CENTRAL POLYTECHNIC COLLEGE, THARAMANI-600 113.

(An Autonomous Institution)

DEPARTMENT OF

BASIC ENGINEERING

QUESTION BANK

EBE21022 – BASICS OF MECHANICAL ENGINEERING

EBE21022 – BASICS OF MECHANICAL ENGINEERING

Unit I ROLES AND RESPONSIBILITIES OF MECHANICAL ENGINEERS

Introduction to Mechanical Engineering- Who is a Mechanical Engineer- Job Description- Roles and Responsibilities-Scope and Opportunities– Mechanical Engineering- Manufacturing- Automobile- Power Generation- Maintenance- Service- Design- Quality- Materials Management Logistics.

Unit II ENGINEERING MATERIALS, METAL FORMING AND JOINING

Engineering Materials: Importance of Materials - Types - Properties: Mechanical - Thermal - Electrical - Magnetic - Chemical - Usages - Applications. Metal Forming: Definition – Types – Hot and Cold working – Hot working –Description and working of drop hammer – Rolling – Roll forging – Extrusion – Cold working – Description and working of Mechanical press - Wire drawing Metal Joining: Types of Joints – Definitions and Applications: Temporary and Permanent - Examples.

Unit III FUNDAMENTALS OF MACHINE TOOLS

Machine Tools–Introduction Lathe: Principle of Lathe–Description and function of Lathe Drilling Machine: Principle of Drilling–Types-Upright Drilling (Description and Function only) Milling Machine: Principle of Milling–Horizontal Milling Machine– Vertical milling machine (Description and Function only) CNC: Introduction to CNC and its applications

Unit IV POWER TRANSMISSION DRIVES AND LUBRICATION

Power Transmission Drives Belt drive – Types - Flat, V Belt & Circular or Rope Drive Applications - Applications of chain drive – Gear drives – Types of gear drives – spur gear drive – Helical gear drive – Bevel gear drive – Worm and Worm wheel drive – Rack and pinion drive – Cam Drive - Descriptions. Lubrication Lubricants -Types -Solid, Semi Solid, Liquid– Properties of lubricants- Purpose of lubrication–Methods of lubrication-Ring Oiler Lubrication, Drip feed Lubrication and Grease Cup Lubrication.

Unit V FUNDAMENTALS OF HEAT POWER ENGINEERING

Thermodynamics: Definition - Heat - Modes of heat transfer – conduction, convection and radiation (Definition only) IC Engines: Classification of IC Engines – Working of – Four stroke Petrol Engine – Diesel Engine –Introduction to Battery Electrical Vehicles (BEV) Power Plants: Power Plants- Introduction to Steam Power plant – Introduction to Nuclear Power plant – Introduction to Solar power plant (PV only)-Introduction to Wind mill-Horizontal axis and vertical axis windmill

U.NO	Q NO	QUESTIONS	
1	1	What is Mechanical Engineering primarily concerned with?	
		(a) Coding software	(b) Designing buildings
		(c) Designing and maintaining mechanical systems	(d) Teaching language
		Ans:c) Designing and maintaining mechanical systems	
1	2	Who is considered the "mother of all engineers"?	
		(a) Civil Engineer	(b) Electrical Engineer
		(c) Mechanical Engineer	(d) Software Engineer
		Ans:c) Mechanical Engineer	
1	3	Which of the following is NOT a role of a mechanical engineer?	
		(a) Product design	(b) Maintenance
		(c) Financial auditing	(d) Quality control
		Ans:c) Financial auditing	
1	4	The process of converting raw materials into finished goods is called:	
		(a) Designing	(b) Manufacturing
		(c) Trading	(d) Procurement
		Ans:b) Manufacturing	
1	5	In which sector does a mechanical engineer work on engines and gear systems?	
		(a) Automobile	(b) Electrical
		(c) Finance	(d) Agriculture
		Ans:a) Automobile	
1	6	Which of the following is a job in the power generation sector?	
		(a) Legal Advisor	(b) Energy Engineer
		(c) Financial Analyst	(d) Web Developer
		Ans:b) Energy Engineer	
1	7	What is the main focus of quality control?	
		(a) Quantity tracking	(b) Reducing labor
		(c) Ensuring standards	(d) Hiring people
		Ans:c) Ensuring standards	
1	8	Which of these sectors deals with storage and transportation of goods?	
		(a) Power generation	(b) Logistics
		(c) Design	(d) R&D
		Ans:b) Logistics	
1	9	What does a Product Designer typically use?	
		(a) Adobe Photoshop	(b) Microsoft Word
		(c) CAD software	(d) PDF viewer
		Ans:c) CAD software	
1	10	Who manages the flow of materials in an industry?	
		(a) Quality Analyst	(b) Maintenance Engineer
		(c) Materials Manager	(d) Design Technician
		Ans:c) Materials Manager	

U.NO	Q NO	QUESTIONS	
1	11	Which company is a top manufacturer in India?	
		(a) TCS	(b) Amazon
		(c) Tata Motors	(d) Flipkart
		Ans:c) Tata Motors	
1	12	A person who supervises machine production is called:	
		(a) Project Manager	(b) Process Engineer
		(c) Production Engineer	(d) Maintenance Head
		Ans:c) Production Engineer	
1	13	The term prototyping refers to:	
		(a) Writing reports	(b) Making legal contracts
		(c) Developing early models	(d) Exporting machines
		Ans:c) Developing early models	
1	14	Which tool helps simulate real-world working conditions?	
		(a) CAD	(b) R&D Lab
		(c) Analysis and testing	(d) Excel Sheet
		Ans:c) Analysis and testing	
1	15	R&D stands for:	
		(a) Rate & Demand	(b) Research & Development
		(c) Revenue & Design	(d) Revision & Design
		Ans:b) Research & Development	
1	16	Maintenance in mechanical systems is mainly aimed at:	
		(a) Decreasing output	(b) Increasing downtime
		(c) Minimizing failures	(d) Reducing worker load
		Ans:c) Minimizing failures	
1	17	Which of these is NOT a design tool?	
		(a) AutoCAD	(b) SolidWorks
		(c) Fusion360	(d) PowerPoint
		Ans:d) PowerPoint	
1	18	Which sector uses CNC machines most often?	
		(a) Teaching	(b) Design
		(c) Manufacturing	(d) Logistics
		Ans:c) Manufacturing	
1	19	One key trait of a mechanical engineer is:	
		(a) Negotiation	(b) Analytical thinking
		(c) Cooking	(d) Storytelling
		Ans:b) Analytical thinking	
1	20	A mechanical engineer in the service sector primarily handles:	
		(a) Customer billing	(b) Installing and repairing machines
		(c) Budget planning	(d) Documentation
		Ans:b) Installing and repairing machines	

