



HLL INFRA TECH SERVICES LIMITED
(Subsidiary of HLL Lifecare Ltd., a Govt. of India Enterprise)
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HITES/BME/PRE-TENDER/06/NURSING/2022-23

Date: 18.03.2023

NOTICE OF INVITATION FOR PRE-TENDER MEETING

Biomedical Engineering Division of HLL INFRA TECH SERVICES LIMITED (a fully owned subsidiary of HLL Lifecare Limited, a Govt. of India Enterprise) is in the process of finalising technical specifications for various Medical/Laboratory/Scientific equipment. In this context, HITES is organising an ONLINE PRE-TENDER MEETING with prospective vendors for the following items to acquire further insight to make technical specification in general without compromising the quality:

SN	Item Name	Department
1	Patient Care Simulator	Nursing
2	Patient care simulator externally controlled by electronic device	
3	Infant Care Simulator	
4	New Born Resuscitation Manikin	
5	ATLS Practising Manikin	
6	Vein Puncture and Injection Arm	
7	BLS Practising Manikin	
8	Pediatric Care Simulator (Pediatric)	
9	Full Body Pregnancy Simulator	
10	Embryonic/Fetal Development	
11	IUD Insertion Trainer Uterus	
12	Difficult Airway management simulator	
13	Physical assessment simulator	
14	Tube feeding simulator	
15	Gluteal IM injection Model	

All the interested prospective vendors are invited to participate in the online pretender meeting and requested to please send your suggestions with respect to the specifications of above items (**Enclosed in Annexure I_Technical Specification**) to the below mentioned e-mail IDs on or before 23.03.2023, 11:00 AM. The details of the Pre-Tender meeting are detailed below:

Date & time of the Pre-Tender meeting	24.03.2023 at 11:00 AM
Details of meeting	The meeting shall be conducted through following Google meet Link: https://meet.google.com/kdx-xgmt-pzq
Last date for submitting suggestions with respect to the technical specifications	23.03.2023, 11:00 AM
Contact Details	Ph: 0120-4071500/ 609/577 Email: bmenoida@hllhites.com

Disclaimer: This notification is not a tender or does not construe that participating vendors shall be qualified for prospective tender in this matter.

For HLL Infra Tech Services Limited
Deputy Vice President (BME)

ANNEXURE 1 _ TECHNICAL SPECIFICATIONS

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1. Patient Care Simulator	
Sl. No	Technical Specification
1	Should be a full-body, lifelike manikin to teach basic and advanced nursing skills
2	Head with anatomical landmarks, trachea, and esophagus, along with simulated lungs and stomach, allow the practice of many procedures
3	It should have the Head with anatomical landmarks, trachea, and esophagus, along with simulated lungs and stomach, allow the practice of many procedures:
4	Irrigation of the eye and ear
5	Application/instillation of medications in the eye, ear and nose including nasal packing
6	Mouth and denture care procedures
7	Insertion and suctioning of oropharyngeal and nasopharyngeal airways
8	Insertion, securing, and care of endotracheal tubes
9	Tracheostomy care and tracheal suctioning
10	Various oxygen delivery procedures
11	NG tube insertion, care, medication administration, and removal
12	Gastric lavage and gavage
13	Nasoenteric and esophageal tube insertion, care, and removal
14	Simulator should have facility to perform Subclavian and Jejunostomy opening
15	Deltoid, dorsogluteal, and vastus lateralis IM injections possible (with removable injection pads)
16	Full range of motion for realistic patient handling
17	Able to sit upright without any support
18	Interchangeable stomas depict colostomy, ileostomy and suprapubic cystostomy
19	Colostomy may be irrigated and will retain an indwelling catheter
20	Fingers and toes are spread to allow bandaging
21	Interchangeable Male and Female Genitalia which should have the following features:
22	Complete urinary catheterization
23	Can be attached to urinary and colon reservoirs via connector valves
24	Female genitalia capable of vaginal douching
25	Will retain indwelling or straight catheter
26	Enema procedures may be performed using fluid for realistic return
27	When used with manikin, fluid may be used for realistic return
28	Urinary valves give the natural resistance felt when catheterizing
29	Anal valves simulate the internal anal sphincter
30	Circulatory Skills and IV Drug Administration
31	It should have:

