



**MGM's College of Engineering  
and Technology, Kamothe**  
Sector No. 1, Kamothe, Navi Mumbai – 410 209

## **TENDER NOTICE**

### **Sealed tender are invited for different Laboratories:**

Instruments / Equipments /  
Apparatus / Machines / Software's /  
Electronics Components/ Trainer  
Kits /All types Human Skeleton  
Models / Chemicals , Accessories /  
Glassware / Printers / Pedestal  
Fans / Printing of Work Books.

For following Departments:

- 1) Bio Medical
- 2) Chemical
- 3) Mechanical
- 4) Electronics and  
Telecommunications
- 5) Electrical
- 6) Applied (Chemistry and Physics)

Interested parties have to submit  
their tenders for above mentioned  
materials on or before **20/06/2018**.  
More details are available at  
MGM CET Website:

**[www.mgmmumbai.ac.in/mgmcet/](http://www.mgmmumbai.ac.in/mgmcet/)**

**PRINCIPAL**

- **Pedestal Fans Specifications –**  
Hi-Speed  
**Brand :** Bajaj / Crompton Greaves / Usha  
**Size : 18”**
- **Printing of Work Books of approximate 300 pages of**
  - 1) Physics I
  - 2) Chemistry I
  - 3) Mathematics I
  - 4) Mathematics III
  - 5) BEE
  - 6) Environmental Engineering

With soft binding and color cover on front and back
- **Printers**
  - 1) Dot Matrix Printer  
Make : Epson  
132 columns
  - 2) Printer Ink jet  
Make : Epson / HP / Canon
  - 3) All in One Laser Printer  
Make : HP

- **Departments of Electronics and Telecommunications:**

**Electronics Compounds**

Sr. No.	Item	Specification	Qty
1	IC	7400 NAND Gate	75
2		7402 NOR Gate	75
3		7404 NOT Gate	75
4		7408 AND Gate	75
5		7432 OR Gate	75
6		7486 XOR Gate	75
7		74151 8:1MUX	10
8		7476 JK Flip-Flop	10
9		74153 4:1MUX	10
10		74139 2:4 DEMUX	10

11		7473 MS JK Flip-Flop	10
		741 op-amp	40
		555 timer	25
12	Breadboard		30
13	LED		300
14	Resistor	1Kohm,10Kohm,12Kohm,15Kohm,22Kohm,33Kohm,39Kohm,47Kohm,68Kohm,82Kohm,100Kohm, 150Kohm, 220Kohm,330Kohm,470, 560Kohm, 680Kohm, 100Kohm, 150Kohm, 180Kohm, 220Kohm, 270Kohm, 330Kohm, 390Kohm, 470Kohm, 560Kohm.	50
15	Wire bundle	Single Stand (1/26,92 Mtr.)	12
16	Cutter	Make :Multitech	10
17.	Fuse with caps	100mA	25
18.	9V Zener diode		25
19.	9V Battery		15
20.	1.5 A3 Cell		10
21.	1.5 A4 cell		10
22.	Transistor	BC547	50
23		BC107	25
24		BC108	25
		FET 2Stage (BFW-10)	20
		Multistage JFET	10
		MOSFET	10
25.	Capacitor	0.1microfarad	25
		0.01microfarad	25

### Trainer Kits

Subject	Sr. No.	Trainer Kit	QTY.
DCOM	1	ASK Modulator, demodulator	3
	2	FSK modulator, Demo dulator	3
	3	BPSK Modulator ,demodulator	3
	4	QPSK Modulator, demodulator	2
	5	MSK Modulator and Demodulator	3
	6	Data Formatting Kit transmitter (Line Code).	3
	7	Data Formatting Kit Receiver(Line Code)	3
	8	Function Generator(2MHz)	5
	9	DSO	5
Microprocessor(Peripheral Kit)	10	Micro-controller Programmer Kit	2
	11	Microprocessor(8085) and Micro-controller(8086) (Peripheral Kit): Stepper Motor	3
	12	Microprocessor(8085) and Micro-controller(8086) (Peripheral Kit): 8255 (Peripheral Interface Controller)	3
	13	Microprocessor(8085) and Micro-controller(8086) (Peripheral Kit): 8259(Interrupt Controller)	3
DSP	14	DSP Starter Kit (DSK) for the TMS320C6713.	3
TV	15	Color TV Trainer kit	1
	16	LED/HD TV trainer kit	1
	17	LCD TV tainer Kit	1
	18	Smart TV Trainer Kit	1
	19	color pattern generator	
	20	DTH and trainer kit	
	21	Multimeters	5
	22	DSO	10
DE	23	Shift Register	1
	24	Counter	5
	25	Flip Flop	5
MCOM	26	3G trainer Kit	1
	27	4G trainer Kit	1
OFC	28	OFC kit Basic	2
	29	OFC kit Advance	2