U.NO	Q NO	QUESTIONS	
1	21	What is the scope of mechanical engineering?	
		(a) Only IT companies	(b) Limited to vehicle design
		(c) Broad across various industries	(d) Just thermal power plants
		Ans:c) Broad across various industries	
1	22	Reliability Engineers are part of:	
		(a) HR department	(b) Maintenance
		(c) Teaching	(d) Software
		Ans:b) Maintenance	
1	23	Facility Maintenance Manager belongs to which field?	
		(a) Software	(b) Service
		(c) Teaching	(d) Design
		Ans:b) Service	
1	24	Which engineer ensures minimum product defects?	
		(a) Maintenance Engineer	(b) CAD Designer
		(c) Quality Control Engineer	(d) Logistics Analyst
		Ans:c) Quality Control Engineer	
1	25	Select the permanent sector job for mechanical engineers:	
		(a) Food Delivery	(b) Teaching English
		(c) Automobile	(d) Movie Editing
		Ans:c) Automobile	
1	26	Industrial design is mainly used for:	
		(a) Writing essays	(b) Creating mechanical layouts
		(c) Buying raw materials	(d) Marketing
		Ans:b) Creating mechanical layouts	
1	27	Which of the following is a Design job title?	
		(a) Service Engineer	(b) CAD Designer
		(c) Project Accountant	(d) Legal Advisor
		Ans:b) CAD Designer	
1	28	The role of Logistics Manager is to:	
		(a) Supervise drivers	(b) Handle design testing
		(c) Oversee transport and warehousing	(d) Fix tools
		Ans:c) Oversee transport and warehousing	
1	29	Which of the following industries commonly hires mechanical engineers?	
		(a) Social media	(b) Aerospace
		(c) Law firms	(d) Pharmacies
		Ans:b) Aerospace	
1	30	A mechanical engineer can work in:	
		(a) Railways	(b) Online content writing
		(c) Fashion styling	(d) Tax consulting
		Ans:a) Railways	

U.NO	Q NO	QUESTIONS	
1	31	Who is responsible for choosing the right material in product development?	
		(a) Auditor	(b) Material Analyst
		(c) Design Technician	(d) Machine Operator
		Ans:b) Material Analyst	
1	32	What does the quality assurance engineer do?	
		(a) Checks marketing	(b) Tests and validates product standards
		(c) Writes code	(d) Handles HR
		Ans:b) Tests and validates product standards	
1	33	Tata Motors belongs to:	
		(a) Automobile	(b) Aviation
		(c) IT services	(d) Government
		Ans:a) Automobile	
1	34	Who is responsible for supply chain and inventory?	
		(a) Service Manager	(b) Warehouse Manager
		(c) Drafting Technician	(d) Analyst
		Ans:b) Warehouse Manager	
1	35	Crankshaft manufacturing belongs to:	
		(a) Power generation	(b) Automobile
		(c) Design	(d) Logistics
		Ans:b) Automobile	
1	36	In which industry is a camshaft used?	
		(a) Textile	(b) Automobiles
		(c) Banking	(d) Retail
		Ans:b) Automobiles	
1	37	Which skill is most essential for machine maintenance?	
		(a) Java programming	(b) Visual design
		(c) Troubleshooting	(d) Accounting
		Ans:c) Troubleshooting	
1	38	Hindustan Unilever is involved in:	
		(a) Automobiles	(b) FMCG Manufacturing
		(c) Banking	(d) Power plants
		Ans:b) FMCG Manufacturing	
1	39	What does CAD stand for?	
		(a) Central Analysis Department	(b) Computer Aided Design
		(c) Central Application Design	(d) None of the above
		Ans:b) Computer Aided Design	
1	40	Which of these involves machine breakdown analysis?	
		(a) Financial auditing	(b) Maintenance
		(c) Materials planning	(d) Procurement
		Ans:b) Maintenance	

U.NO	Q NO	QUESTIONS	
1	41	Service engineers handle:	
		(a) Product sales	(b) Warranty and repair
		(c) CAD modeling	(d) Digital marketing
		Ans:b) Warranty and repair	
1	42	Which one is not an opportunity for mechanical engineers?	
		(a) Quality control	(b) Software debugging
		(c) Logistics	(d) Manufacturing
		Ans:b) Software debugging	
1	43	A mechanical engineer in design is expected to know:	
		(a) C++	(b) AutoCAD
		(c) HTML	(d) Marketing
		Ans:b) AutoCAD	
1	44	What is the objective of Research and Development?	
		(a) Increase marketing	(b) Maximize sales
		(c) Innovate and improve products	(d) Reduce staff
		Ans:c) Innovate and improve products	
1	45	A connecting rod is designed by:	
		(a) Web designer	(b) Mechanical engineer
		(c) Civil engineer	(d) HR
		Ans:b) Mechanical engineer	
1	46	L&T is a major company in:	
		(a) Movie industry	(b) Construction and manufacturing
		(c) Pharmaceuticals	(d) Education
		Ans:b) Construction and manufacturing	
1	47	Nestle India belongs to which sector?	
		(a) Power	(b) Logistics
		(c) Food manufacturing	(d) Automobile
		Ans:c) Food manufacturing	
1	48	Reliability engineers mainly deal with:	
		(a) HR software	(b) Consistent machine performance
		(c) Advertising	(d) Retail display
		Ans:b) Consistent machine performance	
1	49	"Procurement Manager" job title fits best under:	
		(a) Logistics	(b) Power generation
		(c) Education	(d) Coding
		Ans:a) Logistics	
1	50	The act of improving energy efficiency is common in:	
		(a) Power Generation	(b) Graphic Design
		(c) HR	(d) Healthcare
		Ans:a) Power Generation	

U.NO	Q NO	QUESTIONS	
2	51	Which property defines a material's resistance to deformation?	
		(a) Thermal	(b) Mechanical
		(c) Chemical	(d) Electrical
		Ans:b) Mechanical	
2	52	Which of the following is not an engineering material?	
		(a) Plastic	(b) Rubber
		(c) Wood	(d) Electricity
		Ans:d) Electricity	
2	53	Hot working is usually done:	
		(a) At room temperature	(b) Below recrystallization temperature
		(c) At or above recrystallization temperature	(d) In freezing temperatures
		Ans:c)At or above recrystallization temperature	
2	54	Which one is a mechanical property of materials?	
		(a) Melting point	(b) Thermal conductivity
		(c) Tensile strength	(d) Magnetic flux
		Ans:c) Tensile strength	
2	55	Wire drawing is a type of:	
		(a) Hot working	(b) Cold working
		(c) Joining	(d) Welding
		Ans:b) Cold working	
2	56	Which of the following is a cold working process?	
		(a) Drop forging	(b) Rolling
		(c) Extrusion	(d) Mechanical press forming
		Ans:d) Mechanical press forming	
2	57	Metal joining includes all of the following EXCEPT:	
		(a) Welding	(b) Riveting
		(c) Casting	(d) Soldering
		Ans:c) Casting	
2	58	Which of these joints is temporary?	
		(a) Riveted joint	(b) Welded joint
		(c) Bolted joint	(d) Brazed joint
		Ans:c) Bolted joint	
2	59	What is the purpose of hot working?	
		(a) To break the material	(b) To reduce toughness
		(c) To improve ductility and reduce defects	(d) To cool the metal
		Ans:c) To improve ductility and reduce defects	
2	60	Which of the following has high magnetic properties?	
		(a) Copper	(b) Iron
		(c) Plastic	(d) Wood
		Ans:b) Iron	