	· Articulating IV training arm with replaceable skin and infusible vein system allows peripheral intravenous therapy and site care
	· Venipuncture possible in the antecubital fossa and dorsum of the hand
	· Accessible veins include median, basilic and cephalic
32	It should include the following standard accessories:
	· Washable hospital gown (2 set)
	· Carrying case
	· Lubricant or polish

2. Patient care simulator externally controlled by electronic device	
Sl. No	Technical Specification
1	Manikins should have option for advance nursing procedure, including the measurement of noninvasive blood pressure and the auscultation and recognition of normal and abnormal heart, lung and bowel sounds when used with a remote control with monitor connectivity.
2	The system should also be supplied with several virtual clinical patient monitor options
3	It should have simulated ICU patient monitor and should simulate physiological parameters including HR, ECG, SpO2, BP, RR, Temperature, etCO2,.
4	Should be a full-body, lifelike manikin to teach basic and advanced nursing skills
5	Head with anatomical landmarks, trachea, and esophagus, along with simulated lungs and stomach, allow the practice of many procedures.
6	It should have the Head with anatomical landmarks, trachea, and esophagus, along with simulated lungs and stomach, allow the practice of many procedures:
7	Irrigation of the eye and ear
8	Application/instillation of medications in the eye, ear and nose including nasal packing
9	Mouth and denture care procedures
10	Insertion and suctioning of oropharyngeal and nasopharyngeal airways
11	Insertion, securing, and care of endotracheal tubes
12	Tracheostomy care and tracheal suctioning
13	Various oxygen delivery procedures
14	NG tube insertion, care, medication administration, and removal
15	Gastric lavage and gavage
16	Nasoenteric and esophageal tube insertion, care, and removal
17	Simulator should have facility to perform Subclavian and Jejunostomy opening
18	Deltoid, dorsogluteal, and vastus lateralis IM injections possible (with removable injection pads)
19	Full range of motion for realistic patient handling
20	Able to sit upright without any support

21	Interchangeable stomas depict colostomy, ileostomy and suprapubic cystotomy
22	Colostomy may be irrigated and will retain an indwelling catheter
23	Fingers and toes are spread to allow bandaging.
24	1. The manikin system should also help to teach specific learning objectives for postsurgical care regime towards patient assessment, dressing change and drain care.
25	2. It should also allow teaching & training on the central line care
26	Interchangeable Male and Female Genitalia which should have the following features:
27	Complete urinary catheterization
28	Can be attached to urinary and colon reservoirs via connector valves
29	Female genitalia capable of vaginal douching
30	Will retain indwelling or straight catheter
31	Enema procedures may be performed using fluid for realistic return
32	When used with manikin, fluid may be used for realistic return
33	Urinary valves give the natural resistance felt when catheterizing
34	Anal valves simulate the internal anal sphincter
35	Circulatory Skills and IV Drug Administration
36	It should have:
	· Articulating IV training arm with replaceable skin and infusible vein system allows peripheral intravenous therapy and site care
	· Venipuncture possible in the antecubital fossa and dorsum of the hand
	· Accessible veins include median, basilic and cephalic
37	It should include the following standard accessories:
	· Washable hospital gown (2 set)
	· Carrying case
	· Lubricant or polish

3. Infant Care Simulator	
Sl. No	Technical Specification
1	Infant Care Simulator should allow for simulation and practice of range of infant patient care procedures. It should present normal and abnormal heart, breath, and bowel sounds for auscultation
2	Should include :
2.1	Infant Full-body Manikin
2.2	IV Training Arm
2.3	IV Training Leg
2.4	IO Training Leg
2.5	Simulated Rectal Suppositories (3)
2.6	Manikin Lubricant
2.7	Baby Pants
2.8	Carry Case
3	Features:
3.1	Normal, bulging and depressed fontanels for assessment and diagnosis

