List of Laboratory Equipments

Department of Mechanical Engineering

2014

Workshop Practice/ MSFP Lab			
SL.No.	**Name of the Equipment**	**Quantity**	**Specifications**
1.	Lathe Machine 4'	13 Nos.	Length of Bed-2.5', Motor-2 HP, Width of Bed-10", RPM- 1425
2.	Lathe Machine 6'	02 Nos.	Length of Bed-4', Motor-2 HP, Width of Bed-10"
3.	Capstan Lathe Machine	01 No.	Length of Bed-76 mm, RPM-1440, Height of Center-165 mm, Collect Capacity – 25 mm, Motor- 1 HP
4.	Shaping Machine	01 No.	Working Stroke – 305 mm, Length of Ram-660 mm, Motor-1.5 HP
5.	Slotting Machine	01 No.	Stroke length- 6", Longitudinal Movement -8", Cross movement - 6", Motor- 1 HP
6.	Horizontal Milling Machine	01 No.	Longitudinal travel – 55 mm, Cross travel- 140 mm, vertical travel- 265 mm
7.	Vertical Milling Machine	01 No.	Working surface- (1070 x 250) mm, X-axis 760 mm, Z-axis-390 mm, Quick travel – 126 mm
8.	Tool & Cutter Grinding Machine	01 No.	Swing over bed - 8", Longitudinal travel-10", Cross travel - 7"
9.	Cylindrical Grinding Machine	01 No.	Max. length – 335 mm, wheel head – 3 HP
10.	Planing Machine	01 No.	Size- 6' x 3' x 3', Motor- 3 HP, RPM - 1440
11.	Power Hack saw	01 No.	Motor- 1.5 HP , RPM – 1440
12.	TIG Welding Machine	01 No.	Motor-1 HP and 50 Hz, Max. welding current- 200 A at 60%
13.	MIG Welding Machine	01 No.	Voltage- 415 volt, 3 phase, 50 Hz, open circuit voltage – 78.5 volt, welding current – 60% DC
14.	Radial Drilling Machine	01 No.	Spindle nose – MT 4, Motor- 2 HP, Size of base plate – (88 x 54 x 9) cm
15.	Bench Grinder	01 No.	Disc Dia. – 200 mm, width – 25 mm, Motor – 1.5 HP, RPM - 2800
16.	Bench Drilling Machine	01 No.	Capacity- 12.5 mm, drill bit motor- 0.18 HP, RPM – 1440, current – 0.37 amp
17.	Pillar Type Drilling Machine	01 No.	Capacity- 13 mm, Motor -18 HP, RPM – 1440
18.	Hand Shearing Machine	01 No.	Length of cutting blade -10", width of cutting blade -15mm

Engineering Drawing			
19.	Drawing board	45 Nos.	23”x 32”
20.	Models	56 Nos.	Section of solid models like pyramid, prism, cone, sphere etc.
21.	Charts	23 Nos.	Sectional views, Plummer block, Bearings, Fastenings, Joints etc.
22.	3DM Visual Classroom Software	----	Procedural steps, Assignments
Applied Mechanics & Dynamics Lab			
23.	Single Purchase Winch crab apparatus	01 No.	No. of teeth on load wheel -100, No. of teeth on effort wheel -20, Dia. of load drum -56 mm
24.	Double Purchase Winch crab apparatus	01 No.	No. of teeth on load wheel -100, No. of teeth on effort wheel -20, Dia. of load drum-56 mm
25.	Single Purchase Worm & Worm wheel apparatus	01 No.	No. of teeth on load wheel-100, Dia. of load drum -12.10 cm
26.	Double Purchase Worm & Worm wheel apparatus	01 No.	No. of teeth on worm wheel -100 mm, No.of teeth on effort wheel -30
27.	Flywheel apparatus	01 No.	Dia. of fly wheel – 25 cm Dia. of shaft – 23 mm
28.	Screw jack apparatus	01 No.	Pitch of screw – 4 mm, Dia. of effort drum - 100 mm
29.	Polygon law of forces apparatus	01 No.	Dia. of circular disc – 400 mm, No.of pulley brackets -5
30.	Simple jib crane	01 No.	Wooden base, Hanging chain with hook.
31.	Reaction of Beam apparatus	01 No.	20 kg dia type, conical weights
32.	Inclined plane & Friction slide apparatus	01 No.	Wooden type
33.	Link polygon apparatus	01 No.	Wooden rectangular type
34.	Simple wheel & axle	01 No.	Dia. of the shaft -10 mm
35.	Compound wheel & axle	01 No.	Dia. of the shaft -30 mm
36.	Screw efficiency apparatus	01 No.	No. of pulley - 3
37.	Fletcher trolley	01 No.	Wooden base, cast aluminium bracket
38.	Whirling of shaft apparatus	01 No.	Shaft 1 dia (mm) = 5.1, Shaft 2 dia (mm) = 6.5, Fundamental mode