MRE	30	Radar Trainer	1
	31	Microwave Test Bench(gun Based)	1
	32	Microwave Test Bench(Klystron Based)	1
RFGD	33	Antenna Trainer Kit	2
DSD and EDC-I,II	34	Analog and Digital Trainer Kits	10
SATCOM	35	Satellite Communication Trainer Kits	1
VLSI	36	VLSI/Embedded system Trainer Kits	3
VLSI	37	Xilinx	Nil
MINI Project	38	Universal Burner	1
	39	Hand Held Network Analyzer	2
IOT Lab	40	IOT Lab	2
SAR Lab	41	SAR Lab	
Portable lab	42	Portable lab	

- **Electrical Department**

**PLCs**

Sr.No.	Name	QTY.
1	PLC trainer kit with software	3
2	Bottle filling Plant demo unit	1
3	DC motor control Demo unit	1
4	Digital Logic Simulator	1
5	Study of Star and Delta On line starter	1

**Single and Three Phase Motors, Control Panels, Measuring Meters & Accessories**

Sr.No	Name	DESCRIPTION	QTY.
1	Load Test on Single phase Induction Motor	1HP , 230V, 6A, CSCR Single phase S Q Cage Induction Motor with Mechanical Arrangement	1
2		<b>Accessories and control panels</b> AC MCB 2 Pole, DOL Starter, wattmeter 300v, 10A , 10 A AC Ammeter 1 no., 300 V AC Voltmeter 1 no.,	1
3	Speed Control of Three Phase Induction Motor	3 Phase Induction Motor	1
4	Induction Motor by v/f Method	Control Panel for V/f method	1

**Control Panel and Accessories**

Sr. No.	DESCRIPTION	QTY.
1	3.7 kW/ 5 HP / 220 V / 19A / 1500 RPM / DC Shunt Motor	1
2	<b>Control Panel</b> DC MCB 1 no., 3 point Starter 1 no., 10 A DC Ammeter 1 no., 2A DC Ammeter 1 no., 300 V DC Voltmeter 2 nos., Field Rheostat(1000ohm,1.2A), Armature Rheostat (100ohm,5A), (external) 1nos., other required indicators.	1
3	3.7 kW/ 5 HP / 220 V / 19A / 1500 RPM / DC Shunt Motor	1
4	<b>Control Panel</b> DC MCB 1 no., 3 point Starter 1 no., 10 A DC Ammeter 1 no., 2A DC Ammeter 1 no., 300 V DC Voltmeter 2 nos., Field Rheostat(1000ohm,1.2A) (external) 1nos., other required indicators.	
5	1.5 HP / 220 V / 220 V / Separately excited / 1500 RPM DC Motor with flywheel mounted on Motor shaft.	1
6	<b>Accessories and control panel</b> Control Panel Having DC MCB 1no., 10 A rectifier circuit for Armature and 2 A Rectifier circuit for field, Plug to connect variac, Resistance & switch to limit plugging current in three step, change over knife switch, Resistive load controlled in three steps for resistive breaking, 2 No. DC Ammeter (2A & 10A) and 1 No. DC Voltmeter (300V), other terminals required. ( meters will be connected internally)	1
7	1 Phase 230 V / 10 A / Variac	1
8	Digital Stopwatch	1
9	Rheostat 100 ohm 2A	1
10	5.0 HP / 220 V / 1500 RPM / DC Shunt Motor coupled with 3.0 KW / 220 V / 1500 RPM / DC Shunt Generator with base and couplings	1
11	<b>Accessories and control panel</b> consisting DC MCB 1no., 3 point Starter 1no., 4 Nos. DC Ammeter (2A, 10A, 20A), 2 Nos. DC Voltmeter(300V), 1 No. Separate excitation unit for Generator, all other indicators & terminals required.	1
12	Single Phase / 10 A / Lamp Load banks controlled by rotary switches in 10 steps.	1
13	Field Rheostat for Generator Voltage Control (100ohm, 2A)	1
14	Field Rheostats for Motor Speed Control (100ohm, 2A)	1