3.2	Head with anatomical landmarks, trachea and esophagus along with simulated lungs and stomach allow the practice of many procedures, including NG, OG, tracheal care and suctioning
3.3	Articulating IV arm and IV leg allow for practice of IV cannulation, medication administration, site care and maintenance
3.4	Medication and fluid administration through intraosseous infusion allowed via tibia access with landmarks at the tibial tuberosity and medial malleolus
3.5	Gastrostomy tube opening for care and feeding
3.6	Presents normal and abnormal heart, breath, and bowel sounds for auscultation
3.7	Interchangeable genitalia allows for urinary catheterization with fluid return, rectal temperature simulation, and administration of suppositories
3.8	Head with anatomical landmarks, trachea and esophagus along with simulated lungs and stomach allow the practice of many procedures.
3.9	Eye, ear and nose care including
a	Simulated medication application / instillation
b	Simulated irrigation of the eye and ear
c	Nasal packing
d	Variable Fontanels
e	Normal
f	Bulging
g	Depressed
3.10	Anatomical patent airway for
a	Insertion, securing and care of endotracheal tubes
b	Insertion and suctioning of oropharyngeal and nasopharyngeal airways
c	Various oxygen delivery procedures
d	Tracheostomy opening with removable plug for care and suctioning. Lungs can be filled with fluid for realistic suctioning.
e	NG tube insertion, care, medication administration and removal. Stomach reservoir will hold fluid for practice of gastric lavage and gavage.
3.11	Gastrostomy tube care and feedings possible
3.12	Ileostomy stoma care
3.13	Facilitates practice of height and weight measurement and physical exam
3.14	Full range of motion for realistic patient handling
3.15	Interchangeable Male and Female Genitalia
3.16	Can be attached to urinary reservoir for complete urinary catheterization procedures
3.17	Will retain indwelling or straight catheter
3.18	Rectal suppository administration (simulated)
4	IV Training
4.1	Articulating IV arm allows peripheral intravenous therapy and site care with venipuncture possible in the antecubital fossa and dorsum of the hand
4.2	Articulating IV leg with venipuncture possible in the medial and lateral malleolus sites

4.3	Heel prick /stick simulation
4.4	Additional 5nos. of replaceable intraosseous access sites should be supplied along with the system
4.5	Articulating, infusible IO leg with simulated tibia and landmarks at the tibial tuberosity and medial malleolus
4.6	Heel drain will connect to reservoir for infusion exercises
5	Sounds
5.1	Heart sounds synchronized with programmable ECG
5.2	Auscultated lung sounds synchronized with breathing rate, 0 - 60 BPM
5.3	Individual lung or bilateral sound selection
5.4	Normal or abnormal bowel sounds
5.5	Vocal sounds – computer-generated sounds, recorded vocal sounds and real-time voice input
5.6	Heart Sounds
a	Synchronized with programmable ECG
b	Aortic Stenosis
c	Austin Flint Murmur
d	Systolic Murmur
e	Stills Murmur
f	Atrial Septal Defect (ASD)
g	Ventricular Septal Defect (VSD)
h	Pulmonary Stenosis
i	Normal Heart Sounds
5.7	Lung Sounds
a	Synchronized with breathing rate, 0 – 60 bpm
b	Individual lung or bilateral sound selection
c	Coarse Crackles
d	Fine Crackles
e	Pneumonia
f	Stridor
g	Wheeze
i	Rhonchi
j	Normal Breath Sounds
k	Bowel Sounds
l	Normal and abnormal bowel sounds
m	Borborygmus
n	Hyperactive Bowel
o	Hypoactive Bowel
p	No Sound
q	Normal Bowel
r	Vocal Sounds
5.8	Computer-generated sounds, recorded vocal sounds and real-time voice input
1	Cry

2	Cough
3	Content
4	Hiccups
5	Scream
6	Simulated Parameters
6.1	The system should also be supplied with several virtual clinical patient monitor options
6.2	It should have simulated ICU patient monitor and should simulate physiological parameters including HR, ECG, SpO2, BP, RR, Temperature, etCO2.