39.	Universal vibration apparatus	01 No.	AC synchronous motor – 240 V, 50 Hz, Dashpot, Inertial Exciter, Rotor System, Other attachments
40.	Journal bearing apparatus	01 No.	Journal- 0.0498 m, & outside dia. – 0.06 m length
41.	Static & Dynamic balancing	01 No.	Drive motor- 1/12 HP, 220v, 6000 RPM, slotted disc -40 nos.
42.	Motorized gyroscope	01 No.	Motor- 1/6 HP, 230v, 50 Hz, radius of rotor - 0.125 m
43.	Universal Governor	01 No.	Variable speed D.C. motor – ¼ HP, Spring- 655 N/M & 490 N/M
44.	Epicyclic Gear train	01 No.	Motor -3 phase, 1 HP, 1380 RPM Internal gear -56 teeth.
Heat Transfer Lab			
45.	Thermal conductivity of insulating powder apparatus	01 No.	Inner spear- 100 mm OD, Dimmer stat- 0-230 v, 2A Capacity
46.	Natural convection apparatus	01 No.	Dia. of the tube -38 mm, Duct size- 200 mm x 200 mm x 800 mm
47.	Liquid conductivity apparatus	01 No.	Mica heater dia.- 100 mm, cooling plates with test liquid cavity
48.	Metal Rod apparatus	01 No.	Metal bar, copper 25 mm OD, 430 mm long, Test length of bar -240 mm
49.	Guarded Hotplate apparatus	01 No.	Dia. of the hot plate – 100 mm, Width of heating ring – 110 mm
50.	Pin fin apparatus	01 No.	Fins – 12 mm, outer diameter orifice dia. – 22 mm, C_d – 0.64
51.	Critical Heat flux apparatus	01 No.	Glass container dia.-250 mm, Heater type – Nichrome wire, 1 kW
52.	Forced convection apparatus	01 No.	Test pipe- 33 mm, ID – 500 mm, volt meter – 0 to 200v
53.	Emissivity apparatus	01 No.	Volt meter- 0-300 volt, ammeter- 0-1 amp
54.	Stefan Boltzmann apparatus	01 No.	Area of the disc – 3.14 x 10^{-4} m^2 (d = 20 mm), specific heat of the disc = 5.5 gms
55.	Composite wall apparatus	01 No.	Nichrome heater wound on mica former and insulator with capacity 200 watt.
56.	Lagged pipe apparatus	01 No.	Heater- Nichrome wire, Single phase dimmer stat (0-230 v)
57.	Concentric tube heat exchanger apparatus	01 No.	Electric heater- 3 kw capacity Thermo meters- 10°C to 110°C – 4 nos.
58.	Drop wise & filled wise condensation apparatus	01 No.	Condensers made up of copper, Rotameter 25-250 LPH, 1.5 kw heater