15	DC Series Motor (3H.P., 220 V, 12 A, 1500rpm.) with brake drum attachment	
16	Control Panel DC MCB 1 no., 2 point Starter 1 no., 15 A DC Ammeter 1 no., 300 V DC Voltmeter 1 nos., Rheostat (100ohm,5A), (external) 1nos., other required indicators.	
17	Digital Multimeter	8
18	Digital Tachometer	4

### Three Phase Autotransformers

Sr. No.	DESCRIPTION	QTY.
1	Three Phase / 20 A / Autotransformer ( Variac ) Input : 3 Phase / 415 V / 50 Hz. / AC      Output : 3 Phase / 0 – 470 V / 20 A AC	1
2	Single Phase / 10 A / Autotransformer ( Variac ) Input : 1 Phase / 230 V / 50 Hz. / AC      Output : 1 Phase / 0 – 250 V / 10 A AC	4
3	Digital Multimeter	6
4	MI AC Ammeter 0 – 5 A / 10 A dual range	3
5	MI AC Voltmeter 0 – 300 V / 600 V dual range	3
6	MI AC Ammeter 0 – 10 A / 20 A dual range	3
7	MI AC Voltmeter 0 – 50 V / 100 V dual range	3
8	MI AC Ammeter 0 – 2 A	2

### Motors

Sr. No.	DESCRIPTION	QTY.
1	5 HP / 220 V / 19A / 1500 RPM / Shunt Wound DC Motor coupled to 3 KVA / 415 V / 4.2A / 3 Phase / 1500 RPM / 50 Hz. / Four Pole / Rotor Wound / Stator Excited/ Separately excited / Manually Regulated Salient Pole Alternator with base and couplings	1
2	<b>Accessories and control panels</b> Control Panel consisting following components. Motor side : DC MCB 1 no., 3 point Starter 1 no., 25 A DC Ammeter 1 no., 2 A DC Ammeter 1 no., 300 V DC Voltmeter 1 no., Field Rheostat for motor field control 1 no. (External), other required indicators. Generator side : 5 A AC Ammeter 1 no., 2 A DC Ammeter 1 no., 500 V AC Voltmeter 1 no., 2 A Separate excitation unit for Alternator 1 no.,	1

3	5 HP / 220 V / 19A / 1500 RPM / Shunt Wound DC Motor coupled to 3 KVA / 415 V / 4.2A / 3 Phase / 1500 RPM / 50 Hz. / Four Pole / Rotor Wound / Stator Excited/ Separately excited / Manually Regulated Salient Pole Alternator with base and couplings	1
4	<b>Accessories and control panels</b> Control Panel consisting following components. Motor side : DC MCB 1 no., 3 point Starter 1 no., 25 A DC Ammeter 1 no., 2 A DC Ammeter 1 no., 300 V DC Voltmeter 1 no., Field Rheostat for motor field control 1 no. (External), other required indicators. Generator side : 5 A AC Ammeter 1 no., 2 A DC Ammeter 1 no., 500 V AC Voltmeter 1 no., 2 A Separate excitation unit for Alternator 1 no.,	1
5	3 Phase wire wound resistance load bank / 415 V / 10 A / 5A / star connected / controlled in 10 steps by industrial type rotary switches.	1
6	3 HP / 415 V / 3.5A /1500 RPM / 50 Hz. / Star Connected / Rotor Wound / Stator Excited / Separately Excited / Manually Regulated / Salient Pole type / Auto Synchronous Motor with damper windings for auto induction start complete with Mechanical Loading arrangement having Round dial scales and Friction Belt for Torque Measurement.	1
7	<b>Accessories and control panels</b> Control Panel consisting following components. TPN MCB 1 no., DOL Starter interlocked with separate excitation unit for Motor 1 no., 10 A AC Ammeter 1 no., 2 A DC Ammeter 1 no., 500 V AC Voltmeter 1 no., 0.5 leg lead PF Meter 1 no.,other required indicators.	1
8	Digital combimeter mounted in a MS box measuring V, I, KW, KVA, KVAR, PF of all three phases with required CT. Aux. supply 230 V / 1 Ph. 415 V / 10 A rating	1
9	Digital Tachometer 1500 RPM	7
10	Power factor Meter	1

