10. RESOURCE REQUIREMENTS

10.1 Physical Resources

10.1.1 Equipment Requirement:

Sr. No.	Description	Qty	Total Price (Rs)
CARPENTRY SHOP			
1	Work benches fitted with carpenter vices	5	20,000
2.	Circular saw grinder	1	6,000
3.	Wood cutting band saw-vertical	1	10,000
4.	Bench grinder	1	5,000
5.	Drilling machine	1	8,000
6.	Wood turning lathe	1	40,000
7.	Wood Planner	1	20,000
8.	Tool accessories measuring and marking Instruments	25	25,000
9.	Band saw blade brazing unit	1	10,000
FITTING AND PLUMBING SHOP			
1.	Work benches with vices (4 vices on each bench)	5	30,000
2.	Marking tables with scribers	4	24,000
3.	Surface plates	5	20,000
4.	Bench grinders	1	6,000
5.	Drilling machine	2	12,000
6.	Power Hacksaw	1	20,000
7.	Sheet Bending Machine	1	40,000
8.	Tool kits – taps, dies, drills	25	40,000
9.	Tool kits – chiesels, hammers, files, hacksaw	25	25,000
10.	Accessories like calipers, V blocks, height, gauges steel rules and scribers	25	50,000
11.	Pipe vice	4	1,000
12.	Chain wrenches	5	1,250
13.	Ring spanner set	5	600
14.	Pipe die set 2”	2 set	1,000
15.	Pipe bending device	1	5,000
16.	Various pluming fitting	LS	2,000

FOUNDRY SHOP			
1.	Moulding boxes	40	8,000
2.	Ladles	5	2,000
3.	Tool Kits	10 set	5,000
4.	Quenching tanks	2	5,000
5.	Portable grinder	1	3,000
6.	Pit furnace with blower	1	10,000
PAINT SHOP			
1.	Spray gun with hose pine	1	1,000
2.	Paint brushes	20	2,000
3.	Paint/Varnish	LS	2,000
4.	Air Compressor with 2 hp motor	1 set	10,000
5.	Miscellaneous	LS	5,000
SMITHY SHOP			
1.	Blacksmithy forge (with open hearths, accessories to match the forge)	20	40,000
2.	Wrought iron anvils	20	20,000
3.	Swage blocks	4	8,000
4.	Blower with accessories, motor switch etc	1	6,000
5.	Work benches with vices	2	6,000
6.	Power hammer	1	20,000
7.	Tools and accessories – hammers, swages, tongs, pokers, pullers etc	20	10,000
WELDING SHOP			
1.	Electrical welding transformer set with accessories	3	30,000
2.	Gas Cutting Unit	1	3,000
3.	Work benches with vices	3	5,000
4.	Welding generator set	1	10,000
5.	Oxy acetylene welding set with accessories	1	7,000
6.	Acetylene generating set	1	6,000
7.	Electric welder tool kit	10	10,000
8.	Projection welding machine	1	15,000
9.	Brazing equipment with accessories	1	10,000
10.	Soldering irons	3	1,000
11.	Pedestal grinder	1	10,000
12.	Metal spraying gun	1	10,000
13.	Spot welder	1	25,000
14.	TIG welding set	1	1,00,000
15.	MIG welding set	1	1,00,000
16.	Welding Partition Screen	5	2,500
MATERIAL AND METALLURGY LABORATORY			
1.	Salt bath oil fired furnace	1	30,000
2.	Salt bath electric resistance furnace	1	40,000
3.	Electric furnace muffle type	1	60,000
4.	Forced circulation tempering furnace	1	30,000

