarm System
4.20	Heating, Ventilation, and Air-conditioning (optional)	
4.25	Horticulture	Landscaping
4.30*	Hot Water and Steam Supply (Optional)	
4.33	Lifts and Vertical Transport	
4.35	Gas Supply	
4.40	Mechanical Transport	Ambulance Service
4.45	Medical Gas Supply and Vacuum	G A S Scavenging
4.47	Refrigeration	
4.50	Sewage Treatment and Disposal	Sanitation and Drainage
4.52	Solar Energy	
4.55	Solid Waste Disposal	Bio Medical Waste Management
4.60	Telephone and Communication	
4.65	Water supply	Plumbing
4.70	Workshop	

Group 5: Administrative and Ancillary Services

5.05	Audio-Visual Services	
5.20	Education and Training (Optional)	Continuing Education
5.30	Financial Management (Optional)	Accounts
5.35	General Administration	
5.40	House Keeping	
5.50	Management Information (optional)	
5.55	Materials Management	
5.60	Medical Social Work	
5.65	Personnel Management (optional)	
5.70	Public Relation (optional)	
5.75	Security	
5.95	Library and Internet Facility	

NOTE- Some of the services can be out-sourced depending upon the situation

SECTION 2 FNCTIONAL PROGRAMME

4 FUNCTIONAL PROGRAMME

4.1 Functional planning

4.1.1 Functional planning is an analytical process in hospital planning and development which includes definition of functional requirements, area requirements and work flow to meet the need and priorities of the medical programme.

4.1.2 In consideration of the medical programme outlined in Section I, the hospital is to have a balanced combination of the following functional areas and services:

- Entrance area,
- Ambulatory care area,
- Diagnostic services,
- Intensive care area,
- Critical care area,
- Therapeutic services,
- Engineering services, and
- Administrative/Ancillary services

4.2 Functional Analysis

4.2.1 Entrance area will comprise three independent entrance zones, namely:

- Main entrance for ambulatory care, diagnostic service and therapeutic services as well as to include accommodation for pharmacy services.
- IPD (in-patient department)/Emergency entrance for intermediate care, intensive care and critical care (emergency services) as well as to include accommodation for arcade.
- Service/Staff entrance for hospital and engineering services, hospital supplies. Medical, Para-medical and administrative as well as ancillary staff.

4.2.2 The ambulatory care area will comprise of:

- General and speciality clinics for examination, consultation and treatment of opt-patients.
- Ancillary accommodation for nursing services.

4.2.3 Diagnostic services of the hospital will provide facilities for modern modalities essential for practice of contemporary medicine and will comprise imaging, clinical laboratories and blood bank.

4.2.4 Intermediate care area will consist of general wards, private ward (AC and NON AC),dedicated wards, like, maternity and paediatrics with the following bed distribution:

Category of Wards	No. of Beds	
General ward 1 (Medical) including allied speciality	30	
General ward 2 (Surgical) including allied speciality	30	
Private Ward (Ac and Non Ac) (optional)		9
Maternity ward		15
Paediatrics Ward		6
Total		90

NOTE-The number of beds given may be suitably adjusted by hospital administration depending upon local requirements.

- 4.2.5 The intensive care services will comprise facilities for medical and surgical intensive care with bed complement of 4 beds (4 Percent of bed strength).
- 4.2.6 The critical care services will comprise facilities for medical and surgical emergencies with bed complement of 6 beds (about 6 percent of bed strength).
- 4.2.7 The therapeutic services of the hospital will provide facilities for operating care, delivery suite and physiotherapy. Operation theatre suite will conform to the principles of environmental zoning, viz. protective, clean, sterile and Disposal for asepsis in surgical practice.
- 4.2.8 The hospital services will comprise of hospital kitchen, central sterile supply, hospital laundry, central medical and general stores and hospital mortuary.
- 4.2.9 The engineering services of the hospital will comprise the electrical, mechanical, public health, fire protection, communication, medical gases and vacuum and workshop needs of the hospital.
- 4.2.10 The administrative/ancillary services of the hospital will comprise of hospital administration, nursing administration, general transport, housekeeping, Library/conference and medical records services.
- 4.2.11 The above functional analysis is a brief description of various areas and services that collectively will constitute basic requirements for the hospital. Detailed functional programme for the hospital to highlight area-wise and function-wise requirement of facilities is given in Annex A. Summary of area requirement per bed is given in Annex B.
- 4.2.12 Area and function wise requirements of facilities as given in Annex A are based on basic space module of 7 m². This has been stipulated in order to nationalize the requirements for various facilities in the hospital. Basic module so chosen is considered a viable space planning unit of 14 m².

SECTION 3 AREA REQUIREMENTS

5 AREA REQUIREMENTS

- 5.1 Area requirement for hospital is to be derived from carpet area of various services and functions as outlined in functional programme by applying conversion factor for circulation space. The circulation space will include corridors, stairs, fire escapes, walls, ramps and lifts, etc.

- 5.2 While applying 40 percent conversion factor over carpet area of 66 m² per bed the covered area of the hospital works out to 92.5 m² per bed.
- 5.3 Land requirement depends on factors, like, horizontal or vertical development; FAR (floor area ratio) regulations and ground coverage regulated by local self government/municipal regulations correlated to availability of land. Area requirement can thus be calculated with the above parameters assumed as under:

Total hospital beds	100
Number of storeys	3
By placing 40 percent of area on ground floor and remaining in 2 upper floors.	
Municipal regulation	
F.A.R	100
Ground coverage permitted	25 percent
Covered area per bed	92.5m ²
Total covered area	92.5 x100=9250m ²
40 percent of covered area	3700 m ²

Since ground coverage allowed is 25 percent, plot area will be 4 times of 3700 m² that is 148000 m² or 1.48, say, 1.5 hectare. This area is earmarked for hospital building. In addition, Hospital Service buildings like ESS, Generators, HVAC plant, Manifold Rooms, Boilers, Laundry, Kitchen and essential staff residences are required in the Hospital premises. Additional area of 50 % (approximately) of total hospital area is to be added, and net total land area comes to about 2.25 hectare.

Land requirement can be reduced or increased if the hospital is intended to be high or low rise building contrary to above parameters.

6 SITE PLANNING

- 6.1 Hospital sites with high degree of sensitivity to outside noise should be avoided, but may be compatible with other considerations, such as, accessibility and availability of services. The buildings should be so planned that sensitive areas, like, wards, consulting and treatment rooms and operation theatres are placed away from the outdoor source of noise. While planning the hospital building, the importance of landscape elements, such as, open area, horticulture to increase the comfort conditions within the recommendation contained in IS 7662 (Part 1), may be kept in view.

7 RESIDENTIAL ACCOMMODATION

- 7.1 If adequate land is available, residential accommodation for the essential staff only which includes resident medical officer, nurses and class IV staff should be provided.
- 7.2 For the relatives of patients some accommodation, like, shelter home may be provided.
- 7.3 Residential accommodation for a major portion of nursing staff should be provided close to the hospital building in the form of a hostel.

SECTION 4 WORK FLOW

8 GENERAL

A typical work flow analysis is given in Fig.1. Shopping Arcade (No.25) location is preferred to be close to or in between IPD and OPD Zone.

SECTION 5 MANPOWER REQUIREMENTS

9 MANPOWER REQUIREMENTS

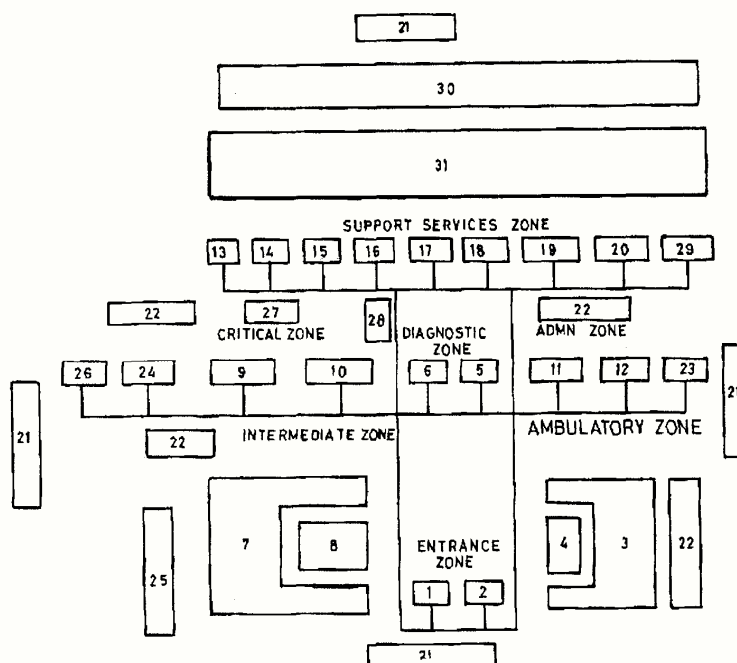
9.1 In the beginning when the hospital starts working, it is recommended that the total strength should be based on 1.5 persons per bed but should increase to 3 person per bed when the hospital is working to its full load capacity. Given below is the recommended strength:

<i>Medical Staff</i>	<i>Minimum Strength</i>
Hospital administrator	1
General medical specialists	3
General surgeons	4
Obstetrician and gynaecologist	3
Ophthalmologist	2
Otorhino-laryngologist	1
Paediatrician	2
Dentist	2
Anaesthetist	4
Orthopaedic Surgeon	2
Dermatologist (optional)	1
Neonatologist (optional)	1
Psychiatrist (optional)	1
Pulmonary medicine specialist (optional)	1
Pathologist	1
Radiologist	2
General duty medical officers	15
 <i>Nursing Staff</i>	
 <i>(See Annex C)</i>	
<i>Health Staff</i>	
Nutritionist	1
 <i>Paramedical Staff</i>	
Lab technician/Blood bank	
Technicians	4
ECG/Imaging Technician	2
Pharmacists	4
Linen-keeper	1
Steward	1
Physiotherapist/Occupational therapist	2
Medical records	1
Dental technologist	1
Ophthalmology technologist	1
CSSD	2
Technical assistants	2
 <i>Engineering Staff (Can be outsourced)</i>	
Civil engineering technologist	1
Mechanical engineering technologist	1
Electrical engineering technologist	1
 <i>Medical Staff</i>	 <i>Minimum Strength</i>

Engineering aides		4+2
<i>Other Staff</i>		
Drivers, ambulance van	3	
Cleaners, ambulance van		3
(One driver and one cleaner per ambulance)		
Carpenter(<i>Can be outsourced</i>)	1	
Plumber(<i>Can be outsourced</i>)	1	
Tailors (<i>Can be outsourced</i>)	2	
Gardeners(<i>Can be outsourced</i>)	2	
Cooks (<i>Can be outsourced</i>)	2	
Cook mates (<i>Can be outsourced</i>)	3	
Class IV, Including Chowkidars Messengers	55	
<i>(Can be outsourced)</i>		
Barber (<i>Can be outsourced</i>)	1	
<i>Administrative Staff</i>		
Office superintendent	1	
Head clerk		1
Cashier	1	
Stenographer	1	
LDC (including registration)		4
*Included in the total strength of class IV staff.		

NOTE-Additional staff shown with + sign, means that it should be added depending upon the work load. If optional facilities are provided proportionate increase in staff may be required.

IS 12433 (Part 2) : 2001



- | | |
|---|-------------------------------|
| 1. Reception/Registration | 17. Sub-station |
| 2. Pharmacy | 18. Workshop |
| 3. Examination/Consultation | 19. Mortuary |
| 4. Nursing station | 20. Incinerator |
| 5. Clinical laboratory | 21. Entrance |
| 6. Imaging | 22. Parking |
| 7. Patient area | 23. Library/Conf |
| 8. Nursing station | 24. Intensive Care |
| 9. Operating theatre | 25. Shopping arcade |
| 10. Labour room | 26. Casualty |
| 11. General administration | 27. Blood bank |
| 12. Medical-cum-general store | 28. Physiotherapy |
| 13. Manifold | 29. Fire-protection |
| 14. Central sterilization and supply deptt. | 30. Residential accommodation |
| 15. Laundry | 31. Park |
| 16. Kitchen | |

NOTE — The work flow analysis gives only the broader services to be provided. Actual layout may be decided by hospital administration depending upon the local needs.

FIG. 1 WORK FLOW ANALYSIS, 100-BEDDED HOSPITAL

SECTION 6 INSTRUMENTS, EQUIPMENT AND FURNITURE REQUIREMENTS

10 INSTRUMENTS, EQUIPMENT AND FURNITURE REQUIREMENTS

10.1 The instruments, equipment and furniture required by various departments are as follows. These may conform to the relevant Indian Standards indicated against each item. However, the number of these shall be governed by the actual local conditions.