U.NO	Q NO	QUESTIONS	
2	61	Drop hammer is used in:	
		(a) Turning	(b) Forging
		(c) Grinding	(d) Welding
		Ans:b) Forging	
2	62	Mechanical press is used in:	
		(a) Hot working	(b) Cold working
		(c) Joining	(d) Testing
		Ans:b) Cold working	
2	63	The process of shaping metal by compressive forces is called:	
		(a) Casting	(b) Forging
		(c) Welding	(d) Assembling
		Ans:b) Forging	
2	64	Riveting is a type of:	
		(a) Hot working	(b) Cold working
		(c) Permanent joint	(d) Temporary joint
		Ans:c) Permanent joint	
2	65	Which of the following has high thermal conductivity?	
		(a) Wood	(b) Rubber
		(c) Aluminum	(d) Glass
		Ans:c) Aluminum	
2	66	Extrusion is a process where metal is:	
		(a) Drilled	(b) Welded
		(c) Pulled	(d) Forced through a die
		Ans:d) Forced through a die	
2	67	The basic requirement for metal joining is:	
		(a) Sharp tools	(b) Clean surfaces
		(c) Wooden base	(d) High speed motors
		Ans:b) Clean surfaces	
2	68	Which process is done at room temperature?	
		(a) Hot forging	(b) Casting
		(c) Cold rolling	(d) Arc welding
		Ans:c) Cold rolling	
2	69	Which of the following is a permanent joint?	
		(a) Bolted	(b) Clamped
		(c) Soldered	(d) Tied
		Ans:c) Soldered	
2	70	In metal forming, rolling is mainly used to:	
		(a) Increase diameter	(b) Reduce thickness
		(c) Paint the metal	(d) Break the metal
		Ans:b) Reduce thickness	

U.NO	Q NO	QUESTIONS	
2	71	Which property is important for electrical wires?	
		(a) Magnetic	(b) Mechanical
		(c) Electrical conductivity	(d) Chemical resistance
		Ans:c) Electrical conductivity	
2	72	Brazing uses a filler metal that has:	
		(a) Lower melting point than base metal	(b) Same melting point
		(c) Higher melting point	(d) No melting point
		Ans:a) Lower melting point than base metal	
2	73	The primary aim of metal forming is to:	
		(a) Improve color	(b) Change shape and size
		(c) Increase weight	(d) Reduce cost
		Ans:b) Change shape and size	
2	74	Which of the following is used in sheet metal operations?	
		(a) Furnace	(b) Grinder
		(c) Mechanical press	(d) CNC lathe
		Ans:c) Mechanical press	
2	75	Which of these is NOT a usage of engineering materials?	
		(a) Construction	(b) Machine parts
		(c) Decorations	(d) Financial investments
		Ans:d) Financial investments	
2	76	The definition of soldering includes:	
		(a) Using threads	(b) Filler metal below 450°C
		(c) Welding base metals	(d) Temporary joints only
		Ans:b) Filler metal below 450°C	
2	77	Which of the following describes forging?	
		(a) Pouring molten metal	(b) Hammering heated metal
		(c) Drilling holes	(d) Cutting sheets
		Ans:b) Hammering heated metal	
2	78	Engineering materials can be classified into:	
		(a) Two types	(b) Three types
		(c) Four types	(d) Several types based on properties
		Ans:d) Several types based on properties	
2	79	Cold working increases:	
		(a) Ductility	(b) Toughness
		(c) Strength and hardness	(d) Melting point
		Ans:c) Strength and hardness	
2	80	In wire drawing, the diameter:	
		(a) Increases	(b) Stays same
		(c) Decreases	(d) Disappears
		Ans:c) Decreases	

U.NO	Q NO	QUESTIONS	
2	81	Which is an example of a composite material?	
		(a) Copper	(b) Brass
		(c) Carbon fiber	(d) Lead
		Ans:c) Carbon fiber	
2	82	Which material is ferrous?	
		(a) Copper	(b) Cast iron
		(c) Aluminum	(d) Zinc
		Ans:b) Cast iron	
2	83	Which property allows a metal to be rolled into thin sheets?	
		(a) Ductility	(b) Malleability
		(c) Elasticity	(d) Plasticity
		Ans:b) Malleability	
2	84	Which property is related to a material's ability to regain shape after deformation?	
		(a) Plasticity	(b) Malleability
		(c) Elasticity	(d) Hardness
		Ans:c	
2	85	Which material has high brittleness?	
		(a) Cast iron	(b) Copper
		(c) Mild steel	(d) Rubber
		Ans:a) Elasticity	
2	86	A material’s ability to resist scratching and indentation is known as:	
		(a) Toughness	(b) Ductility
		(c) Hardness	(d) Malleability
		Ans:c) Hardness	
2	87	A material's resistance to sudden shock without breaking is called:	
		(a) Strength	(b) Toughness
		(c) Elasticity	(d) Brittleness
		Ans:b) Toughness	
2	88	Which of these is NOT a thermal property of materials?	
		(a) Specific heat	(b) Thermal conductivity
		(c) Creep	(d) Capacitance
		Ans:d) Capacitance	
2	89	Annealing after wire drawing helps to:	
		(a) Increase diameter	(b) Relieve internal stresses
		(c) Add threads	(d) Make the metal magnetic
		Ans:b) Relieve internal stresses	
2	90	Creep in materials refers to:	
		(a) Sudden fracture	(b) Temporary elasticity
		(c) Slow deformation under constant load	(d) Change in color
		Ans:c) Slow deformation under constant load	

U.NO	Q NO	QUESTIONS	
2	91	Which of these is an electrical property?	
		(a) Capacitance	(b) Ductility
		(c) Brittleness	(d) Malleability
		Ans:a) Capacitance	
2	92	What does thermal expansion lead to?	
		(a) Decrease in weight	(b) Breaking of material
		(c) Increase in size with heat	(d) Electrical failure
		Ans:c) Increase in size with heat	
2	93	What is the use of flux in joining processes?	
		(a) To heat the metal	(b) To remove oxide layers
		(c) To apply pressure	(d) To insulate the joint
		Ans:b) To remove oxide layers	
2	94	A die in extrusion is used to:	
		(a) Join metals	(b) Heat metals
		(c) Shape the flow of metal	(d) Lubricate the surface
		Ans:c) Shape the flow of metal	
2	95	Fatigue is the failure of a material due to:	
		(a) Constant temperature	(b) Static load
		(c) Repeated fluctuating load	(d) Water exposure
		Ans:c) Repeated fluctuating load	
2	96	Which metal is most commonly used in electrical wiring?	
		(a) Aluminum	(b) Copper
		(c) Lead	(d) Zinc
		Ans:b) Copper	
2	97	The melting point of a material is the temperature at which it:	
		(a) Starts evaporating	(b) Becomes brittle
		(c) Turns from solid to liquid	(d) Catches fire
		Ans:c) Turns from solid to liquid	
2	98	Retentivity in magnetic materials means:	
		(a) Ability to insulate	(b) Ability to stay non-magnetic
		(c) Ability to retain magnetism	(d) Ability to reflect light
		Ans:c) Ability to retain magnetism	
2	99	A particulate composite is made of:	
		(a) Two or more fibers	(b) Coated surfaces
		(c) Fine particles in a matrix	(d) Only metals
		Ans:c) Fine particles in a matrix	
2	100	Coercivity refers to:	
		(a) Expansion during heating	(b) Magnetic resistance to demagnetization
		(c) Thermal shock strength	(d) Surface roughness
		Ans:b) Magnetic resistance to demagnetization	