5.	Quenching tank	2	5,000
6.	Work benches	2	4,000
7.	Pyrometers	1	1,000
8	Pot for bailing out the salt	1	1,500
9.	Metallurgical microscope	1	35,000
10.	Abrasive cut off machine	1	50,000
APPLIED MECHANICS LABORATORY			
1.	Polygon of forces apparatus	1	1,000
2.	Apparatus for reaction at supports	1	1,000
3.	Jib crane	1	1,000
4.	Screw jack	1	300
5.	Inclined plane and friction apparatus	1	500
6.	Worm and worm wheel	1	1,500
STRENGTH OF MATERIALS LABORATORY			
1.	Brinell and Rockwell hardness tester	1	30,000
2.	Impact testing machine	1	20,000
3.	Microprocessor based universal testing machine	1	4,00,000
4.	Torsion testing machine (fully computerized)	1	2,00,000
ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY			
1.	Wattmeter	5	10,000
2.	Ammeter	5	10,000
3.	Voltmeter	5	7,500
4.	DC shunt motor	1	5,000
5.	Single phase variac	1	2,500
6.	Single phase transformer	1	5,000
7.	Resistive load	1	4,000
8.	Multimeter	1	4,000
9.	CRO	1	15,000
10.	Regulated supply	1	8,000
11.	Signal generator	1	5,000
12.	3-phase inductor motor	1	5,000
13.	3-phase variac	1	8,000
14.	DC shunt generator coupled with motor and starter	1	25,000
15.	Rheostat	2	2,500
16.	Tachometer	1	5,000
MECHANICAL WORKSHOP			
1.	Centre lathes	10	5,00,000
2.	Tool room lathe	1	1,00,000
3.	Lathe with copy turning attachment and other attachments	1	1,50,000
4.	Universal milling machine	1	1,25,000
5.	Vertical milling machine	1	75,000
6.	Shapers	2	1,00,000
7.	Radial drilling machine	1	25,000
8.	Upright drilling machine	1	20,000

9.	Gear Shaper	1	75,000
10.	Centreless grinder	1	80,000
11.	Universal cylindrical grinder	1	75,000
12.	Hydraulic surface grinder	1	50,000
13.	Tool and Cutter grinder	1	50,000
14.	Power hacksaw	1	25,000
15.	Pedestal grinder	1	5,000
16.	Electro discharge machine	1	4,00,000
17.	Work bench	3	6,000
18.	Precision instruments	1	5,000
19.	Surface plates	2	15,000
20.	Hand tools and accessories	2	6,000
21.	CNC trainer lathe	1	3,00,000
22.	CNC trainer milling machine	1	4,00,000
23.	PC Computer	2	1,00,000
24.	Computer based NC Programming Software	1	1,50,000
25.	CNC Simulation software	1	1,00,000
26.	CNC Milling machine accessories and holding devices	LS	1,00,000
HYDRAULICS LABORATORY			
1.	Piezometer tube	2	1,000
2.	U tube differential manometer	2	2,000
3.	Inclined manometer	1	1,000
4.	Bourdan pressure gauge	1	1,000
5.	Hydraulic jack	1	4,000
6.	Hydraulic press	1	20,000
7.	Bernoulli’s apparatus	1	15,000
8.	Venturimeter apparatus with differential manometer	1	10,000
9.	Pipe friction apparatus	1	15,000
10.	Reciprocating pump	1	20,000
11.	Centrifugal pump	1	25,000
12	Model of pelton wheel	1	5,000
13	Model of Francis turbine	1	5,000
THERMODYNAMICS LABORATORY			
1.	Throttling Calorimeter	1	25,000
2.	Bomb Calorimeter	1	40,000
3.	Junker’s Gas Calorimeter	1	30,000
4.	Gravimetric Analysis	1	15,000
5.	Orsat Apparatus	1	20,000
6.	Mechanical Types Co_2 Recorder	1	25,000
7.	Single Stage Reciprocating	1	50,000
8.	Rotary Compressor	1	25,000
9.	Flash Point Apparatus	1	10,000
10.	Pyrometer	2	2,000