A ENTRENCE AREA

A-1 RECEPTION

Chair, metal, office type	IS 3499 (Part 1): 1985
Chair, plastic moulded	IS 13713: 1993
Fire fighting equipment	As per statutory requirements
Graphics and signature systems	-
Audio visual display	
Janitor's Equipment	
■ Floor scrubbers	IS 3015 : 1985
■ Brooms	-
■ Dusters	IS 859 : 1978
Notice board	IS 10405: 1982
Reception-registration desk/counter	-
Table, metal, office/counter	IS 3498: 1993
Trolley, patients	IS 4036: 1967
Water cooler with ¾ spouts	IS 1475: 2005
Wheel chairs	IS 6571: 1991, IS 7454: 1991, IS 8086: 1991

A-2 DISPENSARY

Chairs, metal, office type	IS 3499 (Part 1): 1985
Jugs for water, tumblers	IS 3424: 1985
Refrigerator	IS 1474: 1959 IS 1476(Part 1): 2000
Sink unit with desk top work area	IS 2556 (Part 5): 1994
Storage Racks	IS 1883: 1983, IS 7070: 1988
Table, metal, office type	IS 3498: 1993
Wash, hand basin	IS 2556 (Part 4): 2004

B AMBULATORY CARE AREA

B-1 EXAMINATION/CONSULTATION

Bed sheet	IS 175: 1989
Bowls	IS 3994: 1993
Chair, metal, office type	IS 3499 (Part 1): 1985
Chairs, plastic moulded	IS 13713: 1993
Doctor's towel	IS 854: 1991
Dusters	IS 859: 1978 IS 3777: 1994
Diagnostic set (As per the clinics requirements)	
a) Ophthalmoscope slit lamp	IS 8257 : 1976
b) ENT Diagnostic Set	IS 3788 : 1966 IS 5377 : 1969

c) Torch	IS 2083 : 1991			
d) Laryngoscope and auroscope	IS 4113(Part 1 & 2) :2003			
e) Tongue depressor	IS 7756 : 1975			
Examination table/stretchers with mattress	IS 4787: 1968	IS 4035:		
	1967 IS 4037: 1967			
Kidney trays	IS 3992: 1982			
Protoscope				
Screen stands	IS 4458: 1967			
Step stool	-			
Stretcher and stretcher carrier	IS 4037: 1967			
Sphygmomanometer	IS 3390: 1988			
	IS 7652:1988			
Stethoscope	IS 3391: 1965			
Wash hand basin with liquid	IS 2556 (Part 4): 2004			
Soap dispenser and towel rail				
X-ray viewers	-			

B-2 NURSING SERVICE

3 coloured Containers for Bio-Medical Waste Management

Chair, metal, office type	IS 3499 (Part 1): 1985			
Dressing drum	IS 3831: 1979			
Fire fighting equipment	As per statutory requirements			
Hot plates	IS 365: 1983			
Nurses station counter/desk	-			
Needle Destroyer	-			
Notice boards	IS 10405: 1982			
Refrigerator	IS 1476(Part 1): 2000			
	IS 1474:1959			
Screen stands	IS 4458: 1967			
Sink unit with instrument work area	IS 2556 (Part 5) 1994			
Stool, revolving	IS 7081: 1973			
Storage units- storage racks	IS 1883: 1983 IS 7070: 1988			
Table, metal, office type	IS 3498: 1993 IS 8126: 1993			
Trolley, dressing/instrument/medicine	IS 4769: 1968 IS 5631: 1970			
	IS 7083: 1973			
Trolley, patients	IS 4036: 1967			
Wall clocks	IS 5160: 1969			

IS 12433 (Part 2): 2001

Waste receptacles	IS 6904: 1973			
Wash hand basin with liquid	IS 2556 (Part 4): 2004			
Soap dispenser and towel rail				
Water cooler	IS 1475: 2005			
Washing Machines	IS 6390(Part 1):1983			
	IS 6390(Part 2):1992			
	IS 6390(Part 3):1992			
Wheel chairs	IS 6571: 1991			
	IS 7454:1991			
	IS 8086: 1991			
X-ray viewers	-			

B-3 DENTAL

1. Dental Unit complete with following facilities:

- Dental Chair motorized with panel and foot controlled with up and down movement.
- Air Rotor
- Compressor oil free medical grade (noise-free)
- Ultrasonic Scalar with four tips.
- Suction fitted in the dental chair medium and high vacuum.
- Air rotor hand piece contra angle two and one straight hand piece (4 lakhs RPM).
- LED light cure unit.
- Latest foot operated light of 20,000 and 25,000/- Lux.
- Air motor terminal with hand piece.
- Dental X-ray IOP/OPG X-ray viewer with LED light.
- Doctors' Stool.
- Medical Emergency tray.

2. Dental Instruments

- All types of dental extraction forceps (each set 3 sets- minimum required which includes upper and lower molars and anterior forceps).
- Elevators (Dental) all types (3 sets each).
- Apexo.
- Bonefile.
- Bone cutter forceps one.
- Chisel and hammer-one each.
- Periosteal elevator-3 Nos.
- Artery forceps-three each.
- Needle holder- three.
- 20 PMT sets (mouth mirror, probe dental and tweezers)
- Excavators.
- Filling instruments.
Micromotor with straight and contra angle hand piece

3. MINOR SURGICAL INSTRUMENTS.

4. Perio surgical instrument- ONE COMPLETE SET.

5. ENDODONTIC INSTRUMENTS.

6. HANDS SCALER SET BLOPSY.

7. PULP TESTER.

8. TRAYS FOR COMPLETE/ PARTIAL EDENTULOUS PATIENTS FOR MAKING OF COMPLETE/PARTIAL DENTURES OF DIFFERENT SIZES.

9. STERILIZER

- Autoclave small front loading-one
 - Boiler (sterilizer)-One
 - Dressing drum
10. Executive Chair Revolving
 11. Chair metal for office use
 12. Office table
 13. Recovery room with one bed and oxygen cylinder with trolley and gas.
 14. Trolley and wheel chair for patients
 15. Wall clock
 16. Dental I.O.P.X-ray machine with X-ray developing facilities.
 17. Chairs for waiting patients-20.

C DIAGNOSTIC SERVICES

C-1 IMAGING

Aprons, lead-rubber	IS 7352: 1974
Cassettes with intensifying screens	IS/ISO 4090:2001
Chair, office type	IS 3499 (Part 1): 1985
Chair, plastic moulded	IS 13713: 1993
Diagnostic X-ray unit, 200/300mA, with automatic Device	IS 7620(Part 1): 1986
Diagnostic, 60 mA X-ray machines (portable type)	IS 7620 (Part 1): 1986
Dark room safe light	-
Dark room timer	-
Dark room adaption goggles	-
Film clips	-
Film hanger and wall brackets	-
Hanger for X-ray film	-
Gloves, lead-rubber	IS 4148: 1989
Lead numbers for marking	-
X-ray film	IS 15584:2005
Lead sheets	IS 8164: 1976 IS 4135:1974
Lead glass	IS 5148: 1969
Multi purpose ultra sound scanner	-
Rack, steel	IS 1883: 1983
Step stools	-
Stool, revolving	IS 7081: 1973
Tank thermometer	IS 2480(Part 1): 1983 IS 2480(Part 2):1982
Trolley, patients	IS 4036: 1967
Wash hand basins with towel rail and liquid soap dispenser	IS 2256 (Part 4): 2004
X-ray view box	-
X-ray protection screen	IS/ISO 4090:2001
X-ray film processing tank	-
X-ray film corner	-

-C-2 CLINICAL LABORATORY

Tubes, glass, for pathological work	IS 3740: 1966
Tubes, sedimentation	IS 3741(Parts 1 and 2): 1990
Pipette, dilution for haemocytometers	IS 3742: 1990
Pipette for haemoglobinometers and blood pipette for biochemical work	IS 4087: 1980
Pipettes, serological	IS 4364: 1967
Albuminometer (Esbach's) with stopper, stand and case	IS 6606: 1972
Cover, glass, haemocytometer	IS 6943: 1990
Tube, culture, screw cap	IS 7039: 1973
Tube, haemometer	IS 9430: 1980
Blood sedimentation rate	-
Stand for 6/12 tubes	
Test tubes, pyrex type (glass)	IS 2618 : 2006
Volumetric flasks	IS 915: 2006
Beaker	IS 2619: 1993
Urine collection jar	IS 4708: 1968
Glass slides	IS 3099 (Parts 1 and 2): 1992
Colorimeter	IS 9571: 1980
Centrifuge, AC/DC, 200 W with 8 buckets	IS 4092 (Part 1): 1992
Centrifuge tubes (glass)	IS 3740: 1966
Filter papers	-
Haemocytometer with WBC and RBC pipettes	IS 10269: 1982
Incubator	IS 3118: 1978
Haemoglobinometer, sahli, complete	-
Laboratory electric ovens	IS 6365: 1971
Monocular microscope	IS 4328: 1967
Needle, hypodermic, all single	IS 3317: 2004
Needle, hypodermic, single use	IS 10654: 2002
Petri dishes	IS 2626: 1972
Slides boxes	IS 7850: 1975
Nessler's tube	-
Sterilizer, steam	IS 3829(Part 1):1999 IS 3829(Part 2):1978 IS 3829 (Part 3): 1985
Sterilizer, steam, portable type	IS 8462: 1977
Spectroscope with adjustable slit	-
Spirit lamp	IS 9557: 1980
Stop watch	IS 10996: 1984
Syringes, all glass, all sizes	IS 3236: 1992 IS 11400:1985
Syringes for single use	IS 10258: 2002
Suitable strips (as substitute for various tests)	-
Trough, staining	IS 4754: 1968
Water bath, serological	IS 6593: 1972
Wire gauze	IS 14253: 1995
Sink unit with worktop area	IS 2556 (Part 5): 1994
Wash hand basin with liquid soap	IS 2556 (Part 4): 2004

dispenser and towel rail.
 Micropipette (variable)-Size 20 ul to 100ul-qty.-04

- Micropipette (variable)- Size 20 ul to 200ul-Qty.-04
- Micropipette (Variable)- Size 10 ul to 50ul-Qty. -04
- Binocular Microscope
- Wintrobe tubes for Blood Erythrocyte Sedimentation Rate (ESR)
- Refrigerator for storage of kits & chemicals
- Automated differential cell counter (3 part) for HB, TLC, DLC, Platelet count and other complete cell count indices.
- Semi automated Biochemistry Analyser for biochemical tests.(optional)
- Automated Electrolyte Analyser (optional)
- Semi Automatic ESR Analyser (optional).

C-3 BLOOD storage facility

The instruments, equipment and other accessories for blood bank shall be as specified in the *Drugs and Cosmetics Act*.

D INTERMEDIATE CARE AREA

D-1 NURSING STATION

Chair, metal, office type	IS 3499(part 1): 1985
Dressing drum	IS 3831: 1979
Fire fighting equipment	As per statutory requirements
Hot plates	IS 365: 1983
Nurses station counter/desk	-
Notice boards	IS 1040: 1982
Refrigerator	IS 1476(Part 1): 2000 IS 1474: 1959
Screen stands	IS 4458: 1967
Sink unit with instrument work area	IS 2556(Part 5) 1994
Stool, revolving	IS 7081: 1973
Storage units- storage racks	IS 1883: 1983 IS 7070: 1988
Table, metal, office type	IS 3498: 1993 IS 8126: 1993
Trolley, dressing/instruments/medicine	IS 4769: 1968 IS 5631: 1970 IS 7083: 1973
Trolley, patients	IS 4036: 1967
Wail clocks	IS 5160: 1969
Waste receptacles as per BMW Rules	IS 6904: 1973
Wash hand basin with liquid	IS 2556(Part 4): 2004
Soap dispenser and towel rail	
Water cooler	IS 1475: 2005
Wheel chairs	IS 8086: 1991 IS 6571: 1991 IS 7454: 1991
X-ray viewers	-

D-2 PATIENT AREA

Bedstead (including 5 with railing)	IS 5029: 1979
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Bed side lockers	IS 4266: 1967
Back rests	IS 5336: 1969
Bed, Fowler's	IS 7378: 1974
Bed pans	-
Buckets, stainless steel	IS 4768: 1981
Basins	-
Screen stands	IS 4458: 1967
Chair, metal, office type	IS 3499(Part 1): 1985
Chairs, plastic moulded	IS 13713: 1993
Chairs, easy	IS 5974: 1986
Chamber pots	-
Chart holder	-
Diagnostic set:	
a) Ophthalmoscope	IS 8257: 1976
b) ENT speculum	IS 3788: 1966, IS 5377: 1969
c) Audiometer	IS 10565: 1999
d) Torch	IS 2083: 1991
e) Percussion hammer	-
f) Laryngoscope and autoscore	IS 4113(Part 1 & 2): 2003
g) Tongue depressor	IS 3831: 1979
Dressing drum	IS 3831: 1979
Enema can sets	-
Feeding cups with spout	-
Forceps, cheattles	IS 4094: 1967
Flit pumps	IS 3897: 1978
Fly swatters	-
Fire fighting equipment	As per statutory requirements
Hurricane lantern, wick lamp	IS 1238: 2005 IS 9557: 1980
Hammer, percussion	-
Hot plates	IS 365: 1983
Hot water bottles	IS 1867: 1975
Holder, case, sheet	-
Ice box	IS 1869: 1961
Ice bags	IS 3867: 1966
Jugs, enamel	-
Kidney trays	IS 3992: 1982
Kettles	IS 367: 1993
Medicine cups	IS 3998: 1982
Medicine trolleys	IS 7083: 1973
Mugs	IS 3995: 1980
Mattresses for bedsteads	IS 7933: 1975
Notice boards	IS 10405: 1982
Oxygen cylinders with trolleys and flow meters	IS 309: 2005, IS 6207: 1971
Oxygen masks	IS 6190:1971
Phototherapy Equipment	-
Refrigerators	IS 1476(Part 1): 2000
Rack, storage	IS 1883: 1983, IS 7070: 1988
Racks, test tube	-

Room heaters	IS 369: 1992
Screen stands	IS 4458: 1967
Step stool	-
Stool, revolving	IS 7081: 1973
Spoons	IS 990: 1982
Suction apparatus	IS 4533: 1995
Sphygmomanometers	IS 3390: 1988 IS 7652: 1988
Stethoscope	IS 3391: 1965
Steriliser, instruments	IS 5022: 1989
Scissors, general purpose	IS 989: 1982
Splints, arm	IS 6626: 1972
Splints, Thomas	-
Table, metal, office type	IS 3498: 1993, IS 8126: 1993
Trolleys, linen and dirty linen	IS 4455: 1967
Table, examination	IS 4787: 1968
Tray, food (stainless steel)	IS 3257: 1980, IS 3424: 1985
Tumblers (stainless steel)	IS 3424: 1985
Trolley, dressing	IS 4769: 1968
Trolley, patients	IS 4036: 1967
Thermometers, clinical	IS 3055 (part 1): 1994
Thermometers, rectal	IS 3055(Part 1): 1994
Waste receptacle	IS 6904: 1973
Wall clocks	IS 5160: 1969
Water coolers with ¾ spouts	IS 1475: 2005
Weighing machines	IS 2489: 1963 IS 1853: 1961
X-ray view boxes	-

D-3 LINEN FURNISHINGS

Bed sheets	IS 175: 1989 IS 745: 2003 IS 3776: 1994
Blankets	IS 1681: 1998 IS 746: 1987
Curtains	IS 1246: 1978
Draw sheets	-
Dusters	IS 859: 1978
Doctor's cots	IS 5029: 1979
Doctor towels	IS 854: 1991
Face sponges	IS 860: 1987
Mortuary sheets	IS 175: 1989 IS 745: 2003
Mattresses	IS 7933: 1975
Mattress covers	-
Pillow cases	-
Patient coats or jackets	-
Patient pyjama	IS 1245: 1990
Pillows	-