Sr. No.	DESCRIPTION	QTY.
1	Variable Resistor (0-600 ohm)	1
2	Variable Inductor .5 Henry , 5 Amp, 230 V, Single Phase	1
3	Variable Capacitor 100 Micro Farad 230 v ,5 A, Single Phase	1
4	Oscilloscope Make: Keysight , 50 MHz 2 Channel (DSO)	1
5	Function Generator Aplab (2 MHz) Multiwaveform	1



6	Ammeter AC (0 - 2 A)	3
7	Digital Multimeter 3 ¾ ,VC97,Make : Aplab	14
8	Voltmeter AC (0- 300 V)	5
9	Ammeter DC (0 - 500 mA)	7

Sr No.	Equipments	Qty
01	Fatigue Testing Machine	01
02	Spot Welding Machine	01
03	Electric Furnace for forging	01
04	Power Hacksaw Machine	01
05	CREO Software	01
06	Keyboard/Mouse	03
07	Drop wise and Film wise Condensation Apparatus	01
08	Determination of Fin Efficiency and Fin Effectiveness Equipment Pin Fin Apparatus	01
09	Floating Carrier Micrometer	01
10	Tool Makes Microscope	01

- **Bio Medical Department**

**Equipments for Biomechanics Prosthesis and Orthotics Lab.**

Sr.No.	Name of the Equipment	Quantity
1	Human Skeleton for study purpose	01
2	Model of Endoskeleton Prosthesis (Below Knee)	01
3	Model of Exoskeleton Prosthesis (Below Knee)	01
4	Bell Crank Lever	01
5	Orthosis for Spine	01
6	Goniometer for hand, elbow knees:-3 types	01 each

**Equipments of Biosensors and Medical Imaging Lab.**

Sr.No.	Name of the Equipment	Quantity
1	CRO	1
2	DSO	2
3	A-D converter kit	1
4	Pressure sensor kit	1
5	PH electrode kit	1
6	X-ray controller with X-ray tube	1
7	Image processing unit (Table Top)	1
8	Endoscopy trainer kit	1
9	Personal Computer	5
10	Dual Power Supply	2
11	Frequency Generator	2

**Consumable of Biosensors and Medical Imaging Lab.**

1. Thermistor NTC and PTC type
2. Thermometer
3. Multi-Meter
4. Light Bulb
5. Bread Board
6. Connecting wires
7. Resistors and capacitors
8. IC's

**Consumable of HAP Lab.**

1. ECG Gel
2. 10mm Micropipette(3)
3. 5mm Micropipette(3)
4. Picker(3)
5. Needle(150)
6. Normalized N/10 HCL
7. Hemoglobin Pipette
8. Sprit
9. Glass Distill Water(2)
10. Cotton 3 packets
11. Blood group kit(2)
12. RBC dilutin g fluid(Hayem Fluid)
13. Haemocytometer (5)

**Medical Electronics lab.**

Sr.No.	Name of the Equipment	Quantity
1	Consumables: Resistors, Capacitors, Transformers, Digital ICs, Analog ICs, Battery, CRO probes, Bread boards, wires, LEDs,	Each component will be different.
2	Multimeters	8
3	Dual Power Supply	3

**Microprocessor & Microcontroller lab.**

Sr.No.	Name of the Equipment	Quantity
1	Personal Computer	4
2	Consumables(8051 IC8086 IC Adapter 12v	

**Instruments of Computer Application Lab.**

Sr.No.	Name of the Equipment	Quantity
1	Computer Systems	25
2	Printer Ink jet	1
3	Dot Matrix Printer	1
4	DAC Card 8 channel Compatible with MATLAB	07
5	Web camera	02
6	Dermatoscope	01
7	Proteus software	For20 users
8	DSP KIT	2