11.	Lancashire boiler model	1	5,000
12.	Model of impulse turbine	1	5,000
13.	Model of reaction turbine	1	5,000
14.	Model of surface condenser	1	5,000
15.	Spring loaded safety valve	1	6,000
16.	Single cylinder 2 stroke petrol engine	1	35,000
17.	Single cylinder 4 stroke petrol engine	1	40,000
18.	Multicylinder petrol engine test ring	1	70,000
COMPUTERS LABORATORY			
1.	IDEAS	1	5,00,000
2.	AutoCAD	1	50,000
3.	Computer – Pentium	11	4,00,000
4.	Mechanical Desk Top	1	50,000
5.	Catia	1	2,00,000
6.	Digitiser	1	50,000
7.	Plotter	1	75,000
8.	Scanner	1	3,500
9.	Printer (Laser, DMP)	3	80,000
DIGITAL ELECTRONICS AND MICROPROCESSORS LABORATORY			
1.	*DC regulated low voltage variable power supply	6	15,000
2.	*DC regulated multiple output power supply	3	9,000
3.	Digital IC power supply	8	10,000
4.	*Electronic Digital Multimeter	6	9,000
5.	CRO Dual trace, 25 MHz	4	1,00,000
6.	*Digital frequency meter/universal Counter timer	2	20,000
7.	*Pulse Generator	2	10,000
8.	Logic probes (TTL and CMOS)	2	2,500
9.	Digital logic trainer (TTL)	4	20,000
10.	Logic Trainer Boards	10	10,000
11.	Microprocessor trainer Kits 8085	8	50,000
12.	Microprocessor Trainer Kits 8086	6	60,000
13.	Microprocessor Trainer Kits 8051/8031	5	30,000
14.	Computer Trainer	1	30,000
15.	8085 Micro processor Kit (Vinytics)	15	26000
16.	8086 Micro processor Kit (Dynalog)	15	32,500
17.	Interfacing Cards	5	2,50,000
18.	Micro-controller Kit 8051 based	10	1,00,000
19.	Digital IC Tester Model - Nikki	1	50,000
20.	Universal Programmer	1	7,000
21.	Digital Multimeter (Motwane)	10	60,000
22.	EPROM Programme	1	10,000
23.	EPROM Eraser	1	1,500

24.	Additional cards	LS	50,000
25.	Software	LS	1,50,000
26.	Dotmatrix Printers 24 pin 132 col	2	15,000
27.	Ink jet Printers	2	6,000
28.	Laser Printers	2	12000
29	Scanners	2	5000
30	Copier	1	3000
31	Scanner, Copier, Printer, Fax	1	4500
MEASUREMENT LABORATORY			
1.	Light Measurement (Photocells) Kit	8	15,000
2.	LVDT Kit	8	8,000
3.	Pressure Measurement Kit	8	9,500
4.	Strain Measurement Kit	8	14,000
5.	Water Level Measurement Kit	8	11,500
6.	Velocity Measurement Kit	8	7,500
7.	RPM Measurement Kit	8	5,000
8.	Temperature Measurement Kit	8	5,000
9.	Maxwell's Bridge Kit	8	7,500
10.	Wein's Bridge Kit	8	4,500
11.	Anderson Bridge Kit	8	5,000
12.	Flux Meter (Digital) Kit	8	5,000
13.	Q. Meter (Digital) Kit	8	5,000
ELECTRONICS LABORATORY			
1.	DC regulated low voltage variable power supply	10,	25,000
2.	DC regulated multiple output power supply	4	12,000
3.	Audio oscillator	4	16,000
4.	Wide band RC Oscillator	4	10,000
5.	RF Signal Generator	2	8,000
6.	Pulse Generator	2	10,000
7.	Function Generator	4	20,000
8.	Single trace CRO with accessories	4	60,000
9.	Dual trace CRO with accessories	4	1,00,000
10.	Electronic Multimeter DC and AC with different ranges	8	30,000
11.	Electronics digital Multimeter three and a half digit	8	25,000
12.	Digital LCR- Q meter	2	20,000
13.	Transistor tester type 911	1	5,000
14.	Audio output power meter	2	6,000
15.	Mains Voltage stabilizer(3 KVA)	1	10,000
16.	AC Millivoltmeters	4	16,000
17.	DC Millivoltmeters	2	6,000
18.	Voltmeter	5	3,000
19.	DC Ammeter	5	3,000
20.	Battery of different voltage and Ampere hour	2	3,000

