BP INSTRUMENTS (SPHYGMOMANOMETER) –ANEROID TYPE

1. SHOULD BE ANEROID TYPE
2. SHOULD HAVE ISI MARK
3. SHOULD HAVE A MEASURING RANGE FROM 0 TO 300 Hg
4. SHOULD BE PROVIDED WITH ADULT ARM CUFFS OF SIZE MEDIUM AND LARGE AND PAEDIATRIC CUFF
5. THE DIAL MANOMETER MARKINGS AND GRADUATIONS SHOULD BE PERMANENT AND CLEARLY VISIBLE AND FILLED WITH PIGMENTS, WITH MINIMUM DIAMETER OF 160 MM
6. BODY & BEZEL – ALUMINIUM DIE CASTED (POWDER COATED), SCREW TOP BEZEL
7. SENDING-CORRUAGATED PHOSPHOROUS BRONZE TWIN CAPSULE BELLOW
8. MOVEMENT MECHANISM – BRASS
9. CONNECTION: BRASS, NICKEL PLATED FOR 3-4 MM RUBBER HOSE
10. DIAL-ALUMINIUM
11. POINTER-WHITE COATED, THIN & SHARP MADE OF PHOSPHOROUS BRONZE
12. WINDOW LENSES- CLEAR PLASTIC
13. ALL PLASTIC PARTS, IF ANY USED, SHOULD NOT CRACK, FLAKE, PEEL OR DISINTEGRATE DURING NORMAL USE
14. THE INFLATING RUBBER BAG SHOULD BE CAPABLE OF WITHSTANDING INTERNAL PRESSURE OF 450MMHg WITHOUT LEAKING
15. THE INFLATING BULB SHOULD BE SOFT AND SHOULD NOT HAVE ANY JOINTS OR RIDGES
16. THE FASTENING ARRANGEMENTS OF THE CUFF SHOULD BE OF HOOK AND LOOP TYPE
17. THE THREADING AND FASTENING ARRANGEMENT OF THE CUFF SHOULD SHOW NO SIGN OF SLIP OR FAILURE WHEN SUBJECTED TO THE MAXIMUM TEST CONDITIONS
18. THE RUBBER TUBES USED SHOULD HAVE AN INTERNAL DIAMETER OF 3±0.5MM AND THE EXTERNAL DIAMETER SHOULD NOT BE LESS THAN 8MM
19. THE TUBES SHOULD BE FITTED WITH MALE AND FEMALE LEUR CONNECTORS
20. SHOULD PROVIDE A CARRY BAG TO KEEP THE WHOLE SYSTEM SAFE AND SOUND. ALL PARTS SHOULD BE REPLACEABLE IN CASE OF BREAKAGE
21. USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

BP INSTRUMENT WALL MOUNTED/STAND MODEL

1. SHOULD BE PORTABLE TYPE, STAND MODEL
2. SHOULD HAVE ISI MARK
3. SHOULD HAVE A MEASURING RANGE FROM 0 TO 300 MMHg
4. SHOULD BE PROVIDED WITH ADULT ARM CUFFS OF SIZE MEDIUM, LARGE AND PEDIATRIC CUFF
5. THE CONTROL VALVE SHOULD HAVE A THUMB CONTROL DEVICE
6. THE MANOMETER SCALE MARKINGS AND GRADUATIONS SHOULD BE ENGRAVED OR ETCHED AND FILLED WITH PIGMENTS AND IT SHOULD MEET THE REQUIREMENTS OF BOIL TEST
7. THE INTERNAL DIAMETER OF THE MANOMETER GLASS TUBE SHOULD BE 4.1 ±0.1MM AND THE THICKNESS NOT LESS THAN 2MM
8. PLASTIC PARTS, IF ANY USED SHOULD NOT CRACK, FLAKE, PEEL OR DISINTEGRATE DURING NORMAL USE
9. THE INFLATING RUBBER BAG SHOULD BE CAPABLE OF WITHSTANDING AN INTERNAL PRESSURE OF 450MMHg WITHOUT LEAKING
10. THE INFLATING BULB SHOULD BE SOFT AND SHOULD NOT HAVE ANY JOINTS OR RIDGES
11. THE FASTENING ARRANGEMENTS OF THE CUFF SHOULD BE OF HOOK AND LOOP TYPE
12. THE THREADING AND FASTENING ARRANGEMENT OF THE CUFF SHOULD SHOW NO SIGN OF SLIP OR FAILURE WHEN SUBJECTED TO THE MAXIMUM TEST CONDITIONS
13. THE RUBBER TUBES USED SHOULD HAVE AN INTERNAL DIAMETER OF 3±0.5MM AND THE EXTERNAL DIAMETER SHOULD NOT BE LESS THAN 8MM
14. THE HOUSING CASE SHOULD BE OF ROBUST DESIGN. IT SHOULD HAVE PRESS TO RELEASE LOCK.IT SHOULD HAVE METAL HINGES. THE TUBE SHOULD BE SECURED WITH METAL SCREWS AND CLAMPS. IT SHOULD HAVE MECHANISM TO HOLD THE LID IN RIGHT ANGLES AND SHOULD PREVENT ACCIDENTAL DROPPING. ALL PARTS SHOULD BE REPLACEABLE IN CASE OF BREAKAGE
15. A CLEANING BRUSH TO CLEAN THE MANOMETER TUBE AND A SET OF SPARE WASHERS MAY BE PROVIDED WITH EACH UNIT
16. SHOULD BE MOUNTED ON GOOD QUALITY WHEELS
17. SPIRAL TUBING
18. USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

BRONCHOSCOPE –VIDEO

VIDEO PROCESSOR SHOULD HAVE:

- SHOULD HAVE IN BUILT SOFTWARE
- SHOULD HAVE IN APPROX 50 NUMBER PATIENT DATA
- COLOUR SYSTEM: SINGLE-CCD COLOR
- LAMP: XENON SHORT ARC
- VIDEO OUTPUT:2RGBS CONNECTORS/2Y/C CONNECTORS/1 COMPOSTIE VIDEO CONNETCTOR
- EXTERNAL DEVICE: 1 SERIAL CONNECTOR
- WEIGHT: NOT MORE THAN 15KG
- MONITOR:14 INCH, LCD COLOUR MEDICAL MONITOR

SPECIFICATION FOR VIDEO BRONCHOSCOPE HIGH RESOLUTION, LARGE IMAGE 2.8MM WORKING CHANNEL

- FIELD OF VIEW: 120̊
- DEPTH OF FIELD: 3-50 MM
- TIP DEFLECTION UP/DOWN:180/130̊
- RIGID DISTAL DIAMETER:6.3MM
- INSERTION TUBE DIAMETER: 6.2MM
- DIAMETER OF WORKING CHANNEL: 2.8MM
- INSERTION TUBE WORKING LENGTH:600MM
- TOTAL LENGTH:860MM
- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

CARDIAC MONITOR

CONFIGURATION

CARDIAC MONITOR FOR ECG, HEART RATE, RESPIRATION, NIBP AND TEMPERATURE; OPTIONAL: PULSE OXIMETRY, CARDIAC OUTPUT, GAS MONITORING-PREFERABLY MODULAR TYPE

TECHNICAL SPECIFICATION

1. **DISPLAY**

   a) SIZE: ATLEAST 10-14"LCD/TFT

   b) RESOLUTION: ATLEAST 640x480 PIXELS

   c) NUMBER OF TRACES: 3 TO 8

2. **ECG LEADS**

   STANDARD 3 0R 5 LEADS CONFIGURATION WITH LEAD SELECTION WITH SWEEP RATES OF 12.5 / 25 / 50.MM/SEC

3. **HEART RATE**

   a) RANGE: 20-350 BPM

   b) ACCURACY:+/- 5%

   c) ANALYSIS: 3 OR 5 LEAD ON ST DETECTION WITH ARRHYTHMIC DETECTION

4. **RESPIRATION:** 4 TO 200BPM, SPECIFY THE MEASURING TECHNIQUE

5. **NIBP**

   a) TECHNIQUE: OSCILLOMETRIC

   b) PRESSURE RANGE: 20-300MMHg

   c) SHOULD BE ABLE TO DISPLAY SYSTOLIC, DIASTOLIC AND MEAN PRESSURE

6. **PULSE OXIMETRY: (SPO2)**

   a) ADULT, PAEDIATRIC AND NEONATAL:WITH A RANGE OF 40-100% MOTION TOLERANT TECHNOLOGY OR EQUIVALENT

7. **IBP (TWO PRESSURE)**

8. USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

ELECTRO CARDIOGRAPHY MACHINE

CONFIGURATION

12 LEAD INTERPRETIVE ECG MACHINE WITH SIMULTANEOUS ACQUISITION, WITH DISPLAY AND RECORDING FACILITY

TECHNICAL SPECIFICATION

1. SIMULTANEOUS ACQUISITION UPTO 12 LEADS
2. RECORDER WITH 3,6 OR 12 CHANNELS & SPEED RANGE FROM 5MM TO 50MM/SEC
3. AUTO REPORT FORMAT ON A4 SIZE PAPER & MANUAL PRINTING OPTION
4. PROVISION OF:
    A) MANUAL LEAD SELECTION
    B) AC INTERFERENCE FILTER, BASELINE DRIFT FILTER, HIGH CUT FILTER, EMI SUPPRESSION
    C) ECG AMPLITUDE
5. FREQUENCY RESPONSE: IN THE RANGE OF 0.05- 150Hz
6. CMMR RANGE OF 100-140DB
7. INPUT IMPEDANCE GREATER THAN MEGA OHMS
8. OPERATION ON MAINS & RECHARGEABLE BATTERIES
    a) OPERATION TIME IN BATTERY MODE: ATLEAST 30 MIN
    b) BATTERY CHARGING TIME:5-6HRS
9. DISPLAY: BACKLIT LCD
10. DISPLAY OF LEADS: THREE LEADS AT A TIME
11. BUILT IN AUTO-CALIBRATION FACILITY
12. SENSITIVITY RANGE:5-10MM /MV
13. ECG MEASUREMENT: HR, PR, QTC, PQRST, AXIS, ETC

14. ADDITIONAL FEATURES

a) STORAGE CAPABILITY: ATLEAST 40 ECGs

b) INTERFACE

c) TRANSMISSION THROUGH MODEM

d) PACEMAKER DETECTION

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

ECHO CARDIOGRAM MACHINE WITH COLOR DOPPLER

DIGITAL ECHO CARDIO GRAPH SYSTEM WITH PHASED ARRAY SECTOR, HIGH FREQUENCY LINEAR AND MULTIPLANE WITH 2 ACTIVE PROBES (CARDIAC, VASCULAR), ABDOMINAL TRANSDUCERS OPTIONAL

TECHNICAL SPECIFICATION

1. **BEAM FORMER:** DIGITAL BEAM FORMER
2. **GRAY SCALE:**256 SHADE AND ABOVE
3. **TISSUE HARMONIC IMAGING:** ATLEAST 2 SELECTABLE FREQUENCIES
4. **PRESET SELECTION:** ATLEAST 25 USER PROGRAMMABLE PRESETS
5. **SCAN METHODS:** LINEAR/PHASED ARRAY SECTOR
6. **MONITOR:**10" TO 15" HIGH RESOLUTION WITH SWIVEL
7. **SCAN MODES:** B/M/COLOUR/PW/HPRF/CW/HARMONIC IMAGING/TISSUE DOPPLER IMAGING WITH QUANTIFICATION/CONTRAST HARMONICS/COLOUR HARMONICS/STRESS ECHO/4D FOR CARDIAC, TRANSTHORACIC IMAGING APPLICATION
8. **M MODE SWEEP RATE:** 25/50/100M/SEC
9. **DYNAMIC RANGE:** MINIMUM OF 30 STEPS
10. **IMAGE PROCESSING**