E - CRITICAL CARE AREA

E-1 SERVICES

Table, metal, office type	IS 3498: 1993, IS 8126: 1993
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Chairs, metal, office type	IS 3499 (Part 1): 1985
Chairs, plastic moulded	IS 13713: 1993
Stool, revolving	IS 7081: 1973
Table, examination/stretcher	IS 4035: 1967 IS 4037: 1967 IS 4787: 1968
Foot steps	-
Trolley, dressing	IS 4769: 1968
Folding screen	IS 4458: 1967
Bucket	IS 726: 1982
Bowl	IS 3994: 1933
Diagnostic set (as per the clinic requirements)	
a) Ophthalmoscope	IS 8257: 1976
b) ENT speculum	IS 3788: 1966 IS 5377: 1969
c) Torch(flashlight)	IS 2083: 1991
d) Laryngoscope and auroscope	IS 4113(Part 1 & 2): 2003
e) Tongue depressor	IS 7756: 1975
f) Knee hammer	IS 5585: 1970 IS 7819: 1975
g) Stethoscope	IS 3391: 1965
h) Thermometer	IS 3055(Part 1): 1994
i) Tape measure, steel	IS 1269(Part 2): 1997
Jugs	-
Kidney tray	IS 3992: 1982
Tray with cover	IS 3257: 1980 IS 3424: 1985
Sterilizer, instrument	IS 5022: 1989
Stove	IS 1342: 2002 IS 4246: 2002
Saw, plaster	IS 10338: 1982
Cabinet, instruments	IS 6877: 1977
Wheel chair	IS 6571: 1991 IS 7454: 1991 IS 8086: 1991
Trolley Stretcher with mattress	IS 4035: 1967
Wall clock	IS 5160: 1969
Emergency light	-
Refrigerator	IS 1476(Part 1): 2000
Room heater	IS 369: 1992
Room cooler	IS 3315: 1994
Bed sheets	IS 175: 1989 IS 745: 2003 IS 3776: 1994
Blankets	IS 1681: 1998
Pillows	-
Towels	IS 854: 1991
Pillow covers	-
Flit pump	IS 3897: 1978

F THERAPEUTIC SERVICES

F-1 OPERATION SUITE

Bowls, stainless steel	IS 3994: 1993
Basin, stainless steel	-
Brush, nail	IS 5080: 1969
Buckets, stainless steel	IS 4768: 1981
Bucket with lid	IS 726: 1982

	IS 3730: 1988
	IS 4768: 1981
Catheter, rubber	IS 7523: 1974
Diathermy machine	IS 7583: 1991
Dressing drum, all sizes, stainless steel	IS 3831: 1979
Intensifier C-arm	
Lamp, shadow less	
a) Ceiling lamp	-
b) Portable type	-
Sink unit with work top area	IS 2556(Part 5):1994
Sterilizer:	
a) Pressure, hot and cold water	IS 7455: 1974
b) Bowls and utensils	IS 5035: 1969
Suction apparatus	IS 4533: 1995
Stand, I.V	IS 5880: 1970
Stool, revolving, stainless steel	IS 7081: 1973
Stand with wheel for single basin	IS 4267: 1967
Slippers	IS 10702: 1992
Table, operation, hydraulic:	
a) Major	IS 5291: 1969
b) Minor	IS 6328: 1971
c) Orthopaedic Table	-
Image Intensifier C Arm	
Table, instruments	IS 6905: 1973
Trolley, dressing drum	IS 7099: 1973
Trolley, patients	IS 4036: 1967
Trolley, instruments	IS 5631: 1970
Urinals (male and female)	IS 2556(Part 6): 1995
X-ray view box	-
Wheelchairs	IS 6571: 1991 IS 7454: 1991
	IS 8086: 1991

F-2 DELIVERY SUITE

Aprons, rubber	IS 4501: 1981
Basin, stainless steel	-
Bowl for placenta, stainless	-
Bed pans, stainless steel	-
Bowls, stainless steel	IS 3994; 1993
Catheter, rubber and metal	IS 11497: 1985
Cradles, baby	IS 5630: 1994
Chair, wheel	IS 7454: 1991 IS 6571: 1991
	IS 8086: 1991
Cabinet, steel, instruments	IS 6877: 1977
Craniotomy set	-
Dressing drum	IS 3831: 1979
Forceps:	
a) Artery	IS 3644: 1992
b) Obstetric, wringles	-
c) Obstetric, furguson	-
d) Ovum	IS 6578: 1992
e) Sponge holder	IS 7735: 1992
f) Dissecting	IS 3643: 1992

g) Cheatle's	IS 4094: 1967
Feeding cups	-
Foetoscope/Foetal Doppler	IS 6565: 1972
Hot water bottles	IS 1867: 1975
Handle for surgical blades, Bard Parker type	IS 3319: 1995
Ice bags	IS 3867: 1966
Jug, stainless steel	IS 3424: 1985
Jar with cover	IS 3997: 1982
Kidney tray, stainless steel	IS 3992: 1982
Laparoscope, single puncture	-
Mackintoshes	-
Mouth gag	IS 7625: 1975
Needle holder	IS 7994: 1976
Needle, lumber puncture	IS 7350: 1974
Ophthalmoscope	IS 8257: 1976
Probe, uterine	IS 7981(Part 4 and 5): 1976
Pint measures	-
Shadowless lamp	-
Sinks with liquid soap dispensers	IS 2556(Part 5): 1994
Suction apparatus	IS 4533: 1995
Sound, uterine	IS 5829: 1982
Stand:	
a) Basin	IS 4267: 1967
b) I.V	IS 5880: 1970
c) Towel	-
d) Test tube	-
Stethoscope	IS 3391: 1965
Syringes, single use and reusable type	IS 3236: 1992 IS 10258:2002 IS 11400: 1985
Slipper	IS 10702: 1992
Scissors:	
a) Bandage, Lister's	IS 6252: 1971
b) Stitch cutting	IS 4513: 1968
c) Episiotomy	IS 7103: 1973
d) Curved and straight	IS 9146: 1979
Speculum, sim's	IS 6112: 1971
Step stool	-
Table:	
a) Obstetric, labour	IS 6083: 1971
b) Examination	IS 4787: 1968
Trolley:	
a) Patients	IS 4036: 1967
b) Dressing	IS 4769: 1968
Torch	IS 2083: 1991
Trays	IS 3992: 1982 IS 3993:1993
Tubes:	
a) Ryle's	-
b) Foetus	-

Thermometer, rectal	IS 3055 (Part 1): 1994
Tubs, baby bath	IS 4120: 1967
Urinals	IS 2556 (Part 6): 1995
Vacuum extractor	-
Weighing machine, baby	IS 2489: 1963
Wheelchairs	IS 6571: 1991 IS 7454:1991 IS 8086: 1991
X-ray view box	-

F-3 ANAESTHESIA EQUIPMENT AND APPLIANCES

Airways, anaesthetic	IS 3392: 1965
Airways, guedal, rubber	-
Anaesthesia Work Station	-
Piped gas supply:	
a) Oxygen	IS 309: 2005
b) Nitrous Oxide	-
Catheter, oral, endotracheal	-
Catheter, endotracheal, nasal	-
Forceps, endotracheal, nasal	-
Forceps, endotracheal for introducing endotracheal tube	IS 8312: 1977
Face masks	IS 6190: 1971
Laryngoscope	IS 4113(Part 1 and 2): 2003
Pulse Oxymeter	
Mouth gag (Mason)	IS 7627: 1975
Spray, laryngeal (MachIntoch type)	IS 7885: 1985
Tube, endotracheal	IS 6581: 1972

F-4 PHYSIO-THERAPY AND ELECTROTHERAPY

Short wave diathermy	-
Microwave diathermy	-
Ultrasonic apparatus (sonostat)	IS 13020(part 1):1991
Electro-stimulating machine	IS 1131: 2006
Paraffin wax lamp	-
Ultra violet lamp	IS 10550: 1983
Infra red rays lamp	IS 10550: 1983
Hydro collator	-
Suspension therapy apparatus with accessories- 1set	-
Shoulder wheel	IS 5665: 1982
Static cycle (child and adult)	IS 6205: 1982
Hubbard tank	-
Parallel bar (height and width adjustable)	IS 2462: 1981
Skate exercised board	IS 10833: 1984
Mat crutches	IS 5143: 1988
Quadriceps table	
a) Children's walker	IS 6099: 1991
b) Folding walker	-
c) Rollator height weight walkers	IS 13017: 1991
d) Adult size light weight walker aid made of aluminium tubing	IS 13017: 1991

Grip exercise board of hard wood	IS 10833: 1984
Forearm stabilizers	-
Pedo cycle of paraplegics	-
Cervical & Lumber traction apparatus complete with accessories	-
Crutches:	
a) Adjustable elbow crutches	IS 5143: 1988
b) Adjustable guardrumped walking aid	-
c) Adjustable walking stick	IS 5145: 1969
d) Adjustable elbow and shoulder crutches	IS 5143: 1988
e) Adjustable traugh crutches	-
Postural training mirror	-
Adjustable iron weights for cervical traction	IS 5796: 1970
Duplen chest and floor pulley, weight adjustabl	-
Sliding seat for exercise of lower limbs with6 lower limbs with 6 springs, adjustable	-
Quadriceps board reneest for knee bending exercise	-
Push up block made of one piece teak wood	IS 8492: 1985
Iron dumb-bells weight 1/2kg, 5kg, and 10 kg	-
Post knee guard splint with four cuffs and knee streps made of iron strips	-
Post knee guard splint with four cuffs and knee streps made of iron strips, adult size	-
Treadmill	
Wheel chairs (folding)	IS 8086: 1991
Neck sling canvas	-
Wheel chair	IS 6571: 1991
Ankle stirrup canvas	-

G HOSPITAL SUPPORT SERVICE

G-1 KITCHEN

Bowl, wash	IS 3994: 1993
Chair, steel, office type	IS 3499(Part 1):1985
Cans, 100 litre	-
Clock	IS 5160: 1969
Cooking range with oven	IS 4760:2002
Fryer (deep fat)	IS 10263: 1982
Gas burners (domestic)	IS 4246: 2002
Kitchen knife	IS 3546: 1966
Plates for serving	IS 3258: 1980
Platform scales	IS 1435: 1991
Potato peeler	IS 13836: 1993
Rack for utensils	IS 1883: 1983
Refrigerator	IS 1476(Part 1): 2000 IS 1474: 1959
Sink unit with work top	IS 2556 (Part 5):1994
Spoons, stainless steel	IS 990: 1982
Strainers	IS 1516: 1972
Table with marble top	-

Table, office type	IS 3498: 1993
	IS 8126: 1993
Trolley for hot food	IS 10264: 1982
Table cloth	IS 858: 1981
Tableware	IS 1961: 1968
	IS 9220: 1979
Towels	IS 854: 1991
Tumblers	IS 3424: 1985
Trays, food	IS 3258: 1980

G-2 CENTRAL STERILE SUPPLY

Buckets, stainless steel	IS 4768: 1981
Basin, wash	IS 2556(Part 4):2004
Bowls wash	IS 3994: 1993
Bottles, wide mouth	IS 1106: 1986
Brush, mail	IS 5080: 1969
Chairs, office type	IS 3499(Part 1):1985
Catheter, rubber, all sizes	IS 7523: 1974
Catheterization sets	-
Cans	IS 7394: 1984
Cabinet, steel	IS 3312: 1984
Cabinet instruments	IS 6877: 1977
Dressing sets:	
a) Suture needles	IS 9165(Part 1&2): 1992
b) Artery forceps	IS 3644:1992
	IS 3645: 1992
c) Scalpel blades	IS 3319: 1995
Funnel	IS 1541: 2006
Forceps:	IS 10231: 1982
a) Artery	IS 3644: 1992
	IS 3645: 1992
b) Dissecting	IS 3643: 1992
c) Allis	IS 7388: 1992
Gloves	IS 4148: 1989
Hand towel	IS 854: 1991
I.V. sets (preferably single use type)	IS 9824 (Part 2):1995
	IS 9824 (Part 3): 1996
Irrigation sets:	
a) Syringe	IS 3237(part 6): 1986
b) Catheter	IS 7523: 1974
Kidney tray	IS 3992: 1982
Medicine glass	IS 3998: 1982
Lumber puncture sets	-
Needle:	
a) Spinal	IS 7350: 1974
b) Sternal, puncture	-
c) Liver, biopsy	IS 7387: 1974
d) Aspirating	-
e) Aneurysm	IS 8340: 1977
f) Sharpener	-

g) Holder	IS 7994: 1976 IS 10599:1993 IS 10615: 1983
Proctoscopes	-
Pint measure	-
Sink unit with work area tops	IS 2556(Part 5):1994
Stitch removing sets:	
a) Forceps	-
b) Scissors	IS 4513: 1968
Sterilizer, steam (autoclave)	IS 3829(Part 1):1999 IS 3829(Part 2): 1978 IS 3829(Part 3): 1985
Sterilizer, hot air	IS 3119: 1978
Scissors:	
a) General type	IS 989: 1982
b) Mayo's	IS 9146: 1979
Sponge, nylon	-
Screws clamp	-
Speculum	IS 3788: 1966 IS 5377: 1969 IS 5906:1970 IS 6112: 1971
Suction apparatus	IS 4533: 1995
Stop cock, three-way	IS 1996: 2003
Rack, steel	IS 1883: 1983
Tubes:	
a) Foetus tube	-
b) Stomach tubes	-
c) Ryle's tubes	-
d) Tracheostomy	IS 8432: 1977
Trays	IS 3992: 1982 IS 3993: 1993
Towel clip	IS 4066: 1967
Trocar cannula	IS 12271: 1988
Trace dilators	-
Trolley, closed and ordinary	IS 9133: 1979
Table, office type	IS 3498: 1993 IS 8126: 1993
Tracheostomy sets	-
Venesection sets	-
Wrapper	-
Waste paper baskets	IS 3762: 1979
G-2.1 Episiotomy Tray	
Bowl, stainless steel	IS 3994: 1993
Forceps, dissecting	IS 3643: 1992
Scissors, episiotomy	IS 7103: 1973
Sponge holder	IS 10638: 1983
Syringes and needles	IS 3236: 1992 IS 3317:2004 IS 10654: 2002

IS 11400: 1985

G-2.2 Suture Tray

Forceps:

a) Dissecting	IS 3643: 1992
b) Artery, mosquito type	IS 3644: 1992
Needle, suture	IS 9165(Part 1 & 2): 1992
Needle holder	IS 12841(Part 1 to 4): 1989
Syringe, single use and reusable type	IS 3236: 1992, IS 10258: 2002, IS 11400: 1985
Scalpel with blade	IS 3319: 1995
Scissors, suture	-
Spinal sheet with hole	-
Tray with wrapper	IS 3992: 1982, IS 3993: 1993
Towel	IS 854: 1991

G-2.3 Baby Tray

Bowl, stainless steel	IS 3994: 1993
Forceps:	
a) Dissecting	IS 3643: 1992
b) Artery	IS 3644: 1992
Kidney tray	IS 3992: 1982
Mucus suction with catheter	IS 6373: 1971
Scissors:	
a) Ordinary	IS 4513: 1968, IS 9146: 1979
b) Cord cutting	IS 7117: 1973
Thread for cord tying	-

G-2.4 Resuscitation Tray for New Born Babies

Mucus Suckers	IS 6373: 1971
Ambu bag	IS 5602: 1970
Oxygen mask	IS 6190: 1971
Endotracheal tubes	IS 6581: 1972
Laryngoscope	IS 4113(Parts 1 and 2): 2003
Suction catheters	IS 5680: 1969