4. New Born Resuscitation Manikin	
Sl. No	Technical Specification
I	Product Features:
1	It should be a full term new born Resuscitation Manikin.
2	The airway is designed to allow for training in all aspects of newborn airway management, including the use of positive-pressure airway devices, and the placement of ET tubes and LMAs.
3	The torso includes functionality to relieve a tension pneumothorax via needle decompression.
4	The patent umbilicus has a manually generated pulse and can be assessed, cut and can be catheterized for IV access.
II	Specifications
A	Airway Features
1	Positioning the newborn to simulate opening the airway via head tilt, chin lift or jaw thrust
2	Positive Pressure Ventilation (BVM, T-Piece resuscitator, or anesthesia bag)
3	ET tube intubation
4	LMA insertion
5	Orogastric tube insertion
6	Stomach distension (when ET is misplaced)
7	Suctioning (of the nares, nasopharynx, oropharynx, esophagus and the lungs via an ET tube) - Fluids should not be introduced into the airway
B	Breathing features
1	Bilateral and unilateral (with mainstem intubation) chest rise and fall with mechanical ventilation
2	Pneumothorax - Needle thoracentesis left mid axillary (pneumothorax)
3	Cardiac features
4	Manual chest compression at appropriate depth (1/3 AP) and force

C	Circulation Features
1	Manual umbilical pulse
2	Vascular Access
3	Umbilical Vein/ Artery access via patent umbilicus
D	Other Features
1	Full articulation

5. ATLS PRACTISING MANIKIN	
Sl. No	Technical Specification
1	It should be useful for trauma assessment & Management skill. The product should have head which should facilitate facial and cranial trauma assessment including and open depressed skull fracture, deviated trachea, bilateral mandible fracture and fracture of the cervicle vertebare.
2	Standard incubation head should allow airways management manual maneuvres and various airways devices.
3	The trauma manikin should facilitate simulation of multiple facial injuries
4	The manikin should help interchangeable bullet would chest module for assessment and care
5	It should have a carry case or transportation and storage
6	It should also allow to train according to basic trauma life support protocol
7	The arms & Legs should have provision of simulated burns, cuts and fractures
8	The wounds may alternatively serve as distracing element for realism in CPR
9	Penetrating bleeding wounds with fracture femur which should allow student to train in control of bleeding as per datasheet
10	Complete trauma module set to add realism to training scenarios
11	Includes injuries required in 12 patient scenario
12	Over 30 wound lay ons with Velcro design allowing easy application and detachment
13	Dilated pupils
14	Contusions, lecerations and abrasions
15	Cervical spine injury
16	Distended jugular vein
17	Flail chest segment
18	Fractures - open and closed
19	Burns - 1st -2nd and 3rd degree
20	Impaled object
21	Abdominal evisceration
22	Stab Wound
23	Projectile entry/exit (Small and large caliber)
24	Bidder should give demonstration of the quoted model if required

6. VEIN PUNCTURE AND INJECTION ARM	
Sl. No	Technical Specification
1	Complete venous access for IV therapy and phlebotomy plus sites for intramuscular and interdermal injections. Allows students to practice vein puncture at 11 primary and secondary locations.
2	Intramuscular Injections
3	Intradermal Injections
4	Replaceable and skin veins
5	Flexible finger and wrist
6	Complete venous access
7	Basilic V
8	Cephalic V
9	Median Cubital V
10	Dorsal Metacarpal V
11	Digital V. Thumb V
12	Median Basilic V.
13	Median Cephalic V
14	Median Antebrachial V.
15	Bidder should give demonstration of the quoted model if required