U.NO	Q NO	QUESTIONS	
3	101	Which machine is used to perform turning operations?	
		(a) Drill press	(b) Lathe
		(c) Milling machine	(d) Shaper
		Ans:b) Lathe	
3	102	In a lathe, the tool is:	
		(a) Stationary	(b) Rotated
		(c) Reciprocated	(d) Oscillated
		Ans:a) Stationary	
3	103	The main function of a lathe machine is to:	
		(a) Cut threads	(b) Drill holes
		(c) Weld metals	(d) Sand wood
		Ans:a) Cut threads	
3	104	Which part of the lathe holds and rotates the workpiece?	
		(a) Tailstock	(b) Chuck
		(c) Tool post	(d) Bed
		Ans:b) Chuck	
3	105	The tailstock is used for:	
		(a) Holding tool	(b) Supporting long workpieces
		(c) Gear cutting	(d) Cutting threads
		Ans:b) Supporting long workpieces	
3	106	Which machine tool is used to produce flat or curved surfaces using rotary cutters?	
		(a) Lathe	(b) Drilling machine
		(c) Milling machine	(d) Grinder
		Ans:c) Milling machine	
3	107	The vertical milling machine spindle is:	
		(a) Horizontal	(b) Inclined
		(c) Vertical	(d) Rotating
		Ans:c) Vertical	
3	108	Which machine is used to drill holes in a vertical direction?	
		(a) Slotter	(b) Lathe
		(c) Milling machine	(d) Upright drilling machine
		Ans:d) Upright drilling machine	
3	109	A milling cutter is:	
		(a) Stationary	(b) Reciprocating
		(c) Rotating	(d) Static
		Ans:c) Rotating	
3	110	In a horizontal milling machine, the spindle axis is:	
		(a) Vertical	(b) Inclined
		(c) Curved	(d) Horizontal
		Ans:d) Horizontal	

U.NO	Q NO	QUESTIONS	
3	111	CNC stands for:	
		(a) Computer Numeric Control	(b) Control Numerical Calculation
		(c) Common Number Calculator	(d) Centralized Numeric Code
		Ans:a) Computer Numeric Control	
3	112	CNC machines are used for:	
		(a) Manual operations	(b) Sketching designs
		(c) Automating machining processes	(d) Joining plastic
		Ans:c) Automating machining processes	
3	113	CNC machines offer:	
		(a) Manual control	(b) High repeatability
		(c) Reduced accuracy	(d) Low productivity
		Ans:b) High repeatability	
3	114	Drilling operation creates a:	
		(a) Slot	(b) Groove
		(c) Hole	(d) Thread
		Ans:c) Hole	
3	115	The chuck in a lathe is used to:	
		(a) Cut metal	(b) Support cutting tool
		(c) Hold the workpiece	(d) Provide coolant
		Ans:c) Hold the workpiece	
3	116	A tool post in a lathe is used to:	
		(a) Mount the tailstock	(b) Support workpiece
		(c) Hold the cutting tool	(d) Drive spindle
		Ans:c) Hold the cutting tool	
3	117	Which operation cannot be done on a drilling machine?	
		(a) Tapping	(b) Reaming
		(c) Turning	(d) Drilling
		Ans:c) Turning	
3	118	Milling is mainly used for:	
		(a) Drilling holes	(b) Producing cylindrical shapes
		(c) Machining flat surfaces	(d) Forming sheet metal
		Ans:c) Machining flat surfaces	
3	119	CNC machines reduce:	
		(a) Complexity	(b) Productivity
		(c) Accuracy	(d) Human error
		Ans:d) Human error	
3	120	Drilling machine works on the principle of:	
		(a) Linear motion	(b) Rotary motion
		(c) Oscillation	(d) Vibration
		Ans:b) Rotary motion	

U.NO	Q NO	QUESTIONS	
3	121	In a lathe, thread cutting is done using:	
		(a) Milling cutter	(b) Single point cutting tool
		(c) Grinding wheel	(d) Slotter
		Ans:b) Single point cutting tool	
3	122	Which machine is preferred for mass production using automation?	
		(a) Manual lathe	(b) CNC machine
		(c) Hand drill	(d) Bench grinder
		Ans:b) CNC machine	
3	123	The bed of a lathe provides:	
		(a) Speed control	(b) Tool movement
		(c) Rigidity and alignment	(d) Air supply
		Ans:c) Rigidity and alignment	
3	124	T-slots in a milling machine table are used for:	
		(a) Cutting	(b) Mounting workpieces
		(c) Lubrication	(d) Cooling
		Ans:b) Mounting workpieces	
3	125	Drilling machines are classified based on:	
		(a) Size of motor	(b) Type of table
		(c) Construction and purpose	(d) Shape of base
		Ans:c) Construction and purpose	
3	126	Which machine performs both drilling and taper turning?	
		(a) Grinder	(b) Lathe
		(c) Drilling machine	(d) Milling machine
		Ans:b) Lathe	
3	127	CNC programming is mainly written in:	
		(a) Java	(b) G-code
		(c) Python	(d) SQL
		Ans:b) G-code	
3	128	CNC machines reduce production time by:	
		(a) Slowing down cuts	(b) Automating tool paths
		(c) Replacing power tools	(d) Avoiding lubrication
		Ans:b) Automating tool paths	
3	129	In a CNC machine, the tool motion is controlled by:	
		(a) Operator	(b) Motor
		(c) Pre-programmed code	(d) Handles
		Ans:c) Pre-programmed code	
3	130	The operation of removing metal from the end of a cylindrical workpiece is:	
		(a) Facing	(b) Turning
		(c) Knurling	(d) Drilling
		Ans:a) Facing	