    a) EDGE ENHANCEMENT b) PERSISTENCE c)POST PROCESSING

11. **IMAGE OPTIMISATION:** LEFT/RIGHT-UP/DOWN-POSITIVE/NEGATIVE, PAN ZOOM/ SELECTABLE SECTOR ANGLE
12. **COLOUR DOPPLER FUNCTION:** COLOUR TAGGING, STEERING, IN LINEAR PROBE, IN COLOUR ON ALL LINEAR PROBES
13. **SPECTRAL DOPPLER FUNCTION:** AUTO ANGLE CORRECTION, COLOURISATION OF MAPS/HPRF/SAMPLE GATE SIZE 1.0MM TO 10MM/PW DOPPLER RANGE+/- 2.5M/S 90 DEG ANGLE CORRECTION)/CW DOPPLER RANGE+/-8.5 M/S (0 DEG ANGLE CORRECTION)
14. **CALCULATIONS & MEASUREMENTS: UPTO FOUR CALLIPERS-ANGLE/VOLUME/RATION MEASUREMENT-AUTO DOPPLER WITH PI/RI/SD RATIO**
15. **CINE REVIEW AND STORAGE:** UPTO 256 FRAMES IN REVIEW OF B AND COLOUR MODE AND 15 SEC IN M/PW/CW MODES. FACILITY FOR STORING FROZEN IMAGE AND DYNAMIC CLIP IN THE ULTRASOUND UNIT
16. **AUTO ANNOTATIJONS:** AT LEAST 250 ANNOTATIONS SHOULD BE AVAILABLE
17. **STC/TGC:** ATLEAST 8 SLIDE CONTROLS SHOULD BE AVAILABLE

18. **SIMULTANEOUS PROBE CONNECTION:** ATLEAST 3 PROBES SHOULD BE CONNECTED

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

EEG MACHINE

CONFIGURATION

FULLY COMPUTERIZED DIGITAL VIDEO EEG SYSTEM WITH 32 CHANNEL EEG INPUTS PLUS 8 CHANNEL OF DC INPUTS WITH DIGITAL AND AMBULATORY EEG AND SLEEP STUDIES

TECHNICAL SPECIFICATION:

1. **HEAD BOX/PRE-AMPLIFIER:** SHOULD HAVE OPTICALLY ISOLATED AMPLIFIERS IN HEAD BOX
2. **NO OF CHANNELS:** 40 (32 EEG SIGNALS + 8 POLYGRAPHIC INPUTS)
3. **MONTAGE SELECTION:** ATLEAST 32 CHANNELS
4. **SENSITIVITY CONTROL**
    a) MASTER SWITCH SHOULD BE AVAILABLE
    b) INDIVIDUAL CHANNEL OVER RIDE SHOULD BE POSSIBLE
    c) STEPS: ATLEAST 14
    d) RANGE: 1-200 MICRO VOLT/MILLIMETER
5. **LOW FREQUENCY FILTERS**:
    a) BAND WIDTH: IN THE RANGE 0.01 – 15 HZ DC
    b) INDIVIDUAL CHANNEL OVER RIDE SHOULD BE POSSIBLE
6. **MASTER NOTCH FILTER:** SHOULD BE AVAILABLE AS AN INDIVIDUAL CHANNEL WITH OVERIDING
7. **NOISE LEVEL:** LESS THAN 2 MICRO VOLTS PEAK TO PEAK
8. **CMRR:** > 105 DB OR MORE
9. ELECTRODE IMPEDANCE CHECK SHOULD BE AUTOMATIC
10. **REMOTE MONITORING**
    a) PRE-AMPLIFIER INPUT: >100M OHMS
    b) CALIBRATION SHOULD BE POSSIBLE
11. **AUXILARY INPUT AND OUTPUT**: RS 232/ANY COMPATIBLE STANDARD SHOULD BE PROVIDED
12. **COMPUTER SYSTEM:** LATEST TECHNOLOGY PROCESSOR AND OPERATING SYSTEM

13. **DISPLAY**: COLOUR MONITOR MINIMUM 17"OR MORE

14. **STORAGE CAPACITY**:

    a) MINIMUM 40 GB FOR DATA

    b) MINIMUM 120GB FOR VIDEO

15. **PRINTER:**LASERJET

16. DIGITAL VIDEOMETRY SHOULD BE PROVIDED

17. **ANNOTATIONS:** MONTAGE, SCALE, FILTER, SENSITIVITY, HYPERVENT TIME AND USER DEFINABLE TEXT

18. **SPECIAL CHANNELS:** POLYSOMNOGRAPY (PSG), ECG, RESPIRATION, PATIENT EVENT, BRAIN MAPPING

19. **AMBULATORY MODULE**

    a) NUMBER OF CHANNELS

        i. 32 CHANNEL EEG

    b) PROCESSOR: WITH LATEST TECHNOLOGY

    c) MEMORY: ATLEAST 1MB RAM DATA BUFFER, 96 KB EEPROM

    d) FIRM/SOFTWARE:

        i. SPEED OPTIMIZED REAL TIME OPERATING SYSTEM

        ii. REAL TIME SIGNAL PROCESSING & INFERENCING LANGUAGE

    e) DATA THROUGHPUT: MINIMUM OF 16 KHZ AT 12 BIT A/D (TO BE DIVIDED OVER 1-80 CHANNELS)

    f) SIGNAL PROCESSING

        i. FILTERS: HIGH AND BAND PASS FILTERING

        ii. QRS DETECTION FROM ECG

        iii. COMPUTATION OF INTEGRAL AND AREA

    g) PROGRAMMABILITY:

    PROGRAMMABLE PER CHANNEL

        i. 12 BIT A/D CONVERSION (16 BIT BY OVER SAMPLING)

        ii. DIGITAL PROCESSING ALGORITHMS

        iii. 12 TO 8 BIT LOGARITHMIC DELTA COMPRESSION

h) STORAGE

i. HARD DISK OR FLASH DISK STORAGE

ii. MULTIPLE FILE HANDLING BY STACKING CONCEPT

iii. LATEST OPERATING SYSTEM

I) DISPLAY: LCD/CRT/TFT

J) INTERFACES

i. RS 232 TYPE (OR) ANY OTHER COMPATIBLE BI-DIRECTIONAL FOR DATA TRANSFER AND RECORDING CONTROL

ii. SPECIAL BI-DIRECTIONAL DIGITAL INTERFACE

K) POWER SUPPLY: RECHARGEABLE BATTERIES

20. **POWER SUPPLY** 230C/50HZ

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

EMG MACHINE

TECHNICAL SPECIFICATIONS

1. SHOULD BE A PC BASED SYSTEM. SHOULD HAVE ADAPTOR BOX WITH DEDICATED KEYBOARD ON IT OR IF POSSIBLE ALL CONTROLS SHALL BE ON THE AMPLIFIER BOX

2. IT SHALL HAVE OPTION TO FEED PATIENT INFORMATION SUCH AS ID, DATE, PATIENT INFORMATION, AGE, SEX, HEIGHT,PHYSICIAN, TECHNICIAN, REF. PHYSICIAN DIAGNOSIS ETC

3. IT SHALL CONTINOUSLY DISPLAY PATIENT INFORMATION TEST NAME AND NERVE BEING TESTED

4. IT SHALL HAVE A SHOCK STIMULATOR, HEADPHONES FOR AUDITORY STIMULATOR AND EXTRA MONITOR FOR VEP STIMULATOR

5. SMOOTH EXPANDABLE ARM FOR HOLDING EMG AMPLIFIER SHALL BE PROVIDED

6. AMPLIFIER BOX SHALL BE EASILY MOUNTABLE/ DE MOUNTABLE FROM THE STAND

7. IT SHALL HAVE VOLUME CONTRL ON/OFF SWITCH ON THE AMPLIFIER BOX

8. ADAPTOR BOX SHALL HAVE PROVISION FOR GROUNDING

9. IT SHALL HAVE INBUILT SPEAKER FOR EMG

10. IT SHALL HAVE PROVISION TO SWITCH ON/OFF AND SAVE THE WAVEFORMS FORM THE SHOCK HANDLE ONLY

11. SHOCK HANDLE SHALL HAVE PROVISION TO GIVE SHOCK TO THE ADULTS AS WELL AS PEDIATIRCS

12. IT SHALL FULLY ISOLATED SHOCK STIMULATOR AND AMPLIFIER FOR PATIENT SAFETY

13. IT SHALL HAVE FOOTSWITCH FOR START/STOP/SAVE

14. IT SHALL HAVE COMPATIBILITY WITH USB1/USB2

15. IT SHALL HAVE INBUILT BATTERY BACKUP FOR ATLEAST 30MIN OR MORE

16. IT SHOULD HAVE EMG/NCV/EP STUDIES WITH FOLLOWING FEATURES

a) CHANNELS: 4

b) SENSITIVITY: 0.1,0.2,0.5,1,2,5,10,20,50,100,200,500 Y/DIV; 1,2,3,5,10 MV/DIV

c) HIGH CUT: 2 POLE (12 Db/OCTAVE)FILTER

SELECTABLE AT 100,200,500 HZ, 1, 2, 3, 5, 10 KHZ

d) LOW CUT: SELCTABLE AT 0.2,2,20,30,100,200,500 HZ

e) SWEEP SPEEDS (NCS & EP): 1 TP 500MS/DIV IN 17 STEPS

(1,1.5,2,3,5,7.5,10,15,20,30,50,75,100,150,200,300,500)

f) SWEEP SPEEDS (EMG): 2 TP 500 MS/DIV IN 12 STEPS (2,4,6,10.20,20,50,100,150,200,300,500)

g) CMRR:>100dB

h) INPUT IMPEDANCE:>100M OHMS (COMMON MODE)

i) NOISE: 3pV PEAK TO PEAK (10HZ TO 10KHZ)

j) A/D CONVERTER: 14BIT ANALOG-DIGITAL CONVERSION

k) AVERAGER: NUMBER OF AVERAGES PER CHANNEL 2 T0 10,000

l) ELECTRICAL STIMULATION: 0.05, 0.10,0.20,0 .50,1.0MS

m) REPETITION RATES: 0.5,1,3,5,10,15,20HZ PPS REGULAR OR RANDOM REPETITION RATES DEPENDING IN STIMULUS TYPE, SWEEP SPEED AND CONTROL

n) ELECTRICAL STIMULATOR

SHOULD HAVE INDEPENDENT CONTROL, HAND HELD TYPE HAVING CONSTANT CURRENT ELECTRICAL STIMULATOR WITH STIMULUS INTENSITY DIAL AND STIMULUS TRIGGER ON HANDLE WITH ELECTRICAL RANGE OF 0 – 100ma WITH ADJUSTABLE DURATION, INTENSITY AND REPETITIVE RATE

o) AUDITORY STIMULATOR

SHOULD BE A HEADPHONE HAVING FREQUENCY RANGE 0.25-8KHZ,0-100DB INTENSITY

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

GI ENDOSCOPE (VIDEO)

TECHNICAL SPECIFICATIONS

1. DIRECTION OF VIEW SHOULD BE ZERO DEGREE
2. MINIMUM OF 130° OF FIELD OF VIEW
3. RANGE OF OBSERVATION ATLEAST FROM 5MM TO 90 MM
4. ANGULATIONS OF TIP-UP ATLEAST 180°, AND DOWN 90° WITH RIGHT AND LEFT MOVEMENT OF ATLEAST 100/100°
5. INSERTION TUBE DIAMETER OF LESS THAN 10MM
6. DISTAL AND DIAMETER OF NOT MORE THAN 10.5MM
7. INSTRUMENT CHANNEL OF MORE THAN 2.5MM
8. WORKING LENGTH OF NOT LESS THAN 1000MM
9. SHOULD BE COMPATIBLE WITH THE VIDEO SYSTEM SPECIFIED
10. USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