G-2.5 Delivery Tray

Bowl for placenta	-
Catheter, rubber, plain	IS 5680: 1969
Forceps:	
a) Artery	IS 3644: 1992
b) Bowel	-
Gynane sheet	IS 4135: 1974
Kidney tray	IS 3992: 1982
Scissors, Ordinary	IS 4513: 1968, IS 9146: 1979
Sponge holder	IS 10638: 1983
Table, obstetric, labour	IS 3993: 1993

G-2.6 Forceps Tray

Bowl, wash	IS 3994: 1993
Brain Crusher	-
Forceps:	
a) High with weight	-
b) Low	-

c) Vacuum	-
d) Artery	IS 3644: 1992, IS 3645: 1992
Gynae sheet	IS 4135: 1974
Kidney tray	IS 3992: 1982
Sponge holder	IS 10638: 1983
Scissors	IS 4513: 1968, IS 9146: 1979, IS 10414: 1982, IS 10984: 1984

G-2.6 Craniotomy Set

Cannula, dreus smith	-
Catheter, metal	IS 6960: 1973
Forceps, high	-
Hook, embryotomy	-
Perforator skull	IS 10172: 1982
Scissors, craniotomy	-

G-2.7 General Instruments Sets

Forceps:

a) Artery, mosquito, straight and curved	IS 3644: 1992
b) Kocher's pattern	IS 8040: 1992
c) Allis, tissue	IS 7388: 1992
d) Babcock's pattern	IS 8584: 1992
e) Hernia ring	-
f) Dennis browne	IS 7579: 1992
g) Dissecting	IS 3643: 1992
Handle for B.P Blade	IS 3319: 1995
Handle for B.P Blade	IS 3319: 1995
Needle holder	IS 7994: 1976,

IS 10599:1993
IS 10615: 1983, IS 12841(Part
1 to 4) 1989

Needle, aneurism	IS 8340: 1977
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Retractors:

a) Langenback's pattern	IS 8855: 1978
b) Czeray pattern	IS 8854: 1978
c) Morison's Pattern	-
d) Durham's Pattern	-
e) Volkman's Pattern	IS 11640 (Part 6) : 1987
f) Deaver's pattern	IS 8965:1978

Suction nozzle, for suction apparatus	-
Sponge holder	IS 10638: 1983

Scissors:

a) Mayo's pattern, straight and curved	IS 9146: 1979
b) Sharp and blunt	-
c) Wire cutting	-
d) Metzenenboum's pattern	IS 7972: 1987
Towel clips	IS 4066: 1967

G-2.7 Laparatomy Set

Clamp:

a) Payer's, crushing	IS 7665: 1975
b) Intestinal, non-crushing	IS 7502: 1974

Forceps:	
a) Right angle	-
b) Allis pattern	IS 7388: 1992
c) Artery	IS 3644: 1992
d) Babcock's	IS 8584: 1992
e) Dissecting (Mc In doe's)	IS 4282: 1992
f) Dissecting(Gillie's)	IS 4282: 1992
G-2.8 Gall bladder Set	
Gall bladder forceps	IS 7507: 1974
Cholecystectomy clamps	IS 7507: 1974
Bakes dilators	IS 8583: 1991
Bladder sound	IS 9416: 1980
Desjardin Gallstone forceps	IS 7561: 1992
Movos common bile duct, graduated	-
Desargen gallstone scoop flexible set	-
G-2.9 Gastrectomy Set	
Twins gastrectomy clamp	-
G-2.10 Kidney Set	
Bandaes kidney clamp (different sizes)	-
Double angle pedicals clamp	-
Kidney pedicle clamp	-
Kaheys stone holding forceps	-
Peristeam elevator (curved and straight)	-
Bone holding forceps	IS 6371: 1971
Bone cutter (single/double action)	IS 6233: 1971
Bone nibbler	IS 6484: 1972
G-2.11 Cramotomy Set	
Hudson brace with rerjarators and burrs	-
Gigli saw guide	-
Gigli saw	IS 6187: 1971
Bone nibbler, curved right and left	IS 6501: 1972, IS 6485: 1972
Double action bone nibbler	IS 6484: 1972, IS 6486: 1972
Periosteal elevator, curved and straight	IS 9041: 1979
Duraeleystor	-
Fine suction nozzle	-
Fine rubber catheter	IS 7523: 1974
20 ml syringes	IS 3236: 1992
Dural hook, sharp and blunt	IS 9904: 1981
Dural scissor	-
Ventricular needle	-
Bayonet forceps, plain	IS 8695: 1978
Bayonet forceps, toothed	IS 10765: 1983
Self retaining retractor	IS 9408: 1986
Scalp curved artery forceps	IS 8175: 1994
G-2.12 Chest Instruments Set	
Allisons lung retractor	-
Scapula retractor	IS 7434: 1987
Duval's lung holding forceps	IS 6778: 1989
Lung dissecting forceps, tooth and non-tooth	IS 6777: 1989
Rib spreader	IS 6436:1989, IS 7355: 1987
Bone cutter	

Doin's rib raspatory, angled to right and left	-
G-2.13 Bladder set	
Thomson walker retractor with two blades	-
Millson's retractor with 6 blades	-
Capsule holding forceps	-
Bladder syringes	-
Bladder sound	IS 9416: 1980
G-2.14 Endoscopy Set	
Cystoscope, examining, child and adult	IS 5738: 1970
Cystoscope, operating (catheterizing), child and adult	IS 5738: 1970
Ureteric catheter	IS 7523: 1974
Oesophagoscope, child and adult	IS 11319: 1985
Sigmoidoscope, child and adult	IS 5750: 1970
Bronchoscope, child and adult	IS 11318: 1985
Urethral dilators	IS 6584: 1972
Rectal dilators	IS 9145: 1979
Oesophageal bougies (Gum elastic bougies)	IS 8585: 1977
Catheters:	
Metal catheter	IS 6960: 1973
Foley's catheter	IS 11497: 1985
Rubber catheter	IS 7523: 1974
Malacot catheter	-
Catheter introducer	IS 9649: 1980
Catheter gum elastic	-
G-3 CENTRAL STORES (MEDICAL AND GENERAL)	
Chairs, metal, office type	IS 3499(Part 1): 1985
Instruments cabinets	IS 7760: 1985, IS 6877: 1977
Step stools	-
Storage racks	IS 1883: 1983, IS 7070: 1988
Table, metal, office type	IS 3498: 1993
Trolley for general medical stores	IS 9133: 1979
Waste receptacle	IS 6904: 1973
Weighing scales	IS 1853: 1961
G-4 HOUSE KEEPING EQUIPMENT (this can be outsourced)	
Brooms, mops, etc	-
Cabinet, steel	IS 3312: 1984
Chairs, metal, office type	IS 3499(Part 1): 1985
Meat chopper	IS 3545: 1982
Meat block	-
Mop ringer with water tank	-
Table, metal, office type	IS 3498: 1993 IS 8126: 1993
Washing machine for floor cleaning	-
G-5 HOSPITAL WORKSHOP	
Blacksmith tools	See Annex E
Carpentry tools	See Annex E
Chairs, metal, office type	IS 3499(Part 1): 1985

Common spares for repairs of trolleys, Wheel chairs and other traction equipment	-
Spray machine for painting	-
Table, metal, office type	IS 3498: 1993 IS 8126: 1993
Trolley for general medical store	IS 9133: 1979

G-6 HOSPITAL MORTUARY

Facilities for keeping dead body cool	-
Post-mortem table	IS 7036: 1982
Set of instruments for post-mortem	-
Trolleys	-
Office equipment	-
Racks	-

H ADMINISTRATIVE SERVICES

H-1 HOSPITAL, NURSING AND GENERAL ADMINISTRATION

Audio-visual equipment (optional)	-
Chairs, metal, office type	IS 3499(Part 1): 1985
Chairs, plastic moulded	IS 13713: 1993
File cabinets	IS 3313: 1983
Jugs for water	IS 3424: 1985
Office equipment:	
Paper weight	-
Pen stands	-
Racks	IS 1883: 1983 IS 7070: 1988
Personal computer and printer (Optional)	-
Stationary items	-
Steel cabinets	IS 3312: 1984
	IS 4116:1988
	IS 7760: 1985
Tumblers	IS 3424: 1985
Typewriter	-
Waste receptacles	IS 6904: 1973

SECTION 7 BUILDING REQUIREMENTS

11 BUILDING REQUIREMENTS (GENERAL)

The hospital building to be designed as a barrier free facility and all facilities for physically challenged persons required are incorporated in the design.

11.1 Circulation Areas

Circulation areas, such as, corridors, staircases, etc, in the hospital buildings should not be more than 40 percent of the total floor area of the building.

11.2 Floor Height

The height of all the room in the hospital should not be less than 3.5 m (minimum under the lowest point of finish) measured at any point from the surface of the floor to the lowest point of the ceiling. The minimum head-room, such as, under the bottom of beams, fans and light shall be 2.50 m measured vertical under such beam, fan or light. Height in OT Rooms is to be 4.5m (minimum).

- 11.3 Rooms shall have, for the admission of light and air, one or more apertures, such as, window and fan light, opening directly to the external air or into and open veranda. The minimum aggregate areas (see Note) of such opening excluding doors, inclusive of frames, shall be not less than 20 percent of the floor area, in case such apertures are located in one wall and not less than 15 percent of the floor area, in case such apertures are located in two opposite walls at the same sill level.

NOTE-If a window is partly fixed, the open able area shall be counted.

- 11.4 The architectural finishes in hospital shall be of such quality which will help in maintenance of better hygienic conditions.
- 11.5 The design of building shall ensure control of noise due to walking, movement of trolleys and banging of doors etc. Expansion joint should have a non-metallic beading finish. The doors should be openable on both sides in operation theatre while inside at other places.
- 11.6 **Sanitary Fitments**
The requirements of the sanitary fitments shall be in accordance with 17.1 of IS 10905(Part 1)

12 ENTRANCE AREA

12.1 Physical Facilities

The hospital should have entrances as shown in the work flow analysis

12.2 Pharmacy (Dispensary)

The dispensary should be located in an area conveniently accessible from all clinics. The size should be adequate to contain 5 Percent of the total clinical visits to the OPD in one session at the rate of 0.8 m² per patient. The dispensary and compounding room should have multiple dispensing windows, compounding counter and shelves. The pattern of arranging the counter and shelves shall depend on the size of the room. The medicines which require cold storage and blood required for operation and emergencies may be kept in refrigerators.

13 AMULATORY CARE AREA (OPD)

13.1 Waiting Spaces

Apart from the main entrance, general within, subsidiary waiting spaces are required adjacent to each consultation and treatment room in all the clinics. Waiting space for eye clinic should not be subjected to direct-sunlight or glare. Waiting space in the paediatric clinic should provide for minor recreation and play facilities for children.

13.2 Clinic

These clinics include general, medical, surgical, ophthalmic, ENT, dental, Obstetric and gynaecology, paediatrics, dermatology and venereology (optional), psychiatry (optional), neonatology (optional) and orthopaedic. The cubicles for consultation and examination in all clinics should provide for doctor's table, chair, patient's stool, follower's seat, wash basin, examination couch and equipment for examination. The clinics for infectious and communicable diseases should be located in isolation, preferable, in remote corner, provided with independent access and completely cut off from the rest of the hospital. The treatment and dressing room should be spacious enough to accommodate a medicine chest, a work counter for preparing dressings, medicines, sinks, dressing table with screen in between and a pedal operated bin to hold soiled material.

13.2.0 Medical Clinic

The clinic should have a consultation- cum- examination room depending upon the load of out-patients. The clinic should also have facilities for cardiographer examination.

13.2.1 Surgical Clinic

The clinic should have facilities for treatment- cum-dressings. For convenience, this should be placed next to consultation-cum-exam nation room with adequate waiting space.

13.2.2 Eye Clinic

The clinic should include consultation-cum-refraction and minor surgery-cum-treatment room. For testing the state of refractive power of the eye, room length not less than 6m is essential. However by use of mirror length can be reduced. Dark room should be placed close to consultation, Preferable, with an intercommunicating door.

13.2.3 ENT Clinic

The clinic should have facilities for an examination cum treatment sound-proof audiometry room and speech therapy, For testing the state of hearing power of ear, room length of m is advisable.

13.2.4 Dental Clinic

The dental clinic may have facilities for dental hygiene and room for patient's recovery. Consultation- cum-examination room should serve as combined purpose room for consultation, examination, dental surgery and treatment.

13.2.5 Obstetric and Gynaecological Clinic

The clinic should include a separate reception and registration, consulting-cum-examination, treatment and clinical laboratory. The clinic should be planned close to in-patient ward units to enable them to make use of the clinics at time s for ante and postnatal care. The clinic should also be at a convenient distance from other clinic in the OPD. Antenatal patients have to undergo certain formalities prior to examination by the doctors, clinical laboratory for the purpose is essential. A toilet- cum- changing room close to treatment should also be provided.

13.2.6 Paediatric Clinic

The clinic should provide medical care for children up to the age of 12 years. Owing to risk of infection it is essential to isolate the clinic from other clinics. The clinic shall be provided with a separate treatment room for immunisation.

13.2.7 Family Welfare Clinic

The clinic should provide educative, preventive, diagnostic and curative facilities for maternal, child health, school health and health education. Importance of health education is being increasingly recognized as an effective tool of preventive treatment. People visiting hospital should be informed of environmental hygiene, clean habits, need for taking preventive measures against epidemics, family planning, etc. Treatment room in this clinic should act as operating room for IUCD insertion and investigation, etc.

13.2.8 Dermatology and Venereology Clinic (Optional)

The clinic should provide diagnostic and curative facilities for dermatology, sexually transmitted disease and leprosy. The treatment rooms for dermatology and venereology may be combined, but treatment for leprosy should always be segregated. The clinic may also have facilities for superficial therapy and a skin laboratory.

13.2.9 Psychiatric Clinic (Optional)

The facilities required for the clinic should include consultation-cum-examination room, ECT treatment room, recovery, psychologist and a social worker room. The Clinic shall have a one metre high wall and all electrical fittings shall be protected. In ECT room the patient is subjected to electroconvulsive therapy (shock). A resuscitation (recovery) room is needed close to this room.

13.2.10 *Neonatology Clinic (Optional)*

The clinic should include a consultation-cum-examination, counselling room and waiting facilities.

13.2.11 *Orthopaedic Clinic*

The clinic should include arrangements for plaster preparation, fracture treatment, besides consultation-cum-examination. For X-ray facilities the clinic should be in close proximity of radiology department, emergency and accident, in order to make the maximum use of equipment and to reduce the circulation. Plaster and splint storage room is necessary for storing plaster and splint storage room is necessary for storing plaster materials, splints and other therapeutic aids and for preparing plaster, bandages, etc. Fracture and treatment should be spacious enough to accommodate a dressing couch and a mobile X-ray unit. A recovery room adjacent to the fracture and treatment room is essential.