59.	Heat Pipe apparatus	01 No.	Stainless steel pipe – 25 mm OD, 400 mm long copper & stainless steel pipes of same size as heat pipe
60.	Unsteady Heat Transfer apparatus	01 No.	Test piece- 25 mm Ø x 30 mm long, thermo stat for heater
61.	Shell & tube Heat exchanger apparatus	01 No.	Shell – 750 mm long, tubes – 4.5 mm, Thermometers for measuring the water temp.
62.	Two phase Heat Transfer apparatus	01 No.	Rotameter 25 to 250 LPH – 1 no. , Pressure gauge compound – 4.2 kg / cm^2.
IC Engine Lab			
63.	2-stroke petrol engine model	01 No.	Cut section
64.	4-stroke petrol engine model	01 No.	Cut section
65.	2- stroke diesel engine model	01 No.	Cut section
66.	4- stroke diesel engine model	01 No.	Cut section
67.	Single cylinder 4-stroke diesel engine.	01 No.	Kirloskar model AV1, RPM – 1500, 13 BHP – 15 BHP
68.	4- cylinder 4-stroke petrol engine (with accessories)	01 No.	13 BHP – 74 BHP, Rated speed – 5000 RPM, make ambassador (ISUZU),Bore – 84 mm
69.	1- cylinder 2-stroke petrol engine	01 No.	Make – Bajaj, capacity-145.45 cc
70.	2-stage air compressor	01 No.	Dia of low pressure piston – 70 mm, Dia of high pressure piston – 50 mm, Stroke length – 90 mm
71.	4-stroke 1-cylinder petrol engine model	01 No.	Valve timing
72.	V.C.R. petrol engine	01 No.	2.5 BHP, 3000 RPM, Bore = 70 mm, stroke = 66.7 mm
73.	Fuel injector model	01 No.	4 stoke diesel engine type
74.	Maruti van cut-sectional model	01 No.	Multi cylinder, 4 stroke petrol engine, Auxiliary systems
75.	Multi gas analyzer	01 No.	Range of Measurement – CO (0 to 9.99%), HC (0 to 15000 ppm), CO_2 (0 to 20.00 %)

Fluid Mechanics & Hydraulic Machines Lab			
76.	Centrifugal pump test rig	01 No.	Size- 25 mm x 25 mm, capacity = 1 HP, RPM = 1440
77.	Reciprocating pump test rig	01 No.	Double acting single cylinder piston stroke length = 44.5 mm, RPM = 1440
78.	Self priming pump test rig.	01 No.	Size = 25 mm x 25 mm, capacity = 1 HP, RPM = 1440, supply = 220 volt
79.	Gear pump test rig	01 No.	Capacity = 1 HP, RPM = 1440, Area of measuring tank = 0.3 m x 0.3 m
80.	Model & demonstration kit	01 No.	Model of Kaplan turbine , Francis turbine, Pelton Wheel, mixed flow, centrifugal, self priming pump
81.	Bernoulli's apparatus	01 No.	Size of the pump = 19 mm x 19 mm, capacity = 0.25 HP, RPM = 2880
82.	Cavitation apparatus	01 No.	Size of the pump = 65 mm x 65 mm, capacity = 5 HP, RPM = 2880
83.	Pelton wheel apparatus	01 No.	Rated supply head = 46 m, No.of bucket = 18, power output = 3.7 kw
84.	Francis turbine	01 No.	Rated supply speed = 18 meter, No.of guide vanes = 08, power output- 3.7 kw
85.	Kaplan turbine	01 No.	Rated supply speed = 7 meter, No.of guide vanes = 16, power output- 3.7 kw
86.	Metacentric height apparatus	01 No.	Shape of the ship- rectangular weight of the ship – 4.43 kg
87.	Hydraulic laboratory tray	01 No.	Size – 150 cm x 150 cm, supply tank – 0.3 m x 0.3m x 1 m height
88.	Orifice & Mouthpieces apparatus	01 No.	Supply tank – 0.3 m x 0.3m x 1 m height, measuring tank – 0.3 m x 0.3m x 0.3 m height
89.	Impact of jet apparatus	01 No.	Nozzle dia – 8 mm, vane type – flat, weights – 120 gm & 30 gm
90.	Study of pressure measurement device	01 No.	Vacuum gauge – bourdon tube type (0-760 mm) Motor capacity- 0.5 HP
91.	Venturi meter, orifice meter apparatus	01 No.	Size of pump – 25 x 25 mm, input power – 0.65 kw, Head range – 11.25
92.	U-tube manometer	01 No.	Tube inside dia – 7.5 mm, Motor capacity- 0.5 HP