U.NO	Q NO	QUESTIONS	
3	131	The lathe operation that creates external threads is called:	
		(a) Reaming	(b) Facing
		(c) Thread cutting	(d) Taper turning
		Ans:c) Thread cutting	
3	132	In milling, the surface finish depends mainly on:	
		(a) Material hardness	(b) Cutter speed and feed
		(c) Workpiece color	(d) Type of lubricant
		Ans:b) Cutter speed and feed	
3	133	Which of these is not a component of the drilling machine?	
		(a) Spindle	(b) Tailstock
		(c) Worktable	(d) Base
		Ans:b) Tailstock	
3	134	Which machine provides vertical feed movement for the tool?	
		(a) Shaper	(b) Milling machine
		(c) Drilling machine	(d) Slotter
		Ans:c) Drilling machine	
3	135	Vertical milling machines are used when:	
		(a) Horizontal slots are required	(b) End milling is needed
		(c) CNC is unavailable	(d) Flat surface grinding is done
		Ans:b) End milling is needed	
3	136	A tool turret is commonly used in:	
		(a) CNC lathe machines	(b) Hand drills
		(c) Slotters	(d) Manual grinders
		Ans:a) CNC lathe machines	
3	137	Which of the following is not a lathe operation?	
		(a) Turning	(b) Knurling
		(c) Milling	(d) Facing
		Ans:c) Milling	
3	138	A CNC machine is more accurate because:	
		(a) It is smaller	(b) It is manual
		(c) It is programmed	(d) It has more oil
		Ans:c) It is programmed	
3	139	CNC milling machines typically operate in:	
		(a) One axis	(b) Two axes
		(c) Three or more axes	(d) No axis
		Ans:c) Three or more axes	
3	140	In a vertical milling machine, the cutter axis is:	
		(a) Horizontal	(b) Vertical
		(c) Diagonal	(d) Variable
		Ans:b) Vertical	

U.NO	Q NO	QUESTIONS	
3	141	The chuck key is used for:	
		(a) Setting tool feed	(b) Tightening or loosening the chuck
		(c) Adjusting spindle speed	(d) Lubricating the table
		Ans:b) Tightening or loosening the chuck	
3	142	A drill bit is held in place by the:	
		(a) Spindle	(b) Chuck
		(c) Tailstock	(d) Tool post
		Ans:b) Chuck	
3	143	Reaming is done to:	
		(a) Enlarge holes	(b) Thread holes
		(c) Drill holes	(d) Finish holes to accurate size
		Ans:d) Finish holes to accurate size	
3	144	CNC machines reduce:	
		(a) Maintenance time	(b) Precision
		(c) Production quality	(d) Setup time
		Ans:d) Setup time	
3	145	Feed in a lathe refers to:	
		(a) Cutting speed	(b) Depth of cut
		(c) Movement of tool per revolution	(d) Rotation of chuck
		Ans:c) Movement of tool per revolution	
3	146	Facing is done:	
		(a) Along the axis	(b) Across the face
		(c) On side of workpiece	(d) On curved surfaces
		Ans:b) Across the face	
3	147	Which of these operations can be done on both lathe and CNC lathe?	
		(a) Threading	(b) Painting
		(c) Welding	(d) Casting
		Ans:a) Threading	
3	148	Milling cutters remove metal by:	
		(a) Compression	(b) Shearing
		(c) Rotating	(d) Reciprocating
		Ans:c) Rotating	
3	149	Spindle speed is measured in:	
		(a) mm/min	(b) rpm
		(c) cm/sec	(d) degrees
		Ans:b) rpm	
3	150	CNC machines are programmed to follow:	
		(a) Paper drawings	(b) Verbal instructions
		(c) Digital code (G/M code)	(d) Chalkboard diagrams
		Ans:c) Digital code (G/M code)	

U.NO	Q NO	QUESTIONS	
4	151	Which of the following is a mechanical power transmission system?	
		(a) Pneumatic	(b) Hydraulic
		(c) Belt drive	(d) Electrical
		Ans:c) Belt drive	
4	152	The main function of a belt drive is to:	
		(a) Stop rotation	(b) Transfer power between shafts
		(c) Generate heat	(d) Cool the system
		Ans:b) Transfer power between shafts	
4	153	Which is NOT a type of belt used in drives?	
		(a) Flat belt	(b) V belt
		(c) Rope belt	(d) Round belt
		Ans:d) Round belt	
4	154	A chain drive transmits power using:	
		(a) Ropes	(b) Belts
		(c) Interlinked chains and sprockets	(d) Electric pulses
		Ans:c) Interlinked chains and sprockets	
4	155	Gear drives are used when:	
		(a) Low efficiency is acceptable	(b) Long distance transmission is needed
		(c) Compact and high torque transmission is required	(d) No power is transmitted
		Ans:c) Compact and high torque transmission is required	
4	156	Which gear drive is suitable for non-parallel, intersecting shafts?	
		(a) Spur gear	(b) Helical gear
		(c) Bevel gear	(d) Worm gear
		Ans:c) Bevel gear	
4	157	Worm and worm wheel drives are known for:	
		(a) High noise	(b) High speed
		(c) Compact and high reduction ratio	(d) Parallel shafts only
		Ans:c) Compact and high reduction ratio	
4	158	Rack and pinion is used to convert:	
		(a) Rotary to rotary motion	(b) Linear to linear motion
		(c) Rotary to linear motion	(d) Rotary to oscillating motion
		Ans:c) Rotary to linear motion	
4	159	The main function of lubrication is to:	
		(a) Add friction	(b) Create sparks
		(c) Reduce wear and tear	(d) Increase temperature
		Ans:c) Reduce wear and tear	
4	160	Which of these is a solid lubricant?	
		(a) Grease	(b) Oil
		(c) Graphite	(d) Water
		Ans:c) Graphite	

U.NO	Q NO	QUESTIONS	
4	161	Which type of drive is best suited for long-distance power transmission?	
		(a) Gear	(b) Chain
		(c) Belt	(d) Direct
		Ans:c) Belt	
4	162	V-belts are preferred over flat belts because:	
		(a) Cheaper	(b) More flexible
		(c) No slip and better grip	(d) Require no lubrication
		Ans:c) No slip and better grip	
4	163	Bevel gears are used for:	
		(a) Same shaft	(b) Intersecting shafts
		(c) Long distances	(d) Crossed belts
		Ans:b) Intersecting shafts	
4	164	What is the role of a cam drive?	
		(a) Reduce motion	(b) Store energy
		(c) Convert rotary motion to reciprocating	(d) Increase power
		Ans:c) Convert rotary motion to reciprocating	
4	165	Which of the following is a liquid lubricant?	
		(a) Graphite	(b) Grease
		(c) Oil	(d) Teflon
		Ans:c) Oil	
4	166	Which drive is positive and does not slip?	
		(a) Belt drive	(b) Chain drive
		(c) Flat belt	(d) Rope drive
		Ans:b) Chain drive	
4	167	In gear drives, spur gears have:	
		(a) Curved teeth	(b) Straight teeth
		(c) No teeth	(d) Slanted teeth
		Ans:b) Straight teeth	
4	168	Worm gears provide:	
		(a) Speed increase	(b) Speed reduction
		(c) Noise production	(d) Shaft misalignment
		Ans:b) Speed reduction	
4	169	Drip feed lubrication supplies:	
		(a) Continuous high pressure oil	(b) Intermittent drops of oil
		(c) Solid powder	(d) Water-based fluid
		Ans:b) Intermittent drops of oil	
4	170	Which is a semi-solid lubricant?	
		(a) Grease	(b) Oil
		(c) Graphite	(d) Wax
		Ans:a) Grease	