HAEMODIALYSIS MACHINE

MICROPROCESSOR CONTROLLED HAEMODIALYSIS MACHINE CAPABLE OF PERFORMING ACETATE AND BICARBONATE DIALYSIS, VOLUMETRIC ULTRA FILTERATION AND SINGLE AND DOUBLE NEEDLE TREATMENT WITH INTEGRATED MONITOR AND WITH REVERSE OSMOSIS PLANT AND FILTRATION

TECHNICAL SPECIFICATIONS:

1. EXTRACORPORAL CIRCUIT

a) ARTERIAL PRESSURE MONITORING

DISPLAY RANGE: -400MMHg TO +400MMHg

ACCURACY: +/- 10MMHg

RESOLUTION: 20MMHg

b) VENOUS PRESSURE MONITORING:

DISPLAY RANGE: -100MMHg TO +600MMHg

ACCURACY: +/- 10MMHG

RESOLUTION: 20MMHg

c) HEPARIN PUMP

DELIVERY RANGE: 0 TO 10ML/HR

BOLUS FUNCTION: MAX 5ML PER BOLUS

SYRINGE SIZE: 20ML, 30ML, 50ML

d) ARTERIAL BLOOD PUMP

BLOOD FLOW RANGE: 0 TO 600ML/MIN

ACCURACY: +/-10%

e) TRANSMEMBRANE PRESSURE MONITORING

DISPLAY RANGE: 0 TO 600ML/MIN

RESOLUTION: 20MMHg

f) AIR BUBBLE DETECTOR: BY ULTRASOUND TRANSMISSION, ADDITIONAL OPTICAL MONITORING IN VENOUS CLAMP

g) SINGLE-NEEDLE SYSTEM: WITH 2 BLOOD PUMPS, INTERNAL PRESSURE/ PRESSURE CONTROL WITH VARIABLE STROKE VOLUME

2. DIALYSIS FLUID CIRCUIT

a) DIALYSIS FLUID FLOW RANGE:

SELECTABLE ATLEAST 0-800ML/MIN IN STEPS

b) DIALYSIS FLUID TEMPERATURE:

SELECTABLE 35°C TO 39°C (TOLERANCE OF 3°)

c) DIALYSIS FLUID CONDUCTIVITY:

RANGE: 10 TO 17mS/cm (25°C)

d) SODIUM CONCENTRATION DIALYSIS FLUID:

DEFAULT MIXING RATION: 1 + 27.6(OTHER POSSIBLE)

RANGE -13 TO + 13MMOL/1 SODIUM

e) BICARBONATE CONCENTRATION DIALYSIS FLUID:

DEFAULT MIXING RATION: 1 + 27.6(OTHER POSSIBLE)

RANGE: 24 TO +41MMOL/BICARBONATE

3. BALANCING ACCURACY:+/-0.1% OF DIALYSATE FLOW

4. ULTRA FILTRATIONS:

UF RATE: 0 TO 10 l/HR

ACCURACY: 0.5%

ALLOWED DIALYSER UF FACTOR UNLIMITED

PARAMETERS DISPLAY: UF GOAL, UHF TIME, UF RATE, UF VOLUME

5. BLOOD LEAK DETECTOR:

SENSITIVITY: <=0.5ML BLOOD/MIN (HCT=25) AT MAX FLOW OF 800ML/MIN

6. DIALYSATE CONCENTRATION:

a) DISPAY RANGE: 12 TO 16 mS/cm

b) RESOLUTION: 0.1mS/cm

c) ACCURACY :0.1 mS/cm

d) ACETATE: SETTING RANGE -125 UPTO 150MMOL/L

e) BICARBONATE: STANDARD SETTING, RANGE OF READ ADJUSTMENT +/- MMOL/L

7. DISINFECTION AND CLEANING:

a) RINSE

b) HOT RINSE: TEMPERATURE/FLOW: ATLEAST 85° C/450ML/MIN

c) DISINFECTION: TEMPERATURE/FLOW:37°C/600ML/MIN

8. WATER SUPPLY:

WATER INLET PRESSURE: IN THE RANGE OF 1.5-6.0 BAR

WATER INLET TEMPERATURE:5-30°C

9. OPTIONAL EXTERNAL CONNECTION:

a) INTERFACE: RS 232 (OR) ANY SUITABLE CONNECTOR

b) STATUS INDICATOR: FOR CONNECTION OF STATUS INDICATOR

c) INPUT/OUTPUT: FOR CONNECTION OF EXTERNAL AUXILIARY EQUIPMENT

d) AUXILARY SOCKET: SUPPLY VOLTAGE 230V AC, 50 Hz

e) REMOTE CONTROL: FOR CONNECTION OF REMOTE OPERATION

f) HDF SHOULD BE POSSIBLE

g) DIAGNOSIS: FOR IN-HOUSE COMPUTER DIAGNOSIS

10. DISPLAY: INTEGRATED LCD/TFT DISPLAY WITH SCREEN SIZE OF 10" OR ABOVE

11. ALARMS:

a) LOW/HIGH ARTERIAL PRESSURE

b) LOW/HIGH VENOUS PRESSURE

c) LOW/HIGH TRANSMEMBRANE PRESSURE

d) AIR DETECTION

e) BLOOD LEAK

f) BLOOD PUMP STOP

g) HEPARIN PUMP ALARM

h) FLOW ALARM

i) WATER ALARM

j) LOW/HIGH CONDUCTIVITY

k) LOW/HIGH TEMPERATURE

12. REVERSE OSMOSIS PLANT(MEDICAL GRADE) WITH FILATRATION OF 100L/HR
SELF TEST: MACHINE CARRY OUT SELF-TEST FOR ALL VITAL PARAMETERS DURING START UP