7. BLS Practising Manikin	
Sl. No	Technical Specification
1	Oral and nasal passages should allow realistic nose pinch required for mouth to nose ventilation
2	Natural Obstruction of the airway will allow the students to learn the important technique of opening the airway.
3	Head tilt/ chin lift and jaw thrust will allow students to correctly practice all manoeuvres necessary when resuscitating a real victim
4	Realistic airway function: airway remains obstructed without proper head tilt/chin lift or jaw thrust and chest rise is seen with correct ventilators
5	Anatomically correct landmarks and sternal notch allow the students to practice identification of all anatomical landmarks relevant to adult CPR
6	Audible and Visual feedback with information regarding quality of chest compression including rate, depth and release/ non release and too deep compression with recording facility to improve muscle memories.
7	Realistic chest compression resistance allows the students to experience the amount of pressure needed to perform proper chest compressions in a real life situation

8	Economical disposable airways for quick and easy clean up Removable and reusable faces for convenient and affordable maintenance
9	AED Monitor or AED Trainer for defibrillation and AED training.

8. Pediatric Care Simulator (Pediatric)	
Sl. No	Technical Specification
1	It should be a full-body, lifelike manikin realistically representing a child designed for skill and scenario-based training of a complete range of pediatric care procedures. It should allow for auscultation and recognition of normal and abnormal heart, breath and bowel sounds.
2	It should include:
a.	Pediatric Full-body Male Manikin
b.	Multi-Venous IV Training Arm
c.	Hospital Gown
d.	Manikin Lubricant
e.	Assembly Tool Kit
3	Head with anatomical landmarks, trachea, and esophagus, along with simulated lungs and stomach, allow the practice of many procedures.
4	Eye, ear, nose and mouth care including
4.1	Simulated medication application / instillation
4.2	Simulated irrigation of the eye and ear
4.3	Nasal packing
4.4	Oral hygiene
5	Anatomical patent airway for
5.1	Insertion, securing, and care of endotracheal tubes
5.2	Insertion and suctioning of oropharyngeal and nasopharyngeal airways
5.3	Various oxygen delivery procedures
5.4	Tracheostomy opening with removable plug for care and suctioning
5.5	Lungs can be filled with fluid for realistic suctioning
5.6	NG tube insertion, care, medication administration, and removal
6	Stomach reservoir will hold fluid for practice of gastric lavage and gavage
7	Manually generated carotid pulse
8	Injection sites include deltoid, bilateral thigh and dorsogluteal
9	Full range of motion for realistic patient handling
10	Pediatric transfer techniques possible
11	Dressing and bandaging techniques possible
12	Interchangeable Male and Female Genitalia
13	Can be attached to urinary and colon reservoirs via connector valves
14	Urinary valves give the natural resistance felt when catheterizing
15	Complete urinary catheterization
16	Will retain indwelling or straight catheter
17	Anal valves simulate the internal anal sphincter

18	Enema procedures may be performed using fluid for realistic return
19	Articulating IV Training Arm and IO training leg:
a.	Allows peripheral intravenous therapy and site care
b.	Venipuncture is possible in the antecubical fossa and dorsum of the hand
c.	Accessible veins include median, basilic and cephalic
d.	Replaceable skin and infusible vein system
e.	Allows intraosseous at tibia and site care.
f.	Additional 5nos. of replaceable intraosseous access sites should be supplied along with the system
20	The System provides an easy and efficient way to run simulations:
21	Minimal simulation setup time
22	Scenarios and Themes reduce instructor workload
23	Easy manipulation of patient vital signs and other physiological parameters
24	Intuitive touch screen for easy 'pick up and play' experience
25	Mobile - teach anywhere
26	Optimal data capture for quality debriefing