U.NO	Q NO	QUESTIONS	
4	171	Which gear drive has the highest contact ratio?	
		(a) Bevel gear	(b) Spur gear
		(c) Helical gear	(d) Rack and pinion
		Ans:c) Helical gear	
4	172	Rack and pinion mechanism is commonly used in:	
		(a) Gearbox	(b) Steering system
		(c) Brakes	(d) Suspension
		Ans:b) Steering system	
4	173	In belt drive, slip can cause:	
		(a) Increased efficiency	(b) Accurate speed
		(c) Power loss	(d) Gear failure
		Ans:c) Power loss	
4	174	Ring oiler lubrication is used in:	
		(a) CNC	(b) High-speed turbines
		(c) Bearings	(d) Boilers
		Ans:c) Bearings	
4	175	Lubricants reduce:	
		(a) Friction and temperature	(b) Load
		(c) Speed	(d) Motion
		Ans:a) Friction and temperature	
4	176	Which component in a gear train transmits torque?	
		(a) Shaft	(b) Teeth
		(c) Key	(d) Cam
		Ans:b) Teeth	
4	177	Cam drive is commonly used in:	
		(a) Gearboxes	(b) IC engines
		(c) Elevators	(d) Chain drives
		Ans:b) IC engines	
4	178	The gear used in differential mechanisms is:	
		(a) Helical gear	(b) Bevel gear
		(c) Spur gear	(d) Rack gear
		Ans:b) Bevel gear	
4	179	The main disadvantage of belt drives is:	
		(a) High efficiency	(b) Slipping
		(c) Noiseless operation	(d) Compactness
		Ans:b) Slipping	
4	180	Gear drives are preferred for:	
		(a) Long-distance transmission	(b) Short-distance, high-torque applications
		(c) Cooling systems	(d) Flexible connections
		Ans:b) Short-distance, high-torque applications	

U.NO	Q NO	QUESTIONS	
4	181	The circular belt is also called:	
		(a) Round belt	(b) Spiral belt
		(c) V belt	(d) Cross belt
		Ans:a) Round belt	
4	182	A rack in rack and pinion is:	
		(a) Circular gear	(b) Spiral gear
		(c) Linear toothed bar	(d) Tapered roller
		Ans:c) Linear toothed bar	
4	183	Which gear has non-intersecting, non-parallel shafts?	
		(a) Bevel gear	(b) Helical gear
		(c) Spur gear	(d) Worm gear
		Ans:d) Worm gear	
4	184	Grease is commonly used in:	
		(a) High-speed gearboxes	(b) Bearings and joints
		(c) CNC cooling	(d) Air compressors
		Ans:b) Bearings and joints	
4	185	The property of a lubricant that resists flow is:	
		(a) Density	(b) Viscosity
		(c) Specific gravity	(d) Compressibility
		Ans:b) Viscosity	
4	186	A properly lubricated surface has:	
		(a) High friction	(b) Low wear and low friction
		(c) Irregular motion	(d) High noise
		Ans:b) Low wear and low friction	
4	187	Gear drives are considered positive drives because:	
		(a) They slip under load	(b) They are made of plastic
		(c) They offer no slip	(d) They are belt-driven
		Ans:c) They offer no slip	
4	188	Worm and worm wheel are ideal for:	
		(a) Speed multiplication	(b) Parallel shafts
		(c) High reduction in compact space	(d) Chain replacements
		Ans:c) High reduction in compact space	
4	189	A common application of cam drive is:	
		(a) Steering system	(b) Valve actuation in engines
		(c) Brake pads	(d) Flywheel control
		Ans:b) Valve actuation in engines	
4	190	The advantage of helical gears over spur gears is:	
		(a) Lower strength	(b) Higher noise
		(c) Smoother operation	(d) Lower cost
		Ans:c) Smoother operation	

U.NO	Q NO	QUESTIONS	
4	191	Drip feed lubrication is commonly used in:	
		(a) High-precision tools	(b) Heavy machinery
		(c) Office equipment	(d) Machine tool spindles
		Ans:d) Machine tool spindles	
4	192	Which of these is a disadvantage of chain drives?	
		(a) No slip	(b) Positive drive
		(c) Requires lubrication	(d) High torque capacity
		Ans:c) Requires lubrication	
4	193	The function of a sprocket is to:	
		(a) Engage a belt	(b) Rotate gears
		(c) Mesh with a chain	(d) Drive a cam
		Ans:c) Mesh with a chain	
4	194	The pitch circle in a gear is the:	
		(a) Inner diameter	(b) Circle where teeth contact
		(c) Shaft axis	(d) Outer circle
		Ans:b) Circle where teeth contact	
4	195	In lubrication, oil film prevents:	
		(a) Speed	(b) Noise
		(c) Metal-to-metal contact	(d) Rotation
		Ans:c) Metal-to-metal contact	
4	196	Solid lubricants are preferred when:	
		(a) Parts are rotating at high speed	(b) Liquids would evaporate
		(c) Coolant is present	(d) Power is low
		Ans:b) Liquids would evaporate	
4	197	A helical gear has:	
		(a) Straight teeth	(b) Curved teeth in spiral form
		(c) Bevel teeth	(d) No teeth
		Ans:b) Curved teeth in spiral form	
4	198	Crossed belt drives are used to:	
		(a) Maintain direction	(b) Reverse rotation direction
		(c) Increase friction	(d) Reduce power
		Ans:b) Reverse rotation direction	
4	199	Grease cup lubrication is used in:	
		(a) High-speed applications	(b) Intermittent lubrication needs
		(c) Fluid systems	(d) Electrical systems
		Ans:b) Intermittent lubrication needs	
4	200	Which property is most important in lubricant selection?	
		(a) Color	(b) Viscosity
		(c) pH value	(d) Odor
		Ans:b) Viscosity	