13. DICOM 3.0 COMPLIANCE: SEND QUERY, RETRIEVE WITH PRINT AND NETWORK PROTOCOLS

14. POWER SUPPLY: 230V/50Hz

15. USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

HOLTER MONITOR WITH RECORDER AND ANALYSER

CONFIGURATION

HOLTER MONITOR WITH RECORDER FOR ACQUISITION OF ECG WITH EVENT MARKING

TECHNICAL SPECIFICATION

1. **HOLTER SYSTEM**

HOLTER MONITORING SCANNING AND ANALYSIS:

a) ACQUISITION AND PROCESSING OF ECG DATA SIMULTANEOUSLY AND PROVIDE THE RESULT AS CHANNEL CASSETTE PLAY BACK OR DIGITAL FLASH MEMORY

b) AUTOMATIC ACQUISITION OF 3 CHANNEL DIGITAL 24HRS ECG AND ONE CHANNEL PACE MAKER DETECTION

c) VIEWING: THE REVIEW SHOULD BE IN 12 LEADS IN VIEW AND PRINT

2. **DISPLAY:**

SIZE: ATLEAST 17"LCD/TFT/CRT WITH HIGH RESOLUTION

3. **COMPUTER SYSTEM:**

a) PROCESSOR: LATEST PROCESSOR AND OPERATING SYSTEM

b) DDR RAM: ATLEAST 512MB

c) HARD DISK:MINIMUM 80GB

d) FLOPPY DISK: 31/2"1.44MB (OPTIONAL)

e) FLASH CARD READER

f) SERIAL PORT:TWO

g) PARALLEL PORT:ONE

h) USB PORT:TWO

i) MOUSE:ONE

j) KEYBOARD:STANDARD DESIGN

k) LASER PRINTER: LATEST MODEL

l) RIS/HIS/PACS COMPATIBILITY KIT IS MUST

4. STORAGE CAPACITY:

a) PROVISION FOR MINIMUM OF 5000 REPORTS ONLINE

b) STORAGE FOR MINIMUM OF 10-24 HRS, THREE CHANNEL HOLTER TESTS ONLINE

c) REPORTS FAX TRANSMISSION CAPABILITY

d) LONG TERM 24 HRS ECG AND REPORTS STORAGE ZIP DRIVE

5. SCANNING FORMATS:

a) RETROSPECTIVE SCANNING

b) PROSPECTIVE SCANNING VIA SUPERIMPOSITION

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

INFUSION PUMP (SYRINGE)

DESCRIPTION OF FUNCTIONS

ELIGIBILITY CRITERIA:

- SHOULD BE A STANDARD APPROVED PRODUCT
- MANUFACTURER SHOULD BE CERTIFIED FOR QUALITY STANDARDS
- ELECTRICAL SAFETY CLASSIFICATION CLASS I/II, TYPE CF AND INTERNALLY POWERED EQUIPMENT
- CERTIFIED FOR MEETING IEC60601-2-24. PARTICULAR REQIREMENTS FOR THE SAFETY OF INFUSITON PUMPS AND CONTROLLERS
- PREVENTIVE MAINTENANACE TEST AS PER GUIDELINES PROVIDED IN SERVICE/MAINTENACE MANUAL

TECHNICAL SPECIFICATION

- DIGITAL AND SELF REGULATING VOLUME CONTROLLED PORTABLE SYRINGE PUMP
- CAN BE MOUNTED ON BED/WALL RAIL OR MOBILE POLE/STAND (SUPPLIED WITH FIXATION)
- SUITABLE FOR ALL INTRAVENOUS AND INTRA ARTERIAL INFUSIONS
- CONTINUOUS VOLUMETIRC DELIVERY WITH SYRINGES 10,20 AND 50ML
- OPEN SYSTEM, SUITABLE FOR DIFFERENT BRANDS OF SYRINGES
- PROGRAMMABLE.USER ENTRY: INFUSION VOLUME AND TIME OR FLOW RATE
- RATE, ADJUSTABLE: 1 TO 999ML/H, STEPS OF 1ML/H
- ACCURACY: CAL % OF TOTAL VOLUME DELIVERED
- WITH OCCLUSION DETECTION AND ALARM
- DISPLAY REPORTS SYSTEMS ERRORS, END OF INFUSION AND BUILT IN BATTERY STATUS
- AUDIO VISUAL ALARM WITH SILENCING FEATURE FOR AUDIO ALARM
- AUTOMATIC SWITCH FROM MAINS TO BATTERIES IN CASE OF POWER FAILURE

ENVIRONMENTAL FACTORS:

- RECHARGEABLE BATTERY HAVING ATLEAST 5-6 HR BACK UP FOR ABOUT 5ML/HR FLOW RATE WITH 50ML SYRINGES. LARGER BATTERY LIFE AND INDICATION OF RESIDUAL LIFE WILL BE PREFERRED

- THE UNIT SHALL BE CAPABLE OF BEING STORED CONTINUOUSLY IN AMBIENT TEMPERATURE OF 0-50˚C AND RELATIVE HUMIDITY OF 15- 90%

- THE UNIT SHALL BE CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATURE OF 10-40˚C AND RELATIVE HUMIDITY OF 15- 90%

POWER SUPPLY: POWER INPUT TO BE 220-240VAC, 50HZ

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

COMPUTERISED PFT (ADVANCED) SYSTEM

TECHNICAL SPECIFICATIONS

1. THE SYSTEM SHOULD BE AN ECONOMICALLY ORIENTED LUNG FUNCTION MEASURING SYSTEM FOR THE DETERMINATION OF THE STATIC AND DYNAMIC LUNG VOLUMES USING THE CLASSICAL FRC-HELIUM REBREATHING AND THE DIFFUSION CAPACITY BY USING THE SINGLE BREATH TECHNIQUE. IT SHOULD ALSO BE POSSIBLE TO MEASURE DIFFUSION CAPACITY BY THE REBREATHING TECHNIQUE FOR PATIENTS WITH DISTRIBUTION IMPAIRMENTS OF THE LUNGS TO MINIMISE PATIENT CO-OPERATION