- **Chemical Department:**

**I- Chemicals:-**

Sr. no.	Name of Chemicals	Total Quantity required
1	Sodium Hydroxide (Flakes)	5500 g
2	Concentrated Hydrochloric Acid	11 ltr
3	Ethyl Acetate	6 ltr
4	Phenolphthalein Indicator Solution	1250 ml
5	Sodium Chloride	1 kg
6	Acetic Acid	3.5 ltr
7	Petroleum ether (LR grade 60:80)	500 ml
8	Diethyl ether	500 ml
9	Anhydrous sodium sulphate	250 gm
10	Washing soda	5 kg
11	Butyric Acid (CAS NO. 107-92-6)	5 Lit.
12	Ethanol Purity (98%)	13.5 Lit.
13	KMnO <sub>4</sub>	1.0 kg
14	EDTA	2.5 Kg
15	Conc. Ammonia	5 ltr
16	Silver Nitrate	100 gms
17	Potassium Iodide	1 Kg
18	Ammonium Chloride	500 gms

19	Sodium Carbonate	2 Kg
20	Oxalic Acid	1 Kg
21	Salicylic Acid	1.5 Kg
22	Urea	1 Kg
23	Thiourea	1 Kg
24	$\beta$ -Naphthol	1 Kg
25	Sodium Chloride	2500 gms
26	Aniline	1 ltr
27	Phenol	1 ltr
28	Potassium Bromide	1 ltr
29	Potassium Bromate	1 ltr
30	Potassium Hydroxide	1 Kg
31	Glucose powder	1 Kg
32	Iodine Solution	2.5 ltr
33	Copper Wire	500 gms
34	Porcelain piece	500 gms
35	Iron (II) Sulfate	1 Kg
36	Potassium Nitrate	1 Kg
37	Methyl Acetate	5 ltr
38	Acetone	7.5 ltr
39	KOH	500 gm x 2
40	H <sub>2</sub> SO <sub>4</sub>	500 ml x 4
41	Bromo benzene	500 ml x 1
42	Nitric Acid	500 ml x 2
43	Methanol	1 ltr
44	Phosphoric acid	500 ml x 2
45	Anhydrous sodium carbonate	500 ml x 2
46	Sodium nitrite	500 ml x 4
47	Calcium chloride	500 gm x 4
48	Magnesium chloride	500 gm x 2
49	ferric chloride	500 gm x 2
50	cooking oil	500 ml x 4
51	Aluminum can or aluminum metal	500 gm x 2

52	sulfanilic acid monohydrate	500 ml x 2
53	dimethylaniline	500 gm x 2
54	glacial acetic acid	500 gm x 2
55	Sulfur 1,2-dichloroethane	500 gm x 2
56	vinegar	500 ml x 4
57	rubber latex	500 ml x 2
58	Naphthalene Balls	2 kg
59	Benzoic Acid	500 gms
60	Sodium Hidroxide	500 gms
61	Saw dust	500 gms

## **II- Glassware and Equipment:-**

<b>Sr. no.</b>	<b>Name of Item</b>	<b>Capacity</b>	<b>Total quantity</b>
1	Burette (Graduated)	50 ml	10
2	Pipette (Calibrated)	5 ml	5
3	Pipette (Calibrated)	10 ml	5
4	Pipette (Calibrated)	25 ml	5
5	Conical Flask	125 ml	30
6	Conical Flask	250 ml	10
7	Beaker	100 ml	10
8	Beaker	250 ml	10
9	Beaker	500 ml	10
10	Beaker	1000ml	10
11	Measuring Cylinder	5 ml	5
12	Measuring Cylinder	10 ml	5
13	Measuring Cylinder	50 ml	5
14	Measuring Cylinder	100 ml	5
15	Measuring Cylinder	250 ml	5
16	Measuring Cylinder	500 ml	5
17	Measuring Cylinder	1000 ml	5
18	Rubber Bulb	Small Size	5