U.NO	Q NO	QUESTIONS	
5	201	The branch of science that deals with heat and energy is:	
		(a) Mechanics	(b) Thermodynamics
		(c) Statics	(d) Dynamics
		Ans:b) Thermodynamics	
5	202	Which of the following is not a mode of heat transfer?	
		(a) Conduction	(b) Radiation
		(c) Convection	(d) Refraction
		Ans:d) Refraction	
5	203	In conduction, heat transfer occurs through:	
		(a) Liquids	(b) Movement of molecules
		(c) Direct contact	(d) Vacuum
		Ans:c) Direct contact	
5	204	Convection heat transfer requires:	
		(a) Vacuum	(b) Solid medium
		(c) Fluid motion	(d) Light rays
		Ans:c) Fluid motion	
5	205	Radiation differs from conduction and convection as it:	
		(a) Needs air	(b) Occurs only in solids
		(c) Requires no medium	(d) Transfers matter
		Ans:c) Requires no medium	
5	206	The source of energy in IC engines is:	
		(a) Air	(b) Water
		(c) Fuel combustion	(d) Solar panels
		Ans:c) Fuel combustion	
5	207	Which of the following is an external combustion engine?	
		(a) Petrol engine	(b) Diesel engine
		(c) Steam engine	(d) Jet engine
		Ans:c) Steam engine	
5	208	In a four-stroke petrol engine, the spark plug fires during:	
		(a) Intake	(b) Compression
		(c) Power stroke	(d) Exhaust
		Ans:b) Compression	
5	209	A diesel engine differs from a petrol engine by:	
		(a) Using spark plug	(b) Using petrol
		(c) Using compression ignition	(d) Requiring battery ignition
		Ans:c) Using compression ignition	
5	210	In IC engines, air and fuel mixture enters the cylinder during:	
		(a) Exhaust stroke	(b) Compression stroke
		(c) Intake stroke	(d) Power stroke
		Ans:c) Intake stroke	

U.NO	Q NO	QUESTIONS	
5	211	Battery Electric Vehicles (BEVs) are powered by:	
		(a) Petrol	(b) Diesel
		(c) Electricity	(d) LPG
		Ans:c) Electricity	
5	212	Which of the following is a renewable source of energy?	
		(a) Coal	(b) Wind
		(c) Diesel	(d) Natural gas
		Ans:b) Wind	
5	213	In a steam power plant, the primary heat source is:	
		(a) Wind	(b) Water
		(c) Fossil fuels	(d) Electricity
		Ans:c) Fossil fuels	
5	214	Which component in a steam power plant generates steam?	
		(a) Condenser	(b) Turbine
		(c) Boiler	(d) Pump
		Ans:c) Boiler	
5	215	A photovoltaic (PV) cell is used in:	
		(a) Wind turbines	(b) Thermal plants
		(c) Solar power plants	(d) Hydroelectric dams
		Ans:c) Solar power plants	
5	216	Which energy source is used in nuclear power plants?	
		(a) Uranium	(b) Coal
		(c) Natural gas	(d) Sunlight
		Ans:a) Uranium	
5	217	Which is a non-renewable source of energy?	
		(a) Solar	(b) Wind
		(c) Biomass	(d) Coal
		Ans:d) Coal	
5	218	Which part of a nuclear power plant controls the fission process?	
		(a) Turbine	(b) Reactor
		(c) Generator	(d) Boiler
		Ans:b) Reactor	
5	219	Horizontal axis wind turbines are commonly used because:	
		(a) Easier to install	(b) Less space required
		(c) Higher efficiency	(d) Lower speed
		Ans:c) Higher efficiency	
5	220	Which engine uses compression ignition?	
		(a) Petrol engine	(b) Diesel engine
		(c) Steam engine	(d) BEV
		Ans:b) Diesel engine	

U.NO	Q NO	QUESTIONS	
5	221	The component that converts heat energy into mechanical work in a steam power plant is:	
		(a) Boiler	(b) Turbine
		(c) Condenser	(d) Pump
		Ans:b) Turbine	
5	222	In a windmill, mechanical energy is generated from:	
		(a) Diesel	(b) Steam
		(c) Wind	(d) Fuel cells
		Ans:c) Wind	
5	223	Which of the following is not part of a four-stroke engine cycle?	
		(a) Intake	(b) Compression
		(c) Radiation	(d) Exhaust
		Ans:c) Radiation	
5	224	Which mode of heat transfer occurs between the sun and earth?	
		(a) Conduction	(b) Convection
		(c) Radiation	(d) Evaporation
		Ans:c) Radiation	
5	225	BEVs reduce pollution because:	
		(a) They burn hydrogen	(b) They use diesel efficiently
		(c) They use no combustion	(d) They store solar heat
		Ans:c) They use no combustion	
5	226	The efficiency of a diesel engine is generally:	
		(a) Lower than petrol engine	(b) Equal to petrol engine
		(c) Higher than petrol engine	(d) Zero
		Ans:c) Higher than petrol engine	
5	227	A PV panel converts:	
		(a) Heat to mechanical energy	(b) Light to electricity
		(c) Wind to electricity	(d) Fuel to electricity
		Ans:b) Light to electricity	
5	228	A major challenge of wind energy is:	
		(a) Abundance	(b) Storage and reliability
		(c) Maintenance	(d) High fuel cost
		Ans:b) Storage and reliability	
5	229	The part of a BEV that stores energy is:	
		(a) Converter	(b) Motor
		(c) Battery	(d) Inverter
		Ans:c) Battery	
5	230	The intake stroke in an engine cycle involves:	
		(a) Expelling gases	(b) Igniting fuel
		(c) Drawing air-fuel mixture	(d) Compressing gases
		Ans:c) Drawing air-fuel mixture	

U.NO	Q NO	QUESTIONS	
5	231	Which energy system has no moving parts?	
		(a) Solar PV	(b) Windmill
		(c) Diesel engine	(d) Steam turbine
		Ans:a) Solar PV	
5	232	Which of the following heat transfer modes is dominant in solids?	
		(a) Conduction	(b) Convection
		(c) Radiation	(d) Expansion
		Ans:a) Conduction	
5	233	The function of a condenser in a steam power plant is to:	
		(a) Increase pressure	(b) Produce steam
		(c) Convert steam to water	(d) Burn fuel
		Ans:c) Convert steam to water	
5	234	A PV system generates electricity from:	
		(a) Infrared rays	(b) Mechanical force
		(c) Photons	(d) Magnetic fields
		Ans:c) Photons	
5	235	In which engine is a spark plug used?	
		(a) Diesel	(b) Petrol
		(c) Steam	(d) Electric
		Ans:b) Petrol	
5	236	What is the primary source of energy in a nuclear power plant?	
		(a) Combustion	(b) Fission
		(c) Friction	(d) Fusion
		Ans:b) Fission	
5	237	Radiation heat transfer is dominant at:	
		(a) Low temperatures	(b) High velocities
		(c) High temperatures	(d) Sub-zero conditions
		Ans:c) High temperatures	
5	238	The four strokes of an IC engine include:	
		(a) Suction, Radiation, Exhaust, Power	(b) Suction, Compression, Power, Exhaust
		(c) Combustion, Mixing, Suction, Output	(d) Expansion, Rotation, Load, Intake
		Ans:b) Suction, Compression, Power, Exhaust	
5	239	Which type of windmill has blades rotating vertically?	
		(a) Horizontal axis	(b) Vertical axis
		(c) Axial flow	(d) Radial flow
		Ans:b) Vertical axis	
5	240	What is the first law of thermodynamics based on?	
		(a) Heat radiation	(b) Conservation of energy
		(c) Phase change	(d) Cooling and heating
		Ans:b) Conservation of energy	