9. Full Body Pregnancy Simulator	
Sl. No	Technical Specification
I	<u>Description</u>
1	Maternal-Fetal Simulator complete with anatomically realistic mother and fetus for comprehensive training in prenatal care, labor and delivery, and postpartum care.
2	High fidelity simulator with an automated delivery mechanism and maternal aesthetics like a real patient.
3	The birthing mechanism should be noiseless for realistic labour.
4	All maneuvers & interventions should result in appropriate patient response automatically based on underline physiology of patient without any input from the instructor.
5	Birthing simulator should includes a birthing fetus and a second fetus especially designed for Leopold's maneuvers
6	Maternal fetal simulator should have voice linked to labour and should allow upload of voice files in any local language (Preferable)
7	Simulator should support full maternal code as a non-gravid patient and should be supplied with non-gravid abdomen and scenarios for the same.
II	Simulator should have following features:
1	Should have realistic birth canal with vulva/perineum supporting accurate fetal descent and rotation
2	Should provide Multiple Birthing Positions: lithotomy, sitting, and all-fours
3	Should allow vaginal examinations for evaluation of the cervix, fetal station, and position

4	Should have static cervixes representing various stages of dilation (closed to 10cm); effacement from 0-100%
5	Should have palpable uterine contractions which can be detected by palpating the fundus
6	Should have facility to allow Instructors to control the rate and duration of contractions
7	Birth of fetus should not have any connection port at the head or buttocks for realistic presentation during both vertex and breech deliveries (Preferable)
8	Fetus/baby should have open mouth for meconium removal & cyanosis treatment
9	Should support McRoberts Maneuver
10	Should support suprapubic pressure with palpable symphysis pubis
11	Should be able to simulate shoulder dystocia
III	Internal Rotations should be possible
	a. Should support delivery of posterior arm during shoulder dystocia
	b. Should allow Zavanelli maneuver possibility for logging in event log
	c. Trendelenburg position with possibility for logging in event log
	d. Left lateral tilt with possibility for logging in event log
	e. Vertex and breech delivery with no exposed metal parts
13	Should have Fetal heart sounds
IV	Should have clinically accurate fetal size with tactile realism
	a. Fetus with palpable fontanel and sagittal suture
	b. Should allow Forceps application
	c. Should allow Vacuum extraction without fetal cap
	d. Deleted
	e. Should allow Fetal airway suctioning
	f. Should be able to simulate fetal cry
	g. Should be able to display 1-minute and 5-minute APGAR scores
	h. Should simulate postpartum hemorrhage
	i. Should allow for assessment of uterine atony (Contracted vs. Boggy Uterus)
	j. Should have facility bimanual compression and uterine massage
V	Should exhibit:
	a. Uterine blood released upon massage
	b. Uterine massage should automatically decrease rate of blood flow
	c. Uterine massage compression effect
	d. Uterine inversion
	e. Should support placing an Intrauterine balloon
	f. Umbilical cord can be cut and clamped
	g. Episiotomy should be possible
	h. Should have Intact/fragmented placenta with realistic color, texture and flexibility, placenta can be delivered with gentle traction

	i. Should allow to recognize sign for emergency C-section for team training of C- Section.
VI	Mannequin should have following clinical features
	a. Respiratory
1	Manikin should have realistic upper airway with airway management
2	Should have Advanced lungs with mechanical ventilation support
3	Should allows use of airway devices such as LMA
4	Should Support endotracheal tubes, nasal-pharyngeal and oropharyngeal airways
5	Should display spontaneous breathing
6	Should have bag-valve-mask
7	Should exhibit lung sounds: anterior and posterior
8	Should have realistic chest excursion & Exhalation
9	Should allow positive pressure ventilation
10	Should be compatible for CPR
	b. Circulatory System
1	Should support real 4-lead ECG that can be connected to simulator
2	Should display 12-lead ECG simulated in software
3	Should have palpable pulses, with controllable pulse strength
	c. Cardiovascular
1	Should allow Chest compressions resulting in appropriate physiological changes.
2	Should support electrical therapy (defibrillation)
3	Should allow NIBP measurement
4	Should have realistic Heart sounds linked to the physiology of the patient.
	d. Nervous System
1	Should be able to simulate seizures
2	Should be able to simulate pupillary response
3	Deleted
4	Deleted
5	Should have live and pre-recorded speech and should also have ability to import customized vocal sounds into system software
	e. Fluids
1	Should have inbuilt postpartum bleeding tank
2	Should have bilateral iv arms
3	Should have Urinary catheterization
VII	Patient Profiles & Scenarios
1	Should be supplied with preprogrammed patient profiles with system software to write patient profiles as per training needs
2	Should be supplied with pre programmed clinical scenarios (at least 20 nos.) with system software to modify existing scenario & write new scenarios as per training needs