19	Rubber Bulb	Large Size	5
20	Hand Gloves	Standard Size	12 pairs
21	Glass Rod	8 inch long	5
22	Filter Paper	1 Box containing 100 Nos.	1
23	Stop Watch	--	3
24	Conductivity Electrode	--	1
25	Litmus Paper (Red)	--	6 pkt
26	Litmus Paper (Blue)	--	6 pkt
27	Starch Paper	--	6 pkt
28	Termaric Paper	--	6 pkt
29	Sodium Fusion tube	--	2 Gross
30	Capillary tube	--	6 pkt
31	Lead Acetate Paper	--	6 pkt
32	Wire guage	--	24 nos
33	spatula	--	24 nos
34	Mask to protect odour	--	25 nos.
35	Petry dish	--	5
36	Stefan Tube	--	2
37	Thermometer	0-100°C 0-300°C	20 10
38	Filter paper	--	1 rim
39	Burette	--	10
40	Microtic pipette(1 ml-5 ml)	--	1
41	Volumetric measuring cylinder	1000 ml	02

- **LPG Cylinders shifting from inside to outside of laboratory**

### III- Equipments:-

Sr. no.	Name of Equipment	Specification
1	Reynolds Number Apparatus	1)water collecting tank 2)water measuring tank 3) Acrylic glass tube 1” inch & 1r 4) water pipe line, gate valve & ot 5)Colored die dosing unit 6) 1/2 H.P Crompton motor
2	Pitot Tube Apparatus	1)water collecting tank 2)water measuring tank 3)water flow tank 4) Venturimeter tube 5)water pipe line, gate valve & otl 6)Manometer tube 7) 1/2 H.P Crompton motor
3	V and Rectangular Notches Apparatus	1)water collecting tank 2)water measuring tank 3)water flow tank 4)a complete set of different siz Rectangular type Notch for ass flow tank. 5)water pipe line, gate valve & otl 6) 1/2 H.P Crompton motor
4	Dropwise & Filmwise condensation Apparatus	1) MOC: SS 2) steam generator- 8 ltr, 3) heater capacity 1.5 watts 4) RTD Pt 100 type
5	Fluidised Bed Drier	1) capacity-1-2 kg/batch, 2) air pressure 5-15 kg/cm <sup>2</sup> 3) temperature- 50/60 deg c 4) cylinder-10 cm width, & 70 c
6	Flow through Packed Bed Apparatus	1) Pipe dia: 2.5 inch 2) Actual pipe dia: 6.27 cm 3) Length: 1.37 m 4) Surface Area of packing: 374
7	Flow through Fluidized Bed Apparatus	1) Tube Dia: 5.08 cm 2) Glass Beads dia: 4 mm 3) Density of glass beads: 2500
8	Rotameter for cyclone separator (Fluid: Air; Range: 0-200 LPM)	--
9	ISS standard Sieve Set	--

**Applied Physics :**

Sr. No.	Equipment	Quantity
1	Constant current source	1
2	Energy band gap of semiconductor set up	2
3	I / V characteristics of Zener diode(Kit)	2
4	Ultrasonic Distance Meter	2
5	I / V characteristics of semiconductor diode(Kit)	2
6	Determination of 'h' using Photo cell set up	2
7	Newton's ring set up	1
8	Determination of thickness of thin spacer	1
9	Laser source	1
10	Determination of Numerical aperture of optical fiber	1
11	Cathode Ray Oscilloscope(20Mz)	2
12	Signal generator(sine wave)	2

- Applied Chemistry:**

Sr.No.	Name of chemicals	Quantity
1	EDTA	4 Kg
2	CON.AMMONIA	10 ltr
3	CON.HCL	10 ltr
4	AgNO <sub>3</sub>	100gm
5	KI	2Kg
6	AMMONIUM CHLORIDE	3.5Kg
7	DRY COAL POWDER	1Kg
8	POTASSIUM HYDROXIDE	1Kg
9	GROUNDNUT OIL	2Kg
10	EHTYL ALCOHOL	10 ltr
11	ZnSo <sub>4</sub>	2.5kg
12	POTASSIUM DICHROMATE	1kg
13	ACETIC ACID	2 ltr
14	SODIUM THIOSULPHATE	2kg
15	POTASSIUM CHROMATE	500gm
16	FeSo <sub>4</sub>	2kg
17	Kmno <sub>4</sub>	1000gm
18	COPPER SULPHATE	2kg
19	STARCH POWDER	500gm
20	NICKEL AMMONIUM SULPHATE	1kg
21	Aluminum Oxalate	1kg