U.NO	Q NO	QUESTIONS	
5	241	In BEVs, the electric motor converts:	
		(a) Thermal to mechanical	(b) Chemical to electrical
		(c) Electrical to mechanical	(d) Nuclear to kinetic
		Ans:c) Electrical to mechanical	
5	242	What is used to ignite the air-fuel mixture in petrol engines?	
		(a) Compression	(b) Fuel pump
		(c) Spark plug	(d) Camshaft
		Ans:c) Spark plug	
5	243	Which is a direct energy conversion system?	
		(a) Diesel generator	(b) Solar PV
		(c) Thermal plant	(d) IC engine
		Ans:b) Solar PV	
5	244	Diesel engines operate on the principle of:	
		(a) External combustion	(b) Low pressure
		(c) Constant volume	(d) Compression ignition
		Ans:d) Compression ignition	
5	245	A wind turbine converts:	
		(a) Chemical energy to electrical	(b) Heat to motion
		(c) Kinetic energy of air to mechanical	(d) Solar radiation to kinetic
		Ans:c) Kinetic energy of air to mechanical	
5	246	Which of these is a zero-emission vehicle?	
		(a) Diesel truck	(b) Hybrid scooter
		(c) BEV	(d) Petrol car
		Ans:c) BEV	
5	247	Nuclear power plants generate electricity through:	
		(a) Combustion	(b) Mechanical press
		(c) Atomic fission	(d) Air compression
		Ans:c) Atomic fission	
5	248	What form of energy does a solar panel output?	
		(a) Heat	(b) Mechanical
		(c) Electrical	(d) Sound
		Ans:c) Electrical	
5	249	A horizontal axis windmill has its rotor axis:	
		(a) Vertical to wind direction	(b) Perpendicular to tower
		(c) Parallel to wind direction	(d) Below the ground
		Ans:c) Parallel to wind direction	
5	250	The power stroke in an IC engine is when:	
		(a) Air is compressed	(b) Exhaust gases are released
		(c) Spark plug fires	(d) Piston is pushed by combustion
		Ans:d) Piston is pushed by combustion	

BASICS OF MECHANICAL ENGINEERING

PART B

Unit I

1. Define mechanical engineering.
2. Who is a mechanical engineer?
3. List two job responsibilities of a mechanical engineer.
4. Mention two sectors offering jobs to mechanical engineers.
5. State the importance of the manufacturing sector.
6. Give two examples of manufacturing industries in India.
7. List any two job titles in manufacturing.
8. Write two automobile industries in India.
9. What is the aim of maintenance and service?
10. List two roles of a design engineer.
11. Define industrial design.
12. State two roles of a quality engineer.
13. What is the role of logistics in mechanical engineering?
14. List two companies in power generation sector.
15. Mention two opportunities in R&D sector.

Unit II

1. Give importance of materials.
2. Classify metals with example.
3. Differentiate ferrous and non-ferrous metals.
4. Define composite and its types.
5. List any two mechanical properties of materials.
6. Define creep. Give an example.
7. Define fatigue strength.
8. Write two applications of ceramics.
9. Define polymers with example.
10. What is roll forging? Give applications.
11. Define wire drawing. List two applications.
12. Give two types of extrusion.
13. Differentiate temporary and permanent joints.
14. Define brazing. Write one application.
15. What is riveting? Mention one application.

Unit III

1. Define machining.
2. Define machine tool.
3. State principle of lathe.
4. List two parts of a lathe.
5. Mention two operations on lathe.
6. Define drilling machine.
7. List two types of drilling machines.
8. State principle of milling.
9. List two methods of milling.
10. Define CNC.
11. List two components of MCU.
12. What is part program in CNC?
13. List two applications of CNC in machine tools.
14. Write two advantages of CNC system.
15. List two industrial applications of CNC.

Unit IV

1. Define belt drive.
2. Differentiate driver and driven pulley.
3. List types of belt drives.
4. Where is flat belt drive used?
5. Write two applications of flat belt drive.
6. List two advantages of flat belt drive.
7. Define chain drive. Write one application.
8. Mention two gear drives.
9. Define worm and worm wheel drive.
10. Write two functions of cam drive.
11. Define lubrication.
12. List two properties of lubricants.
13. Write two methods of lubrication.
14. State applications of drip feed lubrication.
15. Mention uses of grease cup lubrication.

Unit V

1. Define heat.
2. Write modes of heat transfer.
3. Define conduction.
4. Give two examples of convection.
5. Define thermal radiation.
6. List two types of I.C. engines.
7. Define petrol engine.
8. Define diesel engine.
9. Compare petrol and diesel engines (any two points).
10. Define BEV.
11. List two components of BEV.
12. State principle of steam power plant.
13. List two components of steam power plant.
14. Define nuclear power plant.
15. State principle of wind mill.

BASICS OF MECHANICAL ENGINEERING

PART C

Unit I

1. Explain the role of a mechanical engineer in the automobile industry.
2. State differences between design engineer and maintenance engineer.
3. List three responsibilities of a quality control engineer.
4. Why is logistics important in mechanical engineering?
5. Differentiate between service jobs and power generation jobs.
6. Write three ways mechanical engineers help in renewable energy.
7. Why is manufacturing called the backbone of the economy?
8. Write three uses of CAD in mechanical design.
9. List three job opportunities in research and development.
10. Write three examples showing teamwork in mechanical engineering.

Unit II

1. List three thermal properties of materials with examples.
2. Write three differences between ferrous and non-ferrous metals.
3. List three uses of composites in engineering.
4. Explain creep with one example.
5. List three differences between welding, soldering and brazing.
6. Write three advantages of hot working over cold working.
7. Write two differences between extrusion and rolling with examples.
8. List three uses of polymers in automobiles.
9. Why is material selection important in design? Give examples.
10. List three examples of mechanical joints used in machines.

Unit III

1. Explain the principle of milling in simple words.
2. Write two differences between up milling and down milling.

3. List three uses of CNC in industries.

4. Name three parts of a drilling machine.

5. Write two differences between lathe and milling machine.

6. List three applications of CNC in metal working.

7. List three main features of CNC system.

8. Why is MCU important in CNC machines?

9. Write three disadvantages of old machines compared to CNC.

10. Write three ways CNC helps in improving productivity.

Unit IV

1. List one example each for belt, chain, and gear drives.

2. Draw and explain open and cross belt drive.

3. Write two advantages of gear drive over belt drive.

4. State the use of worm gear drive with one example.

5. List three methods of lubrication.

6. Write three important properties of lubricants.

7. List three uses of cam and follower.

8. Write two advantages and disadvantages of V-belt drive.

9. Why is lubrication important in machines?

10. Where is gear drive suitable for power transmission?

Unit V

1. List three modes of heat transfer with examples.

2. Write three differences between petrol and diesel engines.

3. Explain working of four-stroke petrol engine in simple words.

4. Write three advantages of BEV over petrol cars.

5. List three parts of steam power plant and their use.

6. Write two differences between solar and nuclear power plants.

7. Explain working of horizontal axis windmill.

8. List two advantages and one disadvantage of windmills.

9. Why are renewable energy sources important?

10. Write two problems in steam power plants.