A	Pre programmed clinical scenarios for gravid patient should include:
	a A normal delivery
	b An instrumental vaginal delivery
	c Fetal Tachycardia due to Maternal Pyrexia
	d Maternal cardio-respiratory arrest
	e Fetal central nervous system depression by narcotics given to the mother
	f Eclampsia
	g Major post-partum hemorrhage due to uterine atony
	h Breech delivery
	I Shoulder dystocia
	j Umbilical cord prolapse
B	Urgent Obstetric simulated clinical Experiences (SCEs)
	a. Anaphylactoid Syndrome of Pregnancy
	b. Chronic fetal Hypoxia Associated with Placental insufficiency
	c. Oxytocin induced uterine tachysystole
	d. Repetitive deceleration caused by umbilical cord compression
	e. Uncontrolled gestational diabetic
	f. Fetal Heart rate signal loss
	g. Inadvertent monitoring of maternal heart rate
	h. Major placental abruption
	i. Maternal hypotension follow Epidural Block
	j. Maternal Sepsis
C	Pre programmed clinical scenarios for non-gravid patient should include : (Preferable)
	a Chronic Heart failure exacerbation (Preferable)
	b. Acute Respiratory Distress Syndrome (Preferable)
	c Sepsis with Hypotension (Preferable)
	d. Brain Attack with Thrombolytic Therapy (Preferable)
	e Motor Vehicle Collision with Hypovolemic Shock (Preferable)
VIII	Audio Video Recording System
	1. Microphone – 1 no
	2. Cameras – 2 nos
	3. Computer to be supplied with system for display and control
	4. Suitable server - Ability to capture and video output (display), Intel Core i5 or latest, quad core or better , 1TB internal HD storage with 8 GB RAM
IX	EVENT LOG:
1	The simulator must include physiological, pharmacological event data that is logged and timed stamped.
2	The log must automatically calculate and log the following items:
	a. Alveolar and blood gases
	b. Cardiac Output

	c. Heart rate
	d.SPO2
	e. Invasive blood pressure
	f. Hematocrit and hemoglobin values
	g. Temperatures
3	The event long must be able to be saved and printed.
X	CONTROL SYSTEM: Control system should be expandable for future software up-gradation.
	Should be supplied complete with
	a Maternal mannequin - 01 no.
	b Software License - 04 nos.
	c Fetus for Leopold's maneuvers - 01 no.
	d Abdominal for labor - 01 no.
	e Abdominal for Post Labor - 01 no.
	f Static cervices for vaginal examination - 01 set
	g Instructor laptop – 01 no.
	h Simulated CTG Monitor – 01 no.
	I Delivery Table- 01 no.
	j The system shall be supplied one set of Stethoscope, Laryngoscope, LMA, Patient bed with IV stand, Resuscitation cart, Resuscitator Bag.