13.3 **Nursing services**

Various clinics under Ambulatory Care Area require nursing facilities in common which include nursing station side laboratory, injection room, social service and treatment rooms, etc.

13.3.1 *Nursing Station for Ambulatory Care Area*

The nursing station shall be centered, such that, it serves to the entire clinic from the place. Need based space required for nursing Station in OPD for dispensing nursing services. (Based on OPD load of patient)

13.3.2 *Side Laboratory*

For quick diagnosis of blood, urine, etc, a side laboratory is required.

13.3.3 *Injection Room*

For administering injection to patients a central injection room should be provided in conjunction with the dispensary.

13.3.4 *Dressing Room*

13.3.5 *Social Services*

A social worker room to render service to the patients may be provided.

14 **DIAGNOSTIC SERVICES**

14.1 **Diagnostic/Imaging –space required for-**

- Separate room for doctors/consultants
- Rooms for reporting
- Space for technicians
- Storage/records areas
- Sufficient waiting areas

14.1.1 *General*

The role of imaging department should be radio diagnosis and ultrasound. Radiology is a fast developing technique and the department should be designed keeping in view the future scope for expansion. The department should be located at a place which is easily to both OPD and wards and also to operation theatre department. Additional space required for –

- Separate room for doctors/consultants
- Rooms for reporting
- Space for technicians
- Storage/records areas
- Sufficient waiting areas

14.1.2 As the department deals with high voltage, presence of moisture in the area should be avoided. Radiography is a device of making pictorial records by means of X-ray at sensitized film whereas fluoroscopy is direct visualization through medium of X-ray.

14.1.3 Radiography and Fluoroscopy Room

The size of the room shall depend upon the type of equipment installed. The room should have a sub-waiting area with toilet facility and a change room facility, if required. Fluoroscopy room shall be completely cut off from direct light through provisions of air-locks. The radiography units should be operated from separate control room or behind a lead mobile protection screen of 1.5 mm lead equivalent wherever necessary.

14.1.4 Film Developing and Processing Room (Dark Room)

Film developing and processing (dark room) shall be provided in the department for loading, unloading, developing and processing of X-ray films. The room should be provided between a pair of radiography rooms so that new and exposed X-ray films may be easily passed through the cassette pan with 2.0 mm lead backing installed the will in between. The room should be completely cut off from direct light through provision of airlock. For ventilation, exhaust fans shall be provided. The room shall have a loading bench (with acid and alkali resistant top), processing tank, washing tank and a sink. Flooring for theorem shall be acid and alkali proof.

14.1.5 Film drying and String

There shall be some space available for film drying and storing near the room for film developing

14.1.6 Treatment Room

Treatment room of the department shall include space for the infra X-ray and contact therapy apparatus which is of simple character, occupies little space and may not need elaborate structural requirements. Gynaecology and ophthalmology clinic make use of this apparatus.

14.1.7 Ultrasound

Ultrasound, a scanning device of imaging department, also requires a small room for use mainly by gynaecology and obstetrics clinic.

14.1.8 Doctor Reporting Room

14.1.9 Technician Space

14.1.10 Storage Area

14.1.11 Record Room

14.1.12 Waiting Room

14.1.13 CT Services

14.2 Clinical Laboratory

The clinical laboratory should be provided with 600 mm wide and 900 mm high bench of length about 2 m per technician and to full width off room for pathologist in charge of the laboratory. Each laboratory bench shall have laboratory sink with swan neck fittings, reagent shelving, gas and power point and under-counter cabinet. Top of the laboratory bench shall be of acid, alkali proof material.

14.2.1 Sample Collection Room

For quick diagnosis of blood, urine, etc a small sample collection room facility shall be provided.

14.3 Blood Storage Unit

Follow existing guidelines and various acts pertaining to setting up Blood Storage Unit.

14.3.1 Bleeding Room

Blood taking also requires a comfortable reception with toilet. Bleeding room should be quiet and not a thoroughfare should be divided into cubicles for privacy. A rest room shall also be provided for donors to rest and take light refreshment before returning home.

15 INTERMEDIATE CARE AREA (INPATIENT NURSING UNITS)

15.1 General

Inpatient nursing units, that is, ward concept is fast changing due to policy of early ambulation and in fact only a few patients really need to be into his bed. The basic considerations in placement wards is to ensure sufficient nursing care, locating them according to the needs of treatment, in respective medical discipline and checking cross infection. Nursing care should fall under the following categories:

- a) *General Wards*- Wards of traditional type for patients who are not critically ill but need continuous care or observation and have to be in bed. These include wards for medical, surgical, ENT and eye disciplines, etc.
- b) *Private Wards (ACs)* - Wards for patients who are in position to pay high towards Medicare. These may be air conditioned.
- c) *Wards for Specialities*- Wards for patients who are suffering and need hospitalization in particular specialities, like, paediatric, obstetrics, gynaecology, dermatology, venereology, psychiatry etc.

15.2 Location

The location of wards should be at a quiet area and ensure freedom from unwanted visitors. General ward units are of repetitive nature and hence they may be conveniently piled up vertically one above the other which will result in efficiency, easy circulation and service economy. Wards for particular specialities, however, should be located closer to their respective department of act as self-contained centres. In such case, post-operative ward may be placed horizontal to operation theatre and maternity ward to the delivery rooms.

15.3 Ward Unit

In planning a ward, the aim should be to minimize the work of the nursing staff and provide basic amenities to the patients within the unit. The distances to be travelled by a nurse from bed areas to treatment room, pantry, etc, should be kept to the minimum. The ward unit may be made of desired number of beds at the rate of 7m² per bed and should be arranged with a minimum distance of 2.25 m between centre of two beds and a clearance of 200 mm between the bed and wall. In wards, the width of doors shall not be less than 1.2 m and all wards should have dado to a height of 1.2 m. Isolation unit in the form of one single bedded room per ward unit in the form of one single bedded room per ward unit should be provided cater for certain cases requiring isolation from other patients. An area of 14m² for such rooms to contain a bed, bedside locker, easy chair for patient, a chair for the visitor and a built in cupboard for storing clothes is recommended. This isolation unit should have separate toilet facilities.

15.4 Type of Wards

Suitable type of design may be adopted for Wards as per needs.

15.5 General Ward Facilities

Each ward unit should have a set of ward ancillaries as given below:

- a) Nursing station
- b) Ward pantry,
- c) Ward store,
- d) Treatment room,
- e) Sluice room/dirty utility,
- f) Day space and Patient conveniences.
- g) Patient conveniences.

15.5.1 Nursing Station

Nursing Station may cater to maximum of 24 to 28 patients. It should be positioned in such a way that the nurse can keep a continuous watch over the patients. The room shall contain a cupboard to hold materials which might otherwise, be placed in clean utility room, a drug cupboard, sink, chair, small table and space for call system points and records. Separate toilet facilities for nurses shall be provided.

15.5.2 Ward Pantry

For collection and distribution of meals and preparation of beverages, a ward pantry shall be provided. It should be fitted with a hot-water supply geyser, refrigerator and a hot case and should have the facilities for storing cutlery, etc.

15.5.3 Ward Store

A store shall be provided for storing the weekly requirements of clothes, bed sheets and other ward equipment.

15.5.4 Treatment Room

Major dressing and complicated treatments should be carried out in the treatment room to avoid the risk of cross-infections.

15.5.5 Sluice Room

A room shall be provided for emptying and cleaning bed pans, urine bottles, and sputum mugs, disposing of used dressing and similar material, storage of stool and urine specimen, etc.

15.5.6 Day Space

For those patients who are allowed to sit and relax, a room shall be provided in the ward unit itself. It should afford an easy access to patient and supervision by the nursing staff and should be provided with easy chairs, book shelves and small tables. It may also serve as dining space.

15.5.7 Patient Conveniences (Sanitary requirements)

These may be provided as per local bye-laws. Toilet for an individual room (single or two bedded) in a ward unit shall be 3.5 m² comprising a bath, a wash basin and WC. Toilet common to serve two such rooms shall be 5.25 m² to comprise a bath, a WC in separate cubicle and a wash basin. For multiple beds of a ward unit, requirement of fitments are given below:

<i>Item</i>	<i>Numbers Required</i>
Water closets	1 for every 8 beds or part thereof (male) 1 for every 6 beds or part thereof (female)
Ablution taps	1 for each water closet plus 1 water tap with drainage arrangement in the vicinity of water closet

Urinals	1 for every 12 beds or part thereof (for male only)
Wash basins	1 for every 12 beds or part thereof
Baths	1 bath with shower for every 12 beds or part thereof
Bed pan washing sinks	1 for each ward in dirty utility and sluice room
Cleaner's sinks and sinks/ mackintosh room	1 for each ward in dirty utility and sluice Slab for cleaning
Kitchen sinks and dishwashers	1 for each ward in ward pantry

15.6 Ward Unit for Particular Specialities

The provisions recommended or general ward unit shall apply with addition requirements as described below.

15.6.1 Obstetric Ward

Maternity service includes antenatal care, delivery and postnatal care. Reform and after birth, the patient should be attended to in the out-patient clinic and during labour the patient is confined to bed in the nursing unit. The out-patient cline should also provide diagnostic facilities for gynaecology patients. Since these services are cyclic, it is recommended to place the inpatient unit close to the out-patient cline making it easily accessible to the child bearing women. The inpatient unit shall comprise (a) delivery suite unit, (b) nursing unit, and (c) neonatal unit, and they should be placed on the same floor.

15.6.2 Nursing Unit

Nursing unit for the department shall include antenatal, postnatal, eclampsia, post operative and gynaecological units.

15.6.3 Prenatal Beds

The female patients admitted for treatment during the period of their pregnancy should be housed in a ward separate from those who have undergone the labour. The ward would need the same facilities as recommended for general ward in 15.5. The ward should also have provision for a fully equipped laboratory. The treatment room should also be bigger in such ward unit.

15.6.4 Toxaemia Beds

These patients fall under prenatal and postnatal category. The ward should either form part of antenatal nursing unit or placed close to delivery suite unit. Nursing of beds shall be one in every 20 postnatal beds. Single and two-bedded rooms with attached toilet should be provided.

15.6.4 Postnatal beds

Patients who have had normal deliveries and do not suffer any complication, calling for medical care are admitted to this ward. The size of the ward depends upon whether the babies are kept with the mother or all babies are kept in the central nursery. It is recommended that in the central nursery. It is recommended that in case of normal deliveries, the health babies may be kept with the mother in the baby cradle attached to the bed side of the patients. The unit should be close to maternity ward. Area per bed for such cases may be suitably increased.

15.6.6 Post-operative Bed

The post-operative bed for the patients who have undergone operation shall be able to accommodate two beds per delivery room including operation delivery room. Area per bed may be 8.75m².

15.6.5 Gynaecological Beds

The proportion gynaecological beds should be 40 percent of the maternity beds.

15.7 Neonatal Unit

Well being of the new born becomes the responsibility of the paediatrician. A separate neonatal unit for premature, high risk babies, and sick new borns should be established as independent unit. Facilities like nurseries, nurses' station, formula-cum-breast feeding room, store, photo therapy and a sluice room should be provided. Since the number of maternity beds for 100 bedded hospitals do not afford a separate neonatal unit these facilities are recommended to be clubbed into paediatric ward.

15.7.2 Septic Nursery

Babies known to be or suspected of being infected shall be kept in an isolated room with cubicles. They should be segregated from normal and premature nurseries. Floor space per bassinet should be 3.4 m².

15.7.3 Normal Nursery

An independent nursery for normal and healthy babies is not considered essential. However, a nursery with 2 to 4 bassinets may be provided. Floor space per bassinet may be 3.5 m²

15.7.5 Photo Therapy Room

A room with on transparent side wall for observation of babies in natural light.

15.7.6 Formula Room

A formula room shall be provided close to the nursery for the preparation of food for the infants who are not fully breastfed. The size of the room shall be increased, if washing and sterilizing of feeding bottles is done in the room.

16 INTENSIVE CARE UNIT

16.1 General

In this unit, critically ill patients requiring highly skilled life saving medical aid and nursing care are concentrated. These should include major surgical and medical cases, held injuries, severe haemorrhage, acute coronary occlusion, kidney and respiratory catastrophe, poisoning, etc. It should be the ultimate Medicare the hospital can provide with highly specialized staff and equipment. The number of patients requiring intensive care may be about 2 to 5 percent of total medical and surgical patients in a hospital. The unit shall not have less than 4 beds or more than 12 beds.

16.1.1 Location

This unit should be located close to operation theatre department and other essential departments, such as X-ray and pathology so that the staff and ancillaries could be shared. Easy and convenient access from emergency and accident department is also essential. This unit will also need all the specialized services, such as, piped suction and medical gases, continuous electric supply, heating, ventilation, air-conditioning and efficient lift services. A good natural light and pleasant environment would also be of great help to the patients and staff as well.

16.1.2 Floor Space

All beds in this unit are to be arranged in glazed cubicles with centrally located nurse's station. The area per bed in this unit should be 10.5 m² to cater for free movement, check against infection and at time utilization of specialized bulky equipment.

16.1.3 Planning of the Ward

The basic consideration in planning should be to have:

- A) A fully visible patients area with adequate space all round for positioning of specialized equipment,
- B) A central nurses station with minimum possible walking distance,

- C) An adequate stock of medicines, and
- D) Distinct clean and dirty utility area where movement of staff and supplies could be minimized.

16.2 Facilities

Various facilities required for the unit are given below.

16.2.1 Nurses Station (Control Console)

This should be planned as an open area with adequate counter space for writing, telephones, patients monitoring equipments, X-ray viewing boxes, etc. Open planning should be adopted for visibility as well as audibility of the entire patients' area. A small pantry space along with the nurses' station may be helpful.

16.2.2 Clean Utility Area

This should contain all the essential supplies, linen, medicines, lotions, syringes, trolleys, various mobile equipment, etc.

16.2.3 Equipment Room and Intensive Care Laboratory

This should provide for immediate clinical tests and investigations. All essential testing equipment should be housed in it.

17 CRITICAL CARE AREA (EMERGENCY SERVICE)

17.1 The department is also termed as casualty wing for emergent cases. Emergency should have separate mobile x-ray/laboratory, side labs/plaster room/and minor OT facilities. Separate emergency beds may be provided. Duty rooms for Doctors/nurses/paramedical staff and medico legal cases. Sufficient waiting area for relatives and located in such a way which does not disturb functioning of emergency services. As, it should preferably have a distinct entry independent of OPD main entry so that a very minimum times is lost in giving immediate treatment to casualties arriving in the hospital. It should be located in the complex of the OPD for reasons of easy accessibility and sharing medical facilities with the OPD. It shall be placed in ground floor of the hospital. Guidance to the route from main gate to the doorways of reception hall shall be endured. The physical facilities of the department should include accommodation for our-patients should include accommodation for out-patients in on block with a separate entrance for ambulance, all facilities for reception and immediate treatment, operation theatres, the necessary supporting services and resuscitation services.