Material Testing Lab			
93.	UTM (40 T)	01 No.	Capacity = 4,000 kgf – 40,000 kgf
94.	Hardness testing machine	01 No.	Rock well hardness testing M/c capacity load 60 kg to 187.5 kg
95.	Torsion testing machine	01 No.	Torque range- 0-50 kgm, Grip holders distance – 450 mm (maximum)
96.	Fatigue testing machine	01 No.	Cantilever type, RPM range:0-4000 Drive- v belt
97.	Impact testing machine	01 No.	Charpy drop angle = 140°, Izod drop angle = 85° 21' least court = 2J
98.	Computerzied UTM (100 T)	01 No.	Max capacity = 1000 KN, Measuring Range – 0-1000KN, Least count – 0.1 KN, Data acquisition system
Mechanical Measurement Lab			
99.	Vibration measuring instrument	01 No.	Oscillator cum power amplifier, vibration indicator, vibration exciter
100.	LVDT with accessories	01 No.	Power supply – 230v, 50 Hz, Fuse – 500 MA, least count of micrometer = 0.05 mm
101.	Temp. measuring instrument	01 No.	Thermocouple – 3.6 MV DC J Type, Heater capacity – 500 watts
102.	Dead weight pressure gauge	01 No.	Standard pressure gauge range 0-20 kg/cm^2
103.	LDS photon+ system	01 No.	RT Pro Photon software, DeltaTron accelerometer 4507, B&K analyzer
Production Lab			
104.	Lathe tool dynamometer	01 No.	Sensor: Strain gauge based three axis force sensor, strain gauge resistance: 350 ohm
105.	Drill tool dynamometer	01 No.	Torque- 20 kgm, Thrust- 500 kgm, Strain resistance: 350 ohms
106.	Surface roughness tester	01 No.	Measurement range – 160 mm, Stylus radius – 2 mm, material- diamond
107.	Permeability meter	01 No.	Small orifice range: 90 permeability no., Large orifice range: 800 permeability no.
108.	Clay contact measuring machine	01 No.	Stirrer : 4000 RPM AMP: 0-6, HP: 720
109.	Compressive strength testing machine	01 No.	Mechanical screw type press, 100g-20kg

110.	Extrusion apparatus & dies	01 No.	Billet material: Lead, 30mmX30mm square die, 30mm circular die, Varying Reduction ratios
111.	Tool makers microscope	01 No.	30 x standard magnification (eye piece) Field of view: 8 mm dia,
Refrigeration and Air Conditioning Lab			
112.	Computerized Refrigeration Test Rig	01 No.	Hermetically sealed compressor- 0.75 HP, condenser outer dia:- 3/8"
113.	Computerized AC Trainer	01 No.	Hermetically sealed compressor- 0.75 HP, condenser outer dia:- 3/8"
114.	Ice plant trainer	01 No.	Compressor : Kirloskar made condenser: 3/8", Expansion value : 5 TR capacity
115.	Cascade Refrigeration system	01 No.	High side compressor – 975 watt Low side compressor – 500 watt
116.	Induced draft counter flow cooling tower test rig	01 No.	Large sump size in cm (100 x 62 x 78) Small sump size in cm (100 x 100 x 20) Exhaust fan size = 12", 2000 rpm with regulator
Computer Centre			
117.	Computer	40 Nos.	Intel Core2 Duo, Processor-2.94 GHz , 2 GB RAM, 250 GB-Hard disk
118.	5 kbps PC UPS	02 Nos.	5 KVA line interactive UPS, APC
119.	LCD, Projector	01 No.	Resolution: 800 x 600 pixels Aspect Ratio- 4:3 (SVGA), 200W lamp
120.	Printer (HP)	01 No.	HP DeskJet colour printer
121.	Internet switch	02 Nos.	2 x 24 ports
122.	MATLAB	40	MATLAB 7.0
123.	AutoCAD	40	Auto CAD 2007
124.	ANSYS	05	ANSYS 12.1, Release 13
125.	3DM Visual Classroom Software	-----	Automobile Engineering I & II Engineering Graphics Fluid Mechanics and Machines Manufacturing Technology I, II, III & IV