2. **THE SYSTEM SHOULD MEASURE THE FOLLOWING:**

   a) SLOW AND FORCED SPIROMETRY(INSPIRATORY AND EXPIRATORY FLOW VOLUME CURVE)

   b) LUNG SUBVOLUMES-FUNCTIONAL RESIDUAL CAPACITY (FRC), RESIDUAL VOLUME(RV), TOTAL LUNG CAPACITY (TLC) BY FRC-HELIUM MULTIPLE BREATH TECHNIQUE

   c) DIFFUSION CAPCITY OF THE LUNG, BY SINGLE BREATH TECHNIQUE

   d) DIFFUSION CAPCITY OF THE LUNG, BY MULTIPLE BREATH TECHNIQUE

3. **THE SYSTEM SHOULD MEASURE THE FOLLOWING ESSENTIAL PARAMETERS**

   a) SLOW AND FORCED SPIROMETRY, VT, BF, MV, ERV, FVC, FEV1, VCIN, VCEX, MEF 50, MEF 75,PEF, MVV ETC

   b) LUNG SUBVOLUMES: FRC, RV, TLC,RV%TLC ETC

   c) DIFFUSION CAPCITY OF THE LUNGS: DLCO-SB, DLCO-RB

4. **THE SYSTEM SHOULD HAVE AN EASY TO EXCHANGE, BIDIERCTIONAL HEATED PNEUMOTACH WITH THE FOLLOWING SPECIFICATION**

   a) RANGE SHOULD BE 0 TO 20 LIT/SEC

   b) ACCURACY-SHOULD BE +/-2%

   c) RESISTANCE-SHOULD BE <0.05KPA/LIT/SEC

5. **THE SYSTEM SHOULD HAVE CARBON MONOXIDE ANALYSER, HE ANALYSER AND O2**

   ANALYSER WITH THE FOLLOWING SPECIFICATION

   a) CARBON MONOXIDE ANALYSER: RANGE SHOULD BE FROM 0 TO 0.4%

   RESOLUTION/ACCURACY SHOULD BE 0.0002% / 0.0003%

REPRODUCIBILITY SHOULD BE 0.0006%

b) HE ANALYSER

RANGE SHOULD BE 0 TO 9.5%

RESOLUTION/ACCURACY SHOULD BE 0.005% / 0.05%

REPRODUCIBILITY SHOULD BE 0.02%

c) O2 ANALYSER

RANGE SHOULD BE 0 TO 100%

RESOLUTION/ACCURACY SHOULD BE 0.05% / 1.0%

REPRODUCIBILITY SHOULD BE 0.1%

6. THE SYSTEM SHOULD HAVE UNIT FOR DIRECT BREATHING (NO INSPIRATORY BAG) FROM PRE-MIX GAS CONTAINER, TO MINIMISE WASTAGE OF GAS.

7. THE COMPUTER SYSTEM SHOULD HAVE THE FOLLOWING SPECIFICATION

- PROCESSOR 2.7 GHZ AND ABOVE
- THE UNIT SHALL BE CAPABLE OF BEING STORED CONTINUOUSLY IN AMBIENT TEMPERATURE OF 0 – 50°C AND RELATIVE HUMIDITY OF 15 –90%
- THE UNIT SHALL BE CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATURE OF 10 – 40°C AND RELATIVE OF 15 – 90%

8. POWER SUPPLY

- POWER INPUT TO BE 220 – 240 VAC, 50HZ
- 6 UPS OF SUITABLE RATING WITH VOLTAGE REGUALTION AND SPIKE PROTECTION FOR 60 MIN BACKUP

9. STANDARD, SAFETY AND TRAINING

SHOULD BE A STANDARD APPROVED PRODUCT

MANUFACTURER SHOULD BE CERTIFIED FOR QUALITY STANDARDS

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

PULSE OXIMETER

TECHNICAL SPECIFICATON

COMPACT PORTABLE BEDSIDE PULSE OXIMETER WITH LCD DISPLAY CONTINUOUS MONITORING OF SPO2 (ARTERIAL BLOOD OXYGEN SATURATION), PULSE RATE SIGNAL STRENGTH AND WAVE FORM DISPLAY

MEASURING RANGE:

- SPO2: 30 TO 100%, MINIMAL GRADUATION 1%
- PULSE RATE: 20 TO 250 BPM, MINIMAL GRADUATION 1 BPM
- ACCURACY SPO2: 1-2% WITH LEAST MOTION ARTIFACT
- DISPLAY SHOWS SPO2(%), HR(BPM) AND SIGNAL STENGTH BAR, WAVE FORM DISPLAY
- LARGE DISPLAY READABLE FROM DISTANCE, DISPLAY COVER DURABLE PLASTIC
- USER PRESET OF HIGH/LOW ALARMS ON SPO2 AND PULSE RATE MONITORING
- CABLE LENGTH SHOULD BE MINIMUM 1 METER
- AUDIO VISUAL ALARM FOR SPO2 AND PULSE RATE IN CASE MEASUREMENTS ARE OUTSIDE PRESENT RANGE SILENCING FEATURE FOR AUDIO ALARM
- DISPLAY REPORTS SYSTEM ERRORS, PROBE FAILURE AND BUIT-IN BATTERY STATUS
- AUTOMATIC SWITCH FROM MAINS TO BATTERIES IN CASE OF POWER FAILURE
- ANY INTERFACE FOR DATA COMMUNICATION
- BATTERY BACK UP OPERATING TIME 6 HRS
- SHOULD BE SUPPLIED WITH –SPO2: PEDIATRIC SPO2 SENSORS ONE NUMBER PER MONITOR. NEONATAL SENSOR –O2 PER MONITOR