17.2 There should be an easy ambulance approach with adequate space for free passage of vehicles and covered area for alighting patients. The arrangements for reception of trolleys and walking patients should be close by but independent. It should serve as waiting space also for persons accompanying the patients. As the accident cases are closely associated with police department, a separate room for their use shall be provided in this area.

Separate toilet facility for men and women should be provided nearby.

18 THERAPEUTIC SERVICES

18.1 Operation Theatre Staff

Operation theatre suite is technically therapeutic aid in which a team of surgeons, anaesthetists, nurses and sometime pathologist and radiologist operate upon or care for the patients. For optimum utilization of the operation/labour room units, the department, as a rule, should not be reserved rigidly for use by a particular department.

18.1.1 Location

The location of the department should be decided on the following factors:

- a) Quite environment:
- b) Freedom from noise and other disturbances:
- c) Freedom from contamination and possible cross infection:

- d) Maximum protection from solar radiation; and
- e) Convenient relationship with surgical ward, intensive care unit, radiology, pathology, blood bank and CSSD.

This unit also needs constant specialized services, such as, piped suction and medical gases, electric supply, heating, air-conditioning, ventilation and efficient lift service, if the theatres are located on upper floors.

18.1.2 Zoning

A high degree of asepsis should be ensured to provide appropriate environment for staff and patients. For this, the passing of the patients and the equipment through long corridors and other unprotected areas should be avoided. Zoning shall be done to keep the theatres free from micro organisms. There may be four well defined zones of varying degree of cleanliness.

- a) Protective zone (A)-Containing mostly theatre supply, changing rooms, pre-anaesthetic examination room and waiting area.
- b) Clean zone (B)- It includes the casualty theatres recovery wards, plaster room, theatre pack preparation and pre-operative wards.
- c) Aseptic or sterile zone (C) - IT consists of operation theatres, anaesthetic and sterilizing rooms. It shall provide the highest degree of antibacterial precautions.
- d) Disposal or dirty zone (d)- The soiled instrument and dressings are transacted through this area for washing and re-sterilization or disposal. It includes the sluice rooms and disposal corridor.

18.1.3 Circulation

Normally there are three type of traffic flow, namely, (a) patients, (b) staff, and (c) supplies. All these should be properly channelized.

18.1.4 patients

Patients are brought from the ward and should not cross the transfer area in their ward clothing which is a great source of infection. Changeover of trolleys should be affected at a place which will link up both pre-operative and post operative rooms.

18.1.5 Preparation Room (Theatre pack)

It should be a work room for arranging for sutures, dressings and all other surgical items.

18.1.6 Pre-operative Room

Patients are transferred from respective ward to this room for premedication before e operation. Segregation of male and female patients is to be taken care of. The room should have toilet separately for men and women.

18.1.7 Post-operative Resting

Immediately after operation, the patients are kept in a room situated close to the operation theatre/labour room until such time they are found fit to be taken to their parent ward.

18.1.8 Staff

The doctors, nurse, technicians and class IV staff should enter from a separate route and through a set of change rooms and an air lock. They should communicate with the sterile corridor. A shoe change and growing space near the air lock shall also be provided. Separate change rooms for doctors, nurses and technicians shall be provided, with arrangement for lockers, bathing and toilet facilities.

18.1.9 Supplies

All sterile goods should have a separate entry point reaching the clean corridor independently; soiled material should be taken out by the exit only. Store room shall be provided for storing theatre supplies like stretcher, trolley, sterile material, medical gas cylinders, instruments and linen.

18.1.10 *Operation Theatre*

Operating room should be made dust-proof and moisture proof. Corners and junctions of walls, floor and ceiling should be rounded to prevent accumulation of dust and to facilitate cleaning. All doors should be two leaf types with a minimum 1.5 m width and shall have self closing devices. General Illumination is provided by means of fluorescent tubes. There should be provision of gas pipe line for Oxygen, Nitrous Oxide, compressed air and suction etc. The operating room/labour room should be normally arranged in pairs with scrub-up and instrument sub-sterilizing room. There should be provision of gas pipeline through manifold.

18.1.11 *Scrub-up*

In this room operating team washes and scrub-up their hand and arms, put on their sterile gown, gloves and other cover before entering the operation theatre. It should have a single leaf door with self closing device and viewing window to communicate with the operation theatre. A pair of surgeon's sinks with elbow or knee operated taps are essential.

18.1.12 *Instrument Sterilization*

It is a sub-sterilizing unit attached to the operation theatre limiting its role to operating instruments on an emergency basis only. This room should be equipped with high pressure, quick sterilization apparatus. Instrument Cupboard and a work bench sinks are essential.

18.1.13 *Disposal*

Theatre refuse, such as dirty linen used instruments and other disposable/non-disposable items should be removed to a room after each operation. Non-disposable instruments after initial wash are given back to instrument sterilization and rest of the disposable items are disposed off and destroyed. Dirty linen is sent to laundry through a separate exit. The room should be provided with sink, stop sink, work bench and draining boards.

18.2 Delivery Suite Unit

The delivery suite unit should include the facilities of accommodation for various facilities as given below.

18.2.9 *Reception and Admission*

As the patient many a time arrives in a state of imminent delivery, the registration counter should open into an entrance lobby.

18.2.10 *Examination and preparation Room*

The room should accommodate one or two beds and provide space for the doctor with the work table, etc. A change room with attached toilet facilities shall be provided with the examination cubicle. The provision of lockers for keeping personal clothes and articles may also be kept in view.

18.2.11 *Labour Room*

Labour rooms should preferably be in the form of cubicles; two labour rooms for every 10 maternity beds. As birth follows labour, the labour room should be placed adjacent to delivery rooms. The examination cum-preparation room and labour room may be combined into a single room.

18.2.12 *Delivery Rooms*

Delivery rooms shall be of the following types:

- a) Clean delivery room for normal deliveries, and
- b) Operation theatre for caesarean.

One delivery bed shall be provided for every 10 maternity beds. The size of the operating theatre for caesarean shall be the same as that of the operating theatres. Sterility and other requirements shall be maintained like operation theatres department.

18.2.13 Sterilizing Rooms

The facilities for sterilization of the equipment in the delivery suites should be provided. This room should house a work counter, sink, small high-speed pressure instruments sterilizer, etc.

18.2.14 Sterile Store Room

Close to the sterilizing room, a room to store sterile material should be provided. It should provide with issue windows.

18.2.15 Scrubbing Room

Scrub-up facilities may be provided tow delivery rooms similar to those provided in operation theatre department.

18.2.16 Dirty Utility

For collection and transferring of blood stained clothes to the laundry unit, a sluice room shall be provided. It is desirable to install mechanical aid for washing of bed pans, urinals, etc.

18.2.17 Other Facilities

Other facilities for the unit should include change rooms for doctors, nurses, technicians, anaesthesia room, pack preparation room, instrument and lines storage, recovery room, etc, and these should be identical to operation theatres department. They should be arranged in the same degree so asepsis.

18.3 Physiotherapy

The physiotherapy department provides treatment facilities to patients suffering from crippling diseases and disabilities. Treatment may be classified as physical and electro-therapy, hydro-therapy and exercise (gymnasium).

18.3.1 Location

The department is more frequently visited by out-patients but should be located at a place which may be at convenient access to both outdoor and indoor patients. Availability of natural light, fresh air and adequate ventilation are of extreme importance for the department. Physiotherapy demand complete privacy. Accommodation should therefore be provided into eh form of booth. A long provided with curtains which could be drawn to form cubicle and afford adequate privacy should be suitable.

18.3.2 Physical and Elector-therapy

The nature of treatment and equipment employed may be of various kinds, such as, electrotherapy, thermotherapy, traction and massage, etc. Each Cubical for treatment should be large enough for the physiotherapist to work on either side of table without having to move the equipment. Cubicles should be divided by curtains for easy movement of wheel chairs and stretcher.

18.3.3 Gymnasium

A large hall shall be provided for group or individual exercise activities including parallel bars, pulleys, wall bars, ladders, etc. It is used extensively by patients in wheel chairs, crutches or with walking sticks or other disabilities which limit motion and ability. It may be oblong in shape with the wall bar and climbing bars fixed to one of the long walls. Mirrors should be provided for correcting walking disabilities. Flooring of gymnasium shall be wooden parquet type.

18.3.4 *Office*

The physiotherapist should have an office room where patients may be interviewed and examined. In addition, there shall be sufficient space for staff to maintain clinical records of patients.

18.3.5 *Store*

Articles and equipment which are not in use should have space for storage.

18.3.6 *Toilets*

Separate toilet facility for patient should be provided and they should be designed to accommodate wheel chairs.

19 HOSPITAL SERVICES

19.1 Hospital Kitchen (Dietary Service)

The dietary service of a hospital is an important therapeutic tool. Properly rendered, it shall be a clinical and administrative means of stimulating rapid recovery of patients thereby shorting patients stay in the hospital. The aim in hospital catering, therefore, should be to produce well cooked, appetizing and nutritious food as economically as possible. The achievements of this objective shall depend on administrative efficiency of the staff, planning department, layout and equipment. The hospital kitchen could be alone responsible for spreading diseases if hygienic conditions are not maintained. Use of cooking gas and electricity will definitely improve the hygienic conditions of a hospital kitchen. Good natural light and ventilation is of great importance

19.1.9 Location

Location should ensure that any noise or cooking odours emanating from the department do not cause any inconvenience to the other departments. At the same time the location should involve the shortest possible time in delivering food to the wards.

19.2 Central Sterile and Supply Department (CSSD)

Sterilization, being one of the most essential services in a hospital, requires the utmost consideration in planning. Centralization increases efficiency, results in economy in the use of equipment and ensure better supervision and control. The materials equipment dealt in CSSD should fall under three categories; (a) those related to the operation theatre department, (b) common to operation and other departments, and (c) pertaining to other departments alone. Boiler room is to be provided.

19.2.1 Location

Since the operation theatre department is the major consumer of this service, it is recommended to locate the department at a position of easy access to operation theatre department.

19.3 Hospital Laundry

Laundrying of hospital lines shall satisfy two basic considerations namely, cleanliness and disinfection. Manual/electric laundry can be provided with necessary facilities for driving. Pressing and storing of soiled and cleaned linens. Air change in laundry area may be 10 times per hour.

19.4 Manifold Room

19.5 Boiler Room

19.6 Medical and General Stores

Hospital stores comprise of stores needed for various hospital functioning and should be grouped centrally in the service complex. The area for each type of stores should be utilized to the optimum by providing built in shelves at different heights according to the type of stores. Adequate ventilation and security arrangement shall be provided. Stores should also be provided with fire fighting arrangement.

19.7 Mortuary

Mortuary shall provide facilities for keeping of dead bodies and conducting autopsy. It should be so located that the dead bodies can be transported unnoticed by should have direct access to the mortuary. The mortuary shall have facilities for walk in cooler, post mortem area, etc.

20 ENGINEERING SERVICES

20.1 Electrical Engineering

20.1.1. Sub Station and Generation

Electric substation to accommodate transformer, HT/LT panel and generation set to meet the electrical load requirements of the hospital shall be provided. Standby generators should be provided to generate power requirements for essential and critical areas of the hospital, like, OT/LR, radiology department etc.

20.1.2 Illumination

For requirements for day lighting in hospital building reference may be made to IS 2440. The level of illumination for various visual tasks shall be provided in accordance with IS 4347. General lighting of all hospital areas except stores and lavatory block shall be fluorescent. In other area, it is recommended to be of incandescent lamps. Electrical installations except for artificial illumination shall be in accordance with IS 732, ARE 8030 and SP 30.

20.1.3. Shadow-less Light

Shadow-less light (mountable type) shall be provided in operation theatres and operating delivery rooms whereas in other areas, where operation of minor nature are carried out, shadow-less light (portable type) shall be provided.

20.1.4 Emergency Lighting

Emergency portable light unit should also be provided in the wards and departments to serve as alternative source of light in case of power failure.

20.1.5 Lighting protection

The lighting protective system of hospital buildings shall be in accordance with IS 2309.

20.1.6 Call Bells

Call bells (see IS 2268) with switches for all beds should be provided in all types of wards with indicator lights and location indicator situated in the nurses duty room of the wards.

20.1.7 Ventilation

Ventilation of hospital buildings may be achieved by either natural supply and natural exhaust of air, or natural supply and mechanical supply and mechanical exhaust of air. The following standard of general ventilation are recommended for various areas of the hospital building based on maintenance of required oxygen, carbon-dioxide and other air quality levels and for the control of body odours when no products of combustion or other contaminants are present in the air or anaesthesia gases, which are highly explosive, are present:

<i>Space to be a Ventilated</i>	<i>Air Changes per Hour</i>
Bathrooms/toilets	6-12
Wards	8-12
Kitchens	6-9
Operation theatres	18-20
Other air-conditioned spaces	8-10

20.1.8 The general principles of natural ventilation shall be in accordance with IS 3362. Where adequate air changes cannot be obtained by natural ventilation, mechanical ventilation either by exhaust of air or by positive ventilation (like fans and other equipment) or combination of the two shall be provided. Fans and other equipment for mechanical ventilation may be allocated in convenient position having regard to the intake of fresh air, accessibility for maintenance and noise control. Exhaust fans

shall be provided in walls on one side or in the attic or roof. The exhausted air shall not find entry back into hospital.

20.2 Mechanical Engineering

20.2.1. Air-conditioning and Room Heating

Air conditioning units shall be provide only for the operation theatre and neonatal unit. However, air- coolers or hot air convectors may be provided for the comfort of the patients and the staff depending upon the local needs.

20.2.2. Refrigeration

Hospitals shall be provided with water coolers (see is 1475) and refrigerator (see IS 1474) in wards and departments depending upon the local needs.

20.3. Public Health Engineering

20.3.1. Water Supply

Arrangements shall be made to supply 100000 litres of potable water per day to meet all the requirements (including laundry) except fire fighting. Storage capacity for 2 days requirements should be on the basis of the above consumption. Round the clock water supply above consumption. Round the clock water supply shall be made available to all wards and departments of the hospital. Separate reserve emergency overhead tank shall be provided for operation theatre. Necessary water storage overhead tanks with pumping/boosting arrangement shall be made. The laying and distribution of the water supply system shall be according to the provisions of IS 2065. Cold and hot water supply piping should be run in concealed form embedded into wall with full precautions to avoid any seepage.

20.3.2. Drainage and Sanitation

The design, Construction and maintenance of drains for waste water, surface water, sub-soil water and sewerage shall be in accordance with IS 1742.