21.	Single Phase variac	3	6,000
22.	Rheostat of different wattage and resistance	5	3,000
23.	Servo stabilizer power supply	1	8,000
24.	IC Bread Boards	20	10,000
25.	Distortion factor meter	1	10,000
26.	Decade resistance, capacitance and inductance (four each)	12	12,000
27.	Transducers: Pressure type, thermocouple, LVDT, opto Pick-up, electromagnetic pick-up, ultrasonic pick-up and potentiometer etc	LS	30,000
28.	Thyristor control experimental kits Instrumentation/Transducer experimental kit. Basic electronic experiment kit	LS	2,50,000
29.	Strip chart recorder	1	10,000
30.	Digital Panel meters	6	3,000
31.	Digital thermometer	1	4,000
32.	Stroboscope cum motor drive disc	1	10,000
33.	Digital load indicator with load Cells	1	10,000
34.	Digital Lux meter	1	8,000
35.	CROs 20 MHz (Scientific Make)	6	22,000
36.	Function Generators Audio Frequency	6	7,500
37.	Regulated Power Supply	6	3,600
38.	Multimeter (Digital)	10	20,000
39.	Rectifier Kits	6	20,200
40.	Filter Circuit Kit	6	2,200
41.	Bread Boards	12	4,800
42.	Transistor Kits (a) CB (b) CE	 6 6	 2,400 2,400
43.	FETs	6	5,400
44.	Operational Amplifier Kits	6	33,000
45.	Raw Materials	LS	20,000
ELECTRICAL MACHINES LABORATORY			
1.	Static Converter: 3-Phase, 415 V, 50 Hz, output 230 V dc 15 KW, regulation + 1%, servo controlled, thyristorised	1	30,000
2.	DC Shunt Motor - Shunt Gen. Set: DC shunt motor 230 V, 3 kW, 1440 rpm coupled with DC shunt generator, 230 V, 3kW, complete with appropriate panel board with meters, switches, indicators starter and field regulator	1	30,000
3.	DC Shunt Motor - Series Gen. Set: DC shunt motor 230 V, 3 kw, 1440 rpm combined with DC series generator, 230 V, 3kw, complete with appropriate panel board, tarter and field regulator	1	20,000
4.	DC Compound motor Gen. set.: DC shunt motor 230 V, 3 kW, 1440 rpm coupled with DC compound generator, 230V, 3kw, complete with appropriate panel board, starter and field regulator	1	30,000
5.	DC Compound Motor: Motor with interpoles 230 V, 3 kW, 1440 rpm	1	20,000

	with field regulator, starter and braking(eddy current or drum pulley) arrangement with appropriate panel board		
6.	DC Series motor: DC series motor with interpole/compensating winding, 230 V, kw, 1440 rpm with breaking (eddy current or drum pulley) arrangement and appropriate panel board and over speed safety precautions e.g. light shunt winding etc.	1	8,000
7.	DC Motor-alternator set: DC shunt motor 230 V, 3 kw, 1440 rpm coupled with 3 phase 440 V, 50 Hz alternator having damper winding with exciter complete with appropriate panel board, starter and field regulators	2	25,000
8.	Squirrel Cage Induction Motor: 3-phase squirrel cage induction motor 3 Kw, 415 V, 50 Hz, 1440 rpm all six terminals brought out, complete with appropriate panel board, starter etc.	1	6,000
9.	Slip ring Induction motor: Three-phase, wound rotor induction motor, 3Kw, 415 V. 50 Hz, 1440 rpm with stator and rotor terminals brought out coupled with a dc shunt generator, 230V, 3 KW with appropriate panel board and starter	1	20,000
10.	Pole Changing/Winding Study Motor: Three phase double speed, 440V. 50 Hz, 1-3 Kw induction motor with all the coil terminals brought out for connecting winding for different speeds	1	6,000
11.	Single phase Induction Motor(various types): a) Capacitor start with centrifugal switch 0.5 KW with suitable loading arrangement and appropriate panel board. b) Shaded pole type,0.5 KW,230 V,50 Hz with suitable loading arrangement and appropriate panel board	1 1	3,000 3,000
12.	Universal motor: 230V, 50 Hz, Universal motor, 0.5 KW	1	2,000
13.	Hysteresis motor: 230V, 50 Hz, Hysteresis motor, 0.5 KW	1	2,000
14.	Servo motor: 230V, 50 Hz, Servo motor	1	10,000
15.	AC commutator motor: 230V, 50 Hz, ac (Repulsion type) commutator motor KW with suitable loading arrangement	1	2,000
16.	1-phase transformer: Single phase transformer, 230/115 V, 50 Hz, 3 KVA housed in a metal tank	4	12,000
17.	3-Phase transformer: Three phase transformer, 415/230V,50 Hz, 5 KVA all terminals brought out, housed in a metal tank	2	15,000
18.	Scot-connection Transformer: Single phase transformer, 230/115V, 50 Hz, with tapping at 86%, 50% housed in a metal tank and all terminal brought out	2	5,000
19.	Variacs: a. One phase, 230 V, 50 Hz, 8-A auto transformer continuously valuable, housed in a metal body, portable b. One phase, 230 V, 50 Hz, 15-A transformer continuously valuable, housed in a metal body, portable c. Three phase, 230 V, 50 Hz, 30 A, 415-V transformer continuously valuable housed in a metal body, portable phase	 3 2 3	 6,000 7,000 30,000
20.	Loading Rheostats: a. Resistance type, single phase, 230V, 15A, each natural air cooled,	3	12,000