SUPPLIED WITH:

- 4XRESUABLE SPO2 SENSORS NEONATE, CLIP ON TYPE
- 10XRESUABLE SPO2 SENSORS NEONATE, WRAP AROUND TYPE

ENVIRONMENTAL FACTORS:

- THE UNIT SHALL BE CAPABLE OF BEING STORED CONTINUOUSLY IN AMBIENT TEMPERATURE OF 0-50˚C AND RELATIVE HUMIDITY OF 15- 90%
- THE UNIT SHALL BE CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATURE OF 10-40˚C AND RELATIVE HUMIDITY OF 15- 90%

POWER SUPPLY: POWER INPUT TO BE 220-240VAC, 50HZ

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

AMBU BAG SET

HAND HELD TYPE

MAIN UNIT CONSISTS OF:

PRESSURE REGULATOR WITH MASK AND PLASTIC HOOD

FACE MASK FOR CHILD (3 PIECES)

FACEMASK FOR ADULT (3 PIECES)

OXYGEN RESERVOIR BAG WITH SAFETY VALVE (1 PIECES)

OXYGEN FEEDING TUBE (4 PIECES)

INCLUDING CARRYING BAG

SPECIFICATIONS:

SELF INFLATING BAG VOLUME APPROX 1600ML

OXYGEN RESERVOIR BAG VOLUME: APPROX 2600ML, AUTO CLAVABLE

MATERIALS

SELF INFLATING BAG

TRANSPARENT STANDARD MATERIAL

VALVE HOUSING: TRANSPARENT STANDARD MATERIAL

SHELL OF MASK: TRANSPARENT STANDARD MATERIAL

CUSHION OF MASK: TRANSPARENT STANDARD MATERIAL

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

STETHOSCOPE

- CHROME-PLATED, DUAL –HEAD CHEST PIECE
- 48MM CHEST PIECE WITH DIAPHRAGM
- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

SUCTION MACHINE

- FRONT PANEL WITH TRANSPORTED HANDLE
- 2 JARS, 2Lt, EACH AT LEAST
- MOBILE WITH 4 CASTERS
- NOISE LEVEL <50DB
- OPERATING TIME: CONTINUOUS OPERATION
- AIR FLOW RATE OF PUMP: AROUND 35L/MIN
- POWER:220V/50Hz
- FILTERS AND TUBES ARE INCLUDED
- VACUUM ADJUSTMENT
- VACUUM GAUGE IS INCLUDED
- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

TREAD MILL TEST MACHINE (COMPUTERISED)

CONFIGURATION

12 LEAD ECG, COMPUTER BASED STRESS MONITORING SYSTEM WITH TREADMILL

TECHNICAL SPECIFICATION

1. **NUMBER OF LEADS:** MINIMUM OF 12 LEADS ECG
2. **DIPSLAY**
    a) SIMULTANEOUS DISPLAY OF 12 LEAD ECG AND HEART RATE
    b) BP STAGE BY STAGE TIME
    c) RECOVERY TIME
    d) TREAD MILL SPEED
    e) GRADE
3. **SYSTEM:** SHOULD BE COMPUTER BASED
4. **PROTOCOLS:** STANDARD PROGRAMMABLE PROTOCOLS
5. **ANALYSIS:**S-T LEVEL, SLOPE, TREND AND ARRHYTHMIA ANALYSIS
6. **PRINTER:** LASER-JET PRINTER AND BUIT IN THERMAL PRINTER
7. **TREADMILL**
    a) AC/DC MOTOR DRIVEN WITH ATLEAST 2-2.5HP
    b) EMERGENCY STOP BUTTON
    c) SPEED RANGE:0.5-12MILE/HR

ELEVATION RANGE:0-25%

    d) DRIVE SYSTEM
    e) ATLEAST 22'x63", SHOCK ABSORBING, LUBRICATED, LOW-PROFILE, SELF-ALIGNED RUNNING BELT
    f) SAFETY HANDRAILS
    g) DISPLAY OF SPEED AND GRADE IN TREADMILL ALSO
    h) NIBP MEASUREMENT INCLUDED
    i) **STANDARD ACCESSORIES:** PATIENT HARNESS

8. OPTIONAL ACCESSORIES

a) WIRELESS PATIENT CABLE

b) ECG DATA EXPORT BY MODEM & FAX

9. **POWER SUPPLY:** 230V/50HZ

- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED

ULTRASOUND MACHINE

ULTRASOUND SCANNER WITH CONVEX, LINEAR AND SECTOR SCANNING FOR USE ON MOTHERS AND NEONATES ON THE NICU, FEATURING

1. ULTRASOUND SYSTEM

- SHADES(LEVEL) OF GREY:256
- MIN 256 DIGITAL CHANNEL
- TISSUE HARMONIC IMAGING
- HIGH ACQUISITION FRAME RATE, APPROX. 60 FPS
- CINE MEMORY MINIMUM 32 FRAMES
- MODES:B-MODE, M-MODE, B/M-MODE,DUAL B-MODE
- CALCULATION PACKAGES FOR OB/GYN; ABDOMINAL EXAMS, CARDIOLOGY AND UROLOGY
- PROBE CONNECTORS: MINIMUM 2
- HIGH RESOLUTION MONITOR: MINIMUM 12", HIGH RESOLUTION LCD OR TFT
- DOPPLER
- COLOR DOPPLER
- DICOM 3.0
- B/W VIDEO PRINTER 1 PCS PER UNIT
- B/W VIDEO PAPER, BOX OF 5 ROLLS, 5 BOXES
- ULTRASOUND GEL, BOTTLE 250ML, 12 BOTTLES
- SUITABLE PROBES FOR THE MACHINE
- USER/TECHNICAL/MAINTENANCE MANUAL TO BE SUPPLIED