20.3.2.1 The selection, installation and maintenance of sanitary appliances shall be in accordance with IS 2064. The design and installation of soil waste and ventilating pipes shall be as given in IS 5329.

20.3.2 Waste Disposal System

The guidelines provided by Central Pollution Control Borer, Ministry of Environment and Forests shall be followed.

20.4 Fire protection

20.4.1 First-aid Fire-fighting Equipment

Adequate first-aid, fire-fighting equipment shall be provide and installed in accordance with IS 2190

20.4.2 Fire Alarm

Manually-operated fire alarm facilities shall be provided in hospital building which sound and audible alarm in administrative department engineering service offices, fire office and such other location where gongs, sirens, whistles or bells don not disturb the patients. Distinctive visual or audible alarm shall be installed at each nurse's duty room, duty station and used for fire alarm purpose only. Hospital may also be equipped with automatic fire alarm system conforming to IS 2189.

20.5 Telephone and Intercom

Wiring in conduits shall be provided to give telephone outlet points in rooms, wards and departments as desired by the authority. An intercom system may also be provided in addition to

the telephones. The communication system should be adequately designed in hospitals for alerting all persons charged with duties for patient care and all employees of the hospital who are within the building in the event of emergency. The alerting system shall be capable of being operated from intercoms, telephones and the administrative office.

20.6 Medical Gas

Medical gases comprise mainly of Oxygen and nitrous oxide. Central piped gas line with manifold area should be made available.

20.6.1 Manifold Medical gas supply through centralized gas supply system may also be considered including N₂O, Oxygen & CO₂.

20.6.2 Cooking Gas

For better hygienic condition use of LPG (liquefied petroleum gas) cylinders is recommended.

20.8 Laboratory Gas

LPG (liquefied petroleum gas) cylinders should be made available for pathological lab. Alternatively, kerosene stove may be made available where gas supply is not available.

20.9 Building Maintenance

An office-cum store should be provided to handle day to day maintenance work of the hospital building

20.10 Horticulture

To maintain the hospital landscaping a room to store garden implements, seeds etc, should be provided.

20.11 Parking

Sufficient parking space shall be provided as per bye law. Dedicated parking space for physically disabled's vehicle should be provided.

21 ADMINISTRATIVE SERVICES

21.1 General Administration

The administration department of hospital shall essentially look after organized group of people. Patients and resources in order to accomplish the task of providing best patient care. IT shall have two main sections, namely general and medical records. General section shall deal with all matters relating to overall upkeep of the hospital as well as welfare of its staff and patients. Medical records section shall function for professional work in diagnosis, treatment and care of patients.

ANNEX A
(Clause 4.2.11)
FUNCTIONAL PROGRAMME

<i>Zone Service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>
(1)	(2)	(3)	m ² (4)	m ² (5)
Entrance Area			420.00	4.20
	<i>Main Entrance</i>	25.0	175.00	1.70
	Entrance lobby		49.00	
	-Trolley park	1.5		
	-General waiting	3.5		
	-Public utilities	2.0		
	Reception		63.00	
	-Enquire counter	1.5		
	-Registration counters	1.5		
	-Queuing tracks	2.0		
	-Records	2.0		
	-Staff accommodation	2.0		
	Dispensary		63.00	
	-Issue counter	2.0		
	-queuing tracks	2.0		
	-Drugs store	2.0		

	-Staff accommodation	3.0			
OPD/Emergency Entrance			25.0	175.00	1.75
	Entrance Lobby			49.00	
	-Trolley park		1.5		
	-General waiting		3.5		
	-Public utilities	2.0			
	Reception			70.00	
	-Enquiry counter		1.5		
	-Admission/discharge	1.5			
	-Cash counter	1.5			
	-Queuing track	2.0			
	-Staff accommodation	2.0			
	Arcade			35.00	
	-Chemist		2.0		
	-Gift, book shop	1.5			
	-Snack counter	1.5			

<i>Zone Service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per</i>
(1)	(2)	(3)	m ²	Bed m ²
	Control Room		21.00	
	-Security/fire	1.5		
	-Ambulance station	1.5		
<i>Service/Staff Entrance</i>		10.0	70.00	0.70
	Landing Bay		42.00	
	-Trolley park	2.0		
	-Temporary storage	2.0		
	-Central receipt/inspection	2.0		
	Staff utilities		28.00	
	-Lockers	1.5		
	-Change rooms	1.5		
	-Time keeping	1.0		
Ambulatory Care Area Clinics (Required)			931.00	9.31
			86.00	6.02
	General Clinic's		56.00	
	-Exam/Consultation (2)	4.0		
	-Sub-waiting	4.0		
	Medical		56.00	
	-Exam/Consultation (2)	4.0		
	-Sub-waiting	4.0		

	Dermatology and Veneriology		63.00	
	-Exam/Consultation	2.0		
	-Skin lab	2.0		
	Treatment	2.0		
	-Sub-waiting	3.0		
	Psychiatry		66.50	
	-Exam/Consultation	2.0		
	-Counselling	2.0		
	-ECT and recovery	2.5		
	Sub-waiting	3.0		
	Neonatology		49.00	
	-Exam/Consultation	2.0		
	-Counselling	2.0		
	-Sub-waiting	3.0		
<i>Nursing Services</i>		21.5	150.50	1.50

<i>Zone Service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Nursing station		35.00	
	-Nurse's desk	2.0		
	-Clean utility	1.5		
	-Dirty utility	1.5		
	Diagnostic		63.00	
	-Sample collection	1.5		
	-Side laboratory	2.5		
	-Electrocardiography	2.0		
	-Sub-waiting	3.0		
Diagnostic Services			595.00	5.95
<i>Imaging</i>			50.0	350.00
	Reception		63.00	
	-Enquiry/Registration	2.0		
	-Queuing track	2.0		
	-Records	2.0		
	-Sub-waiting	3.0		
	General X-ray		63.00	
	-Radiography room	4.00		
	-Control room	1.00		
	-Change room	1.00		
	-Sub-waiting	3.00		

Special X-ray		87.50
-Radiography room	5.0	
-Control room	1.0	
-Change room	1.0	
-Toilet	1.0	
-Barium Preparation	1.5	
-Sub-waiting	3.0	
Ultrasound		35.00
-Ultrasound	2.0	
-Change room	1.0	
-Sub-waiting	2.0	
Support		52.50
-Dark rooms	2.0	
-Film/Chemical Store	1.5	
-Reporting	2.5	
-Archive/Record	2.0	

<i>Zone Service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i> m2	<i>Area per</i> <i>Bed</i> m2
(1)	(2)	(3)	(4)	(5)
	Staff		49.00	
	-Consultant (1)	2.0		
	-Residents	2.0		
	-Technicians	2.0		
	-Staff toilets	1.0		
<i>Clinical Laboratories</i>		25.0	175.00	1.75
	Reception		49.00	
	-Enquiry/Record	2.0		
	-Sample receipt and preparation	2.0		
	-Sub-waiting	2.0		
	-Toilets	1.0		
	Laboratories		56.00	
	-Emergency	2.0		
	-Immunopathology	2.0		
	-Histology	2.0		
	-Cytology	2.0		
	Support		35.00	
	-Washing and disinfection	2.0		
	-Media preparation	1.5		
	-Chemical/Glassware store	1.5		

	Staff			35.00		
	-Pathologist (1)	2.0				
	-Technicians	2.0				
	-Staff toilets	1.0				
Blood Bank		10.0		70.00		7.00
	-Reception/Waiting	2.0				
	-Bleeding	2.0				
	-Refreshment/Donors rest room	2.0				
	-Blood lab/Storage	2.0				
	-Doctors rest room	2.0				
Intermediate Care Area				1575.00		15.75
General Wards (2x30 Beds)		120.00		840.00		8.40
Nursing station				168.00		
	-Nurses desk	(2)	3.0			
	-Clean Utility	(2)	3.0			
	-pantry	(2)	3.0			

<i>Zone Service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>
			m2	m2
(1)	(2)	(3)	(4)	(5)
	-Store	(2)	3.0	
	-Treatment room	(2)	4.0	
	-Dirty utility/Sluice room (2)		4.0	
	-Janitor	(2)	1.0	
	-Trolley park (2)		3.0	
	Patient beds		476.00	
	-General beds 2x24		48.0	
	-Isolation beds 2x2		8.0	
	-Progressive Beds 2x4		12.0	
	Patient conveniences (2)	9.0	63.00	
	Day space (2)	9.0	63.00	
	Staff accommodation		70.00	
	-Nurse duty ¹⁾	(2)	5.0	
	-Nurse duty ¹⁾	(2)	5.0	
Private Ward-A/C Non A/C 9 Beds (Optional)		40.0	280.00	2.80
	Nursing station		84.00	
	-Nurses desk		1.5	
	-Clean utility	1.5		
	-Pantry		1.5	
	-Treatment room		2.0	

	-Dirty utility/Sluice room	2.0			
	-janitor		0.5		
	-Trolley park	1.5			
	Patient beds			143.00	
	-Single beds ¹⁾	5	12.5		
	-Double beds ¹⁾	2	8.0		
	Visitors bay	2.5		17.50	
	Staff accommodation			35.00	
	-Nurses duty ¹⁾		2.5		
	-Doctors duty ¹⁾		2.5		
Maternity Ward 15 Beds			<u>40.00</u>	<u>280.00</u>	<u>2.80</u>
	Nursing station			84.00	
	-Nurses desk		1.5		
	-Clean utility	1.5			

<i>Zone Service</i>	<i>Functions</i>	<i>Module Area</i>	<i>Area per Bed</i>	
			m2	m2
(1)	(2)	(3)	(4)	(5)
	-Pantry	1.5		
	-Store	1.5		
	-Treatment	2.0		
	-Dirty utility	2.0		
	-Janitor		0.5	
	-Trolley park	1.5		
	Maternity beds		133.00	
	-Prenatal beds	5	6.0	
	-Toxaemia beds	2	3.0	
	-Delivery beds	4	4.0	
	-Post natal Bes with baby bassinets	4	6.0	
	Patient conveniences	2.0	14.00	
	Day space	2.0	14.00	
	Staff accommodation		35.00	
	-Nurses duty ¹⁾		2.5	
	-Doctors duty ¹⁾		2.5	
Paediatric Ward 6 BEDS		<u>25.0</u>	<u>175.00</u>	<u>1.75</u>
	Nursing Station		77.00	
	-Nurses desk		1.0	
	-Clean utility including formula room	1.5		
	-pantry		1.5	
	-Store		1.5	

-Treatment room including phototherapy		2.0	
-Dirty utility/Sluice		1.5	
-Janitor		0.5	
Trolley park	1.5		
Patient beds			49.00
-paediatric beds	4	5.0	
-Premature nursery	1	1.0	
-Septic nursery	1	1.0	
-Patient conveniences	1.5		10.50
-Day space	1.5		10.50
Staff accommodation			28.00

<i>Zone Service</i>	<i>Function</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>	
(1)	(2)	(3)	(4)	m2	m2
				(5)	
	-Nurses duty1)	2.0			
	-Doctors duty1)	2.0			
Intensive Care Area			196.00	1.96	
<i>Patient Care Area</i>		28.0		196.00	1.96
	Nursing station			87.50	
	-Central console	3.0			
	-Clean utility	1.5			
	-Pantry	1.5			
	-Store	1.5			
	-Equipment park	1.5			
	-Dirty utility	1.5			
	-Janitor	0.5			
	Trolley park	1.5			
	Patient Beds			66.50	
	Intensive care beds 4	6.0			
	-Patient conveniences	1.5			
	-Relatives Bay	2.0			
	Staff accommodation		42.00		
	-Nurses duty1)	2.5			

	-Doctors duty1)	2.5			
	-Staff Change	1.0			
Critical Care Area				469.00	4.69
<i>Emergency Service</i>		67.0	469.00		1.69
	Nursing station			150.50	
	-Nurses desk	1.5			
	-Clean utility	1.5			
	-ECG room	2.0			
	-Pantry	1.5			
	-Reception	2.0			
	-Medico-legal specimen and record	1.5			
	-Emergency lab	3.0			
	-Mobile X-ray	3.0			
	-Dirty utility	1.5			
	-Janitor	0.5			
	-Trolley park	1.5			
	-Stores	2.0			

Zone Service	Function	Module	Area	Area per Bed
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Exam/Resuscitation 6 beds		147.00	
	-waiting	3.0		
	-Social Worker	1.5		
	-Police/Legal recording	1.5		
	-Drug dispensing	2.0		
	-Examination cubicles	3.0		
	-Emergency beds 3	4.5		
	-Observation beds 3	4.5		
	-Patient conveniences	1.0		
	Operating suite		119.00	
	-Emergency OT	4.5		
	-Scrub/Gowning	1.5		
	-Instrument sterilization	1.5		
	-Dirty utility	1.5		
	-Anaesthesia	2.0		
	-Plaster room	3.0		
	-Treatment room	3.0		
	Staff accommodation		52.50	
	-Nurses duty1)	2.5		
	-Doctors duty1)	2.5		
	-Ambulance driver/	2.5		

nursing Assistant

Therapeutic Services

875.00

8.75

Operation Theatre suite

63.0

441.00

4.41

Protective zone

161.00

Staff changing (3 units)

- Lockers 2.0
- Change room/Staff resting 3.5
- Rest room 2.0
- Pantry 1.5
- Staff conveniences 1.5

Staff accommodation

- Nurses duty1) 2.5
- Anaesthetist's duty1) 2.5

Theatre supply (stores)

- pre-anaesthesia exam 2.0
- Waiting 2.5

Zone Service

Functions

Module

Area

Area per Bed

m2

m2

(1)

(2)

(3)

(4)

(5)

Clean zone

154.00

Nursing station

- Nurses desk 1.5
- Clean utility 1.5
- janitor 0.5
- Trolley park 1.5

Patient beds

- Pre-anaesthesia 2 3.0
- Recovery 2 3.0
- Patient conveniences 1.5
- Theatre pack prep 2.0
- frozen section 1.0
- Plaster room 2.5
- X-ray with dark room 2.5

Sterile zone

112.00

- Operating theatres (2) 9.0
- Scrub/Gowning 2.0
- Instrument trolley layup 2.0
- Anaesthesia 3.0

Disposal zone

14.00

- Dirty utility 2.0

Delivery Suite	40.0	280.0	2.80
	_____	_____	_____
Patient area		84.0	
Nursing station			
-Nurses desk	1.5		
-Clean utility	1.5		
-Janitor	0.5		
-Trolley park	1.5		
Patient beds			
-Exam/Prep 3	3.0		
-Recovery 2	3.0		
-Patient conveniences	1.0		
Staff area		21.00	
Staff changing (3 units)			
-Lockers	1.5		
-Change rooms	1.5		