	housed in metal body fitted with switches and mounted on trolleys b. Resistance type, three phase 440V, 15A, natural air cooled, housed in metal body, switches and base wheels, six terminals brought out c. Continuously variable choke type loading coil, coil upto 15A, three phase,440V, 50Hz, housed in a metal case on wheels (Trolley Aid) d. Capacitor bank, variable in steps through switches, 440V, 3 phase, 15A max. housed in a portable metal case	 2 2 2	 6,000 6,000 6,000
21.	AC motor Starters a. DOL starter, suitable for 415V, 3 Phase, 50 Hz, 3kw induction motor b. Auto transformer starter for 3 phase, 415 V, 50 Hz,5 Kw induction motor with facility of tappings c. Star-delta starter suitable for 415V, 3 Phase, 50 Hz, 5 kw induction motor (i) Manual (ii) Automatic	 1 1 1 1	 2,000 3,000 3,000 3,000
22.	DC Motor starters: a. DC shunt motor starter, three point suitable for 230V, 3 kw motor b. -Do- 4 point	 1 1	 3,000 3,000
23.	Rheostats: Wire wound Rheostats (Approx. of following rating) a. 440 Ohm, 3A b. 110 Ohm 8A	 15 10	 4,500 3,000
24.	Tachometer: Digital non-contact type tachometers 0-10,000 rpm, 3 1/2 digit	4	8,000
25.	Stroboscope: with calibrated dial for frequency/rpm measurement	1	2,500
26.	DC Ammeters: Portable moving coil permanent magnet 150 mm uniform scale with anti parallax mirror, knife edge, pointer, housed in a teak wood/ebonite case, accuracy + 1-5% Ammeter 0-3 amp Ammeter 0-25 amp Ammeter 0-50A	 6 6 6	 3,000 3,000 3,000
27.	DC Voltmeters Portable moving coil permanent magnet 150 mm uniform scale with anti parallax mirror, knife edge pointer, housed in a teak wood/ebonite case, accuracy $\pm$ 1-5% a) 0-15 b) 0-50 c) 0-150 d) 0-300 e) 0-600	 4 2 3 10 1	 3,000 1,500 2,250 7,000 700

28.	AC Ammeters Portable moving iron, 150 mm uniform scale with anti parallax mirror, knife edge pointer, housed in a teak wood/ebonite case, accuracy ±1.5%		
	a) 0-1A	3	3,000
	b) 0-3A	3	3,000
	c) 0-10A	7	8,000
	d) 0-20A	7	5,000
29.	AC Voltmeters Portable moving iron 150 mm uniform scale with anti parallax mirror, knife edge pointer, housed in a teak wood/ebonite case, accuracy ±1.5%		
	a) 0-1V	3	2,000
	b) 0-15V	3	2,000
	c) 0-30/60 V	4	3,000
	d) 0-150/300 V	10	7,000
30.	Multimeter:		
	a) Digital/type: 3 1/2 digit LCD display manually operated multimeters with AC/DC 10 A and 10 mega ohm, accuracy± 0.5% for DC and ±1% for AC	2	2,500
	b) Indicating type DC voltage: Sensitivity 10 k ohm/v range -300 kV, 1, 3, 10, 30, 100, 300, 1000V; AC voltage - sensitivity 10 K ohm/V Range 1,3,10,30, 100,300,1000V etc.	2	2,000
31.	Wattmeters: Portable dynamometer type: Portable dynamometer measuring instrument housed in a teak wood/ebonite case scale 150 mm, knife edge pointer with antiparallax mirror, critically damped, accuracy ± 1%		
	a) 75/300/600 V and 1.5/3A (LPF)	2	4,000
	b) 75/300/600 V and 1.5/20A (UPF)	2	4,000
	c) 75/150/300 V and 15/30A	4	8,000
	d) 110/220/440 V and 15/30A	4	8,000
32.	Portable Power factor meters: Dynamometer type, eddy current type, damping, frequency cycle 50 Hz , scale length 150 mm, current rated upto 20A, Volt-300V. p.f. range 0.5 lag-unity 0.5 lead, housed in teak wood/ebonite case with antiparallex mirror with knife edge pointer		
	a) Portable type single phase single element type 110 V/240 V or 1 A or 5 A	1	2,500
	b) Portable type 3-phase single element type 110 V/ 240 V, 1 A or 5 A	1	2,500
33.	Frequency Meter:		
	a) Pointer type Portable type housed in phenolic moulded body with ant parallax mirror scale knife, edge pointers range 40-60 Hz, 230 V, 110 V or 240 V or 45-55 Hz	1	1,500
	b) Read type 230 V, range 40-60 Hz and 21	1	1,500
	c) Read Digital type. 3 1/2 digit: LED, display frequency meter suitable for use on 230V AC main supply range 20-99Hz	1	1,000