10. Embryonic/Fetal Development	
Sl. No	Technical Specification
I	<u>Product features</u>
1	Set of nine individual models mounted on stands show the stages of human development.
2	Each model comes with a stand and a rod for display
3	Hand painted
II	<u>Product description</u>
	Set of nine individual models mounted on stands show the stages of human development.
1	An embryo 6 days old, considerably enlarged.
2	Uterus with embryo in 1st month of gestation.
3	Uterus with embryo in 3rd month of gestation.
4	Uterus with fetus, in 4th month.
5	Uterus with fetus, placenta and umbilical cord.
6	Uterus with fetus, in 5th month pregnancy.
7	Uterus with fetus in 7th month pregnancy
8	Uterus with fetus in 8th month pregnancy.
9	Uterus with fetus in 9th month pregnancy. Each model comes with a stand and a rod for display

11. IUD Insertion Trainer Uterus	
Sl. No	Technical Specification
1	Should be IUD Insertion Trainer Uterus
2	A compact hand-held IUD Insertion Trainer Uterus for demonstrating and performing IUD insertion technique.
3	IUD Insertion Trainer Uterus
4	Features:
a.	Should have Normal size uterus and post partum uterus
b.	Clear window permits easy viewing of IUD
c.	Window tilts open to permit removal of IUD
d.	Should be provided with PPIUCD forceps, sponge holding forceps, sim's speculum and cusco speculum
5	USES:
a.	Procedure of IUD Insertion and Removal

12. Difficult Airway management simulator	
Sl. No	Technical Specification
1	The model should have following features:
2	Anatomically correct airway.
3	The incisors should be removable when excessive force is applied
a.	OR With excessive laryngoscope pressure on teeth will produce signal.
b.	The airway training model should indicate and alert instructor/faculty excessive pressure on incisors (Preferable)
4	Successful tube tip placement should be able to be confirmed by some indicators.
5	Airway opening techniques (head tilt, jaw thrust).
6	Bag mask ventilation.
7	Pre-intubation airway assessment.
8	Pressurization of external larynx to improve laryngeal view.
9	Intraoral/intranasal intubation.
10	Use of oropharyngeal airway.
11	Use of nasopharyngeal airway.
12	Use of laryngeal mask airway.
13	Confirmation of successful ventilation by indicators.
14	Should be able to create difficult airway conditions

13. Physical assessment simulator	
Sl. No	Technical Specification
	It should allow training and assessment of-
1	Blood Pressure (BP) Palpation and Auscultation
2	Bilateral Carotid, Brachial, Radial, Femoral and Pedal Pulses
3	Heart, Lung, Bowel and Vocal Sounds (Normal & Abnormal)
4	Palpable Anatomical Landmarks (Anterior, Posterior, Axilla)
5	Eye examination for blinking and pupils (Normal, Constricted, Dilated and Asymmetrical Pupils)

14. Tube feeding simulator	
Sl. No	Technical Specification
	The model should have following features:
1	Oral/nasal tube insertion and PEG tube setting are possible.
2	Tube placement can be confirmed by auscultation.
3	The manikin can be set at Fowler's position.
4	Real liquid foods can be administered.
5	The tube feeding routes panel should be there and the chest sheet should be able to facilitate demonstration and anatomical understanding.
6	The neck should be flexible to learn appropriate neck/head positioning.
7	Feeding tube insertion and confirmation of tube placement.
8	PEG tube setting and care.
9	Stomach pumping (Lavage)

15. Gluteal IM injection Model	
Sl. No	Technical Specification
A.	It should have the following Features:
1	Realistic model for practice of intramuscular injection.
2	Trainees can feel and confirm the Skelton as required for measurement.
3	Injection site corresponding to Clark's point measurement method.
4	Facilitate to perform syringe infusion.
5	Similar texture of the muscle and skeleton as of a human body and should help in selecting the correct region and angle for injection.
6	Injected solution should be drained out by the drainage tube.

7	The sensation of needle insertion should be very realistic.
8	Supplied with stand for giving lateral injection in supine position
9	Replaceable skin and vein system ensure longevity of model
10	Will articulate to other adult manikins
B.	It should include the following standard accessories:
1	Manikin Lubricant
2	Stand
3	Carrying case
4	Spare injection sites (left and right) 2 each
5	Drainage tube 2 pcs
6	Skin 1 pc