<i>Zone service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Staff conveniences		21.00	
	-pantry	1.5		
	-Staff conveniences	1.5		
	Delivery area		154.00	
	-Labour rooms (3)	4.5		
	Delivery room (2)	6.0		
	-Scrub/Gowning	2.0		
	-Clean utility	2.0		
	-Anaesthesia	2.0		
	-Nursery-baby bath	1.0		
	-Dirty utility	1.5		
	-Sterile storage	1.5		
	-Instruments and linen	1.5		
		_____	_____	_____
<i>Physiotherapy</i>		22.0	154.00	1.54
		_____	_____	_____
	Therapies		119.00	
	-Reception/Record	2.0		
	-Electrotherapy	3.0		
	-Thermotherapy	1.5		
	-Massage therapy	1.5		
	-Gymnasium	5.0		

	-Traction	2.0			
	-Store	2.0			
	Staff accommodation and patient waiting			35.00	
	-Physiotherapist with attached	2.5			
	-Sub-waiting with toilet	2.5			
				700.00	7.00
Hospital Services					
			22.0	154.00	1.54
<i>Hospital Kitchen</i>					
	Entrance			10.50	
	-Lockers	0.5			
	-Staff change	1.0			
	Bulk storage	1.5		10.50	
	Day store	1.0	7.00		
	Pre-preparation	1.0		7.00	
	Preparation	2.0		14.00	

Zone service	Functions	Module	Area	Area per Bed
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Cooking/Baking	4.5	31.00	
	Loading/Distribution	1.5	10.50	
	Washing		17.50	
	-Trolley wash	1.5		
	-Utensil and pot wash	1.0		
	Utensil storage	1.5	10.50	
	Trolley park	1.5	10.50	
	Staff accommodation		17.50	
	-Dietician	1.5		
	-Dietetics staff	1.0		
	Staff conveniences	1.0	7.00	
<i>Central Sterile Supple</i>		20.0	140.00	1.40
	Entrance		10.50	
	-Lockers	0.5		
	-Staff change	1.0		
	Dirty receipt	1.0	7.00	
	Washing/Disinfection	2.5	17.50	

	Assemble	1.5	10.50	
	Sterilization		2.0	14.00
	Sterile storage		3.0	21.00
	Delivery/Distribution	1.5	10.50	
	Trolley wash		1.0	7.00
	Trolley park		1.5	10.50
	Bulk store		1.5	10.50
	Staff accommodation			17.50
	-CSS supervisor		1.5	
	-Technical staff		1.0	
	Staff conveniences	0.5	3.50	
			-----	-----
<i>Hospital Laundry</i>			22.0	154.00
			-----	-----
	Entrance			10.50
	-Lockers		0.5	
	-Staff change		1.0	
	Dirty Receipt		1.0	7.00
	Sorting/Weighing		1.5	10.50

Zone service	Functions	Module	Area	Area per Bed
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Sluicing	1.0	7.00	
	Washing	2.5	17.50	
	Hydro-extraction	2.0	14.00	
	Tumble drying	1.5	10.50	
	Flat work ironing	1.5	10.50	
	Hand pressing	1.0	7.00	
	Clean storages	1.0	7.00	
	Mending	1.0	7.00	
	Delivery/Distribution	1.5	10.50	
	Trolley wash		1.0	7.00
	Trolley park		1.0	7.00
	Staff accommodation			17.50
	-Laundry supervisor	1.5		
	-Laundry staff		1.0	
	Staff conveniences	0.5	3.50	
			-----	-----
Medical & General Stores			26.0	182.00
			-----	-----
	Surgical and dressing	4.5	31.50	

	Linen and livery	2.0	14.00	
	Stationery and printing	2.0	14.00	
	Chemical and Glassware	2.0	14.00	
	Sanitation and misc	2.0	14.00	
	Furniture	4.5	31.50	
	Issue	2.0	14.00	
	Trolley Park	1.5	10.50	
	Awaiting condemnation	1.5	10.50	
	Staff accommodation		28.00	
	-Stores officer	1.5		
	-Secretarial staff	1.0		
	-Store keepers	1.5		
Mortuary		10.0	70.00	0.70
	Autopsy	3.0	21.00	
	Body store	1.5	10.50	
	Body wash	1.5	10.50	
<hr/>				
Zone service	Functions	Module	Area (m2)	Area / Bed (m2)
(2)		(3)	(4)	(5)
	Staff accommodation	1.5	10.50	
	Public utilities	0.5	3.50	
	Sub-waiting	2.0	14.00	
Engineering Services			392.00	3.92
Electrical			14.0	0.98
	Sub-station	4.5	31.50	
	Standby generator	4.5	31.50	
	U.P.S	1.5	10.50	
	Workshop	1.5	10.50	
	Switch room	2.0	14.00	
Mechanical			14.0	0.98
	Lifts	5.0	35.00	
	Air-conditioning	5.5	38.00	
	Boilers	1.5	10.50	
	Solar energy	-	-	
	Air handling unit	2.0	14.00	
Public Health			8.0	0.56
	Water supply	2.0	14.00	

	Sewage disposal		2.0		14.00	
	Solid waste disposal	2.0			14.00	
	Incineration		2.0		14.00	
			-----		-----	-----
<i>Fire Protection</i>			4.5		31.50	0.31
			-----		-----	-----
	Fire detection		1.5		10.50	
	Fire fighting (water storage)		2.0		14.00	
	Fire extinguishers		1.0		7.00	
			-----		-----	-----
<i>Communication</i>			4.5		31.50	0.32
			-----		-----	-----
	Supervisor	1.0			7.00	
	Telephone exchange	2.0			14.00	
	Public address system	1.5			10.50	
			-----		-----	-----
<i>Medical gases and vacuum</i>		7.0			49.00	0.49
			-----		-----	-----
	Landing bay		1.5		10.50	
	Manifold		2.5		17.50	
Zone service	Functions	Module		Area		Area per Bed
				m2		m2
(1)	(2)	(3)		(4)		(5)
	Compressor	1.5		10.50		
	Vacuum	1.5		10.50		
			-----	-----		-----
<i>Workshop</i>		4.0		28.00		0.28
			-----	-----		-----
	Electro-mechanical	2.0		14.00		
	Bio-medical	2.0		14.00		
			-----	-----		-----
Administrative/Ancillary Services				448.00		4.48
			-----	-----		-----
<i>Hospital Administration</i>			9.0		63.00	0.63
			-----		-----	-----
	Medical superintendent	3.0		21.00		
	Secretarial staff	3.0		21.00		
	Sub-waiting	3.0		21.00		
			-----	-----		-----
<i>Nursing Administration</i>			7.0		49.00	0.49
			-----		-----	-----
	Matron	2.0		14.00		
	Secretarial staff	3.0		21.00		
	Sub-waiting	2.0		14.00		
			-----	-----		-----
<i>General Administration</i>			12.0		84.00	0.84
			-----		-----	-----

	Personnel office	2.0	14.00		
	Accounts office	2.5	17.50		
	Purchase office	2.5	17.50		
	Secretarial staff	3.0	21.00		
	Sub-waiting	2.0	14.00		
		_____	_____		_____
<i>Hospital Information</i>		4.5	31.50	0.31	
		_____	_____		_____
	Supervisor	1.5	10.50		
	Computer room	3.0	21.00		
		_____	_____		_____
<i>Security/Fire</i>		2.5	17.50	0.17	
		_____	_____		_____
	Supervisor	1.5	10.50		
	Secretarial Staff	1.0	7.00		
		_____	_____		_____
<i>Mobile Transport</i>		2.5	17.50	0.17	
		_____	_____		_____
	Supervisor	1.5	10.50		
	Secretarial staff	1.0	7.00		
		_____	_____		_____
<i>House Keeping</i>		2.5	17.50	0.17	
		_____	_____		_____
	Supervisor	1.5	10.50		
	Secretarial staff	1.0	7.00		
		_____	_____		_____
<i>Library/Conference</i>		14.0	98.00	0.98	
		_____	_____		_____

<i>Zone service</i>	<i>Functions</i>	<i>Module</i>	<i>Area</i>	<i>Area per Bed</i>
			m2	m2
(1)	(2)	(3)	(4)	(5)
	Supervisor	1.5	10.50	
	Secretarial staff	1.5	10.50	
	Index/Issue counter	2.0	14.00	
	Storage racks	2.0	14.00	
	Reading bays	1.5	10.50	
	Conference room	4.0	28.00	
	Reprographics	1.5	10.50	
		-----	-----	-----
Medical Records		10.0	70.00	0.70
		-----	-----	-----
	Receipt	1.0	7.00	
	Compilation desk	1.5	10.50	
	Indexing/ Coding	1.0	7.00	
	Statistical analysis	1.5	10.50	
	Issue	1.0	7.00	
	Stationery store	1.0	7.00	
	Staff accommodation		17.50	
	-Medical records officer	1.5		
	-Secretarial staff	1.0		
	Staff conveniences	0.5	3.00	

ANNEX B

(Clause 4.2.11)

SUMMARY OF AREA REQUIREMENT PER BED

Particulars	Area per Bed
Entrance area	4.20
Ambulatory	9.31
Diagnostic services	5.95
Intermediate care area	15.75
Intensive care area	1.96
Critical care area	4.69
Therapeutic services	8.75
Hospital services	7.00
Engineering services	3.92
Administrative/ Ancillary services	4.48
	—————
	66.01
	—————
Add 40 percent for circulation space including corridors	26.40
	—————
	92.41
	—————
	92.50

ANNEX C (Clause 9.1)

MANPOWER REQUIREMENTS FOR NURSING STAFF

Normal Wards	1 Staff nurse/ Nursing sister for every 6 beds
Special Wards	1 Staff nurse/ Nursing sister for every 4 beds
Nursery	1 Staff nurse/ Nursing sister for every 2 beds
ICU (Intensive Care Unit)	1 Staff nurse/ Nursing sister for every bed
Labour Room	1 Staff nurse/ Nursing sister for every board/ table
Operation Theatre	
• Major	Two staff nurses/nursing sister for every functional operation table, including recovery room
• Minor	One staff nurse/Nursing sister for every functional operation table
Casualty	
a) Casualty (Main) Attendance up to 100 patients per day	5 staff nurse/nursing sister for 24 hours, that is 1 per shift
Thereafter for every additional attendance of 35 patients	1 Staff nurse/nursing sister
b) Orthopaedics Attendance up to 45 patients per day	5 Staff nurses/nursing sisters for 24 hours, that is, 1 per shift
Thereafter for every additional attendance of 15 patients per day	1 Staff nurse/nursing sister
c) Gynae/Obstetrics Attendance up to 40	5 Staff nurses/Nursing sister for 24 hours
Thereafter for every additional attendance of 15 patients	1 Staff nurse/nursing sister

Out Patients Department (Injection Room):

Attendance up to 100 patients per day	1 Staff Nurse
Attendance from 101 to 220 patients per day	2 Staff Nurse
Attendance from 221 to 320 patients per day	3 Staff Nurses
Attendance form 321 to 420 Patients per day	4 Staff Nurses

Out Patients Departments:

<i>Name of Department</i>	<i>Number of Staff Nurses/Nursing Sisters</i>
Paediatric & Immunisation work	2
Eye	1
Ear	1
Pre-anaesthetic	1
Family planning	1
Medical	1
Surgical	
Central sample collection centre(Technician)	1
Orthopaedic (Technician)	2
Gynae	2
X-ray (Technician)	3
Neurology	1
Microbiology Infection Control	2
Psychiatry (Optional)	1

NOTE- In addition to the 10 percent reserve as per rules, 45 percent post may be added for officers where services are provide for 365 days in a year.

ANNEX D

(Clauses 10.1.1 AND b-3)

INDIAN STANDARDS ON EXTRACTION FORCEPS

<i>IS NO.</i>	<i>Title</i>	<i>IS NO.</i>	<i>Title</i>
4976: 1987	Forceps, extraction, dental, upper anteriors, NO. 1 and 2 (first revision)	6859: 1972	Forceps, extraction, dental, upper root, wide beak
4977: 1968	Forceps, extraction, dental, lower molar, Hawk's Bill No.1	6866:1986	Forceps, extraction, dental, upper wisdom tooth (first revision)
6824: 1972	Forceps, extraction, dental, lower wisdom tooth	6867: 1972	Forceps, extraction, dental, upper root, medium beak
6825: 1972	Forceps, extraction, dental, upper cuspids and bicuspid	6868: 1991	Dental instruments –Dental extraction forceps- specification (first revision)
6826: 1972	Forceps, extraction, dental, upper molars, left		
6827: 1972	Forceps, extraction, dental, upper molars, left	8044: 1976	Forceps, extraction, dental, lower molar children
6828: 1972	Forceps, extraction, dental, upper molars, right	8045: 1976	Forceps, extraction, dental, lower incisors and canines, children
6856: 1972	Forceps, extraction, dental, upper root narrow beak	8046: 1976	Forceps, extraction, dental, upper incisors and canines, children
6858: 1972	Forceps, extraction, dental, lower incisors, cuspids and bicuspid	8047: 1976	Forceps, extraction, dental, upper molar, children

ANNEX E

[Clause 10.1(G-5)]

INDIAN STANDARDS ON BLACKSMITH AND CARPENTRY TOOLS

<i>IS NO.</i>	<i>Title</i>	<i>IS NO.</i>	<i>Title</i>
402: 1990	Cold Chisels (Third revision)	2586: 1986	Bench vices (<i>second revision</i>)
510: 1986	Blacksmith's anvils (second revision)	2852:1998	Carpenter's augers (<i>first revision</i>)
552: 1965	Smith bits (revised)	3587:1986	Rasps(<i>second revision</i>)
663: 1980	Adzes (second revision)	3650: 1981	Combination side cutting pliers (<i>second revision</i>)
703: 1999	Axes (second revision)	4017: 1992	Carpenter's squares (<i>first revision</i>)
841: 1983	Steel hammers (second revision)	4057: 1986	Carpenters' metal bodied bench planes
842: 1968	Smith swages (first revision)	5169: 1986	Hacksaw frames (<i>first revision</i>)
843: 1968	Smith swages (first revision)	6891: 1973	Carpenters' auger bits
844	Screw drivers:	6892: 1973	Blacksmith's bick-iron
(Part 1): 1979	Technical supply condition	7041: 1973	Carpenter's plain brace
	(second revision)	7958: 1976	Head vices
(Part 2): 1979	Dimensions (second revision)	8202: 199	Carpenter's wooden bodied planes (<i>first revision</i>)
(Part 3): 1979	Dimension for screw drivers	10860:1984	Bead pianos and bead planes iron
	for recessed head screws		
	(second revision)		
846: 1963	Smith's flatters (first revision)	10886: 1984	Carpenter's vice
847: 1968	Smith fullers (first revision)	11832: 1986	Cut iron and cap irons for carpenter's metal
			bodied planes