34.	Synchroscope: Suitable for 110V AC, 1-phase, 50 Hz alongwith potential transformer, 230V and 415V on primary and 110V on secondary side	1	2,500
35.	Phase Shifting Indicator: Suitable for 50 V to 500 AC from 25 Hz to 55 Hz	2	6,000
36.	Tong Testing Ammeter: 0-15 A/50A/100A Clip-on type	1	3,000
37.	Current Transformer: 100-50-25-10/5A	2	1,000
38.	Potential Transformer: a) 10 VA, 440/110 V b) 10 VA, 220/110 V	 1 1	 1,000 1,000
39.	DC Regulated Power Supplies: 0-30V, 5A, DC and also with short circuit and over lead protection with measuring devices	2	4,000
40.	Controllers, Timers, Contactors and limit switches	2	4,000
41.	Equipment for additional experiments: 3-phase Brushless alternator coupled to dc shunt motor may be added 8KVA,415volts,3-phase,50Hz,1500rpm	2	20,000
42.	Rectifier-Inverter Set: 3-Phase, 3KVA, 415V, 50Hz on rectifier input side 3 phase, 3 KVA,25 to 150 Hz on the output side	1	10,000

NOTE:
In addition to above, laboratories in respect of physics, chemistry will be required for effective implementation of the course.

Provision for overhead projector, TV with VCR facility slide cum strip projector, TV with VCR facility slide cum strip projector, 16 mm film projector, photocopier, PC-XT facilities, duplicating machines, drafting machines etc has also to be made.

10.1.2 Space Requirement:

Norms and standards laid down by All India Council for Technical Education (AICTE) may be followed to work out space requirement in respect of class rooms, tutorial rooms, drawing halls, laboratories, space required for faculty, student amenities and residential area for staff and students.

10.1.3 Furniture Requirement

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course.

10.2 Human Resources:

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE.

Following are the qualifications and experience for the teaching faculty and technical staff.

Qualification	Experience
Lecturer First class M.E./M.Tech in Mechanical/Production/ Electrical/Electronics/Civil Engineering or equivalent	NIL
Sr.Lecturer M.E./M.Tech in Mechanical/Production/ Electrical/Electronics/Civil Engineering or equivalent	5 years experience in teaching/industry/ research at the level of Lecturer or equivalent
Head of Department M.E./M.Tech in Mechanical/Production/ Electrical/Electronics/Civil Engineering or equivalent with first class at Bachelor's level	8 years experience in teaching/industry/ research at the level of Lecturer or equivalent
Note: Candidates from industry/profession with B.E/ B.Tech in Mechanical/ Production/ Electrical/Electronics/Civil Engineering or equivalent and with recognized professional work experience equivalent to Master's degree and 5 years experience may also be eligible for the post of H.O.D.	
Workshop Superintendent First class B.E./B.Tech in Mechanical Engineering/Production Engineering or equivalent	2 years industrial experience
OR Diploma in Mechanical Engineering/Production Engineering or equivalent	8 years industrial experience
Instructor/Technician Diploma in Mechanical Engineering/Production Engineering or equivalent	2 years practical experiences in teaching/ industry at appropriate level