

GOVERNMENT POLYTECHNIC SHEOHAR

DEPT. OF MECHANICAL ENGINEERING

PREVIOUS YEAR QUESTIONS

Subject: Basic Mechanical Engineering Sem: III

SL.NO	UNIT	QUESTION	CO	BLOOMS LEVEL
1	Unit-I	Define thermodynamic? State the role of thermodynamic in engineering and science.	CO1	Remember
2	Unit-I	Define closed system and open system. Give two examples of each.	CO1	Remember
3	Unit-I	Define the following terms (i) State (ii) Process (iii) Cycle.	CO1	Remember
4	Unit-I	State the different types of thermodynamic system with examples.	CO1	Remember
5	Unit-I	Explain the following terms related to thermodynamics (i) Intensive Property (ii) Extensive Property.	CO1	Understand
6	Unit-I	Explain point function and Path function and state two examples of each.	CO1	Understand
7	Unit-I	What is thermodynamic equilibrium?	CO1	Remember
8	Unit-I	Explain Zeroth law of thermodynamics.	CO1	Understand
9	Unit-I	Explain first law of thermodynamics.	CO1	Understand
10	Unit-I	State the limitation of first law of thermodynamics.	CO1	Remember
11	Unit-I	State Kelvin-Plank statement and Clausius statement of Second law of thermodynamics.	CO1	Remember
12	Unit-I	Explain second Law of thermodynamics.	CO1	Understand
13	Unit-I	Explain concepts of PMM-I and PMM-II.	CO1	Understand
14	Unit-I	Explain with neat sketch: (i) Perpetual motion of first kind (PMM-I) (ii) Perpetual motion of kind II (PMM-II).	CO1	Understand
15	Unit-I	Show that Clausius and Kelvin-Plank statement is equivalent to each other.	CO1	Apply
16	Unit-I	Distinguish between Heat and work.	CO1	Apply
17	Unit-I	Define steady flow process and unsteady flow process.	CO1	Remember
18	Unit-I	Distinguish between heat pump and refrigerator.	CO1	Apply
19	Unit-I	Define COP. Give mathematical expression of COP for heat pump and refrigerator.	CO1	Remember

20	Unit-I	Prove the relationship between COP of heat pump and COP of refrigerator.	CO1	Apply
21	Unit-I	Distinguish between heat engine and heat pump.	CO1	Apply
22	Unit-I	Explain reversible process and irreversible process.	CO1	Understand
23	Unit-I	Explain concept of entropy.	CO1	Understand
24	Unit-II	Define Heat transfer. State different modes of heat transfer and explain any one with suitable example.	CO2	Understand
25	Unit-II	State Fourier's law of Heat transfer.	CO2	Remember
26	Unit-II	Define thermal conductivity. Give its unit.	CO2	Remember
27	Unit-II	Write short notes of the following: (a) Black Body (b) Composite wall (c) Conduction.	CO2	Understand
28	Unit-II	Explain overall heat transfer coefficient.	CO2	Understand
29	Unit-II	Determine the rate of heat flow through the boiler wall made of 3 cm thick steel and covered with an insulating material 0.5 cm thick. The temperature of wall inside a boiler is 300°C and temperature on outer surface of insulation is 50°C.	CO2	Apply
30	Unit-II	A flat wall is composed of 0.2 cm thick fire clay bricks, faced with 0.1 m thick insulation. Determine the heat flow rate per unit area of composite wall and interface temperature. Assume coefficient of thermal conductivity for fire clay brick and insulation as 0.05 W/m.K and 0.278 W/m.K respectively. Assume interface temperature of fire clay will be 870°C while face temperature be 210°C.	CO2	Apply
31	Unit-II	Define boiler. State its properties.	CO3	Remember
32	Unit-II	Explain the classification of boiler.	CO3	Understand
33	Unit-II	Explain water tube boiler and fire tube boiler with its advantage and disadvantage.	CO3	Understand
34	Unit-II	Write construction and working principle of Babcock and Wilcox boiler.	CO3	Understand
35	Unit-II	Draw and explain with neat sketch Cochran Boiler.	CO3	Understand
36	Unit-II	Differentiate between fire tube boiler and water tube boiler.	CO3	Apply

37	Unit-II	Draw PV and TS diagram of Rankine cycle and explain.	CO3	Understand
38	Unit-II	Draw the layout of thermal steam-turbine power station and explain its working.	CO3	Understand
39	Unit-III	Classify steam turbine in detail.	CO3	Understand
40	Unit-III	With a neat sketch, explain the variation in pressure and velocity of steam in impulse turbine.	CO3	Understand
41	Unit-III	Explain the construction and working of reaction turbine with suitable sketch.	CO3	Understand
42	Unit-III	What is the necessity of compounding of steam turbine?	CO3	Understand
43	Unit-III	State meaning of term 'governing' and 'compounding' of steam turbine.	CO3	Remember
44	Unit-III	Write basic function of steam condenser.	CO3	Understand
45	Unit-III	How steam condenser is classified?	CO3	Understand
46	Unit-III	State the sources of air leakage in condenser.	CO3	Apply
47	Unit-III	State the effects air leakage in condenser.	CO3	Apply
48	Unit-III	What is the function of cooling tower in steam power plant?	CO3	Understand
49	Unit-III	List various types of cooling towers. Describe forced draught cooling tower with neat sketch.	CO3	Understand
50	Unit-III	Draw and explain Otto cycle on P-V and T-S diagram.	CO2	Understand
51	Unit-III	What do you mean by I.C Engines? State the classification of I.C Engines.	CO2	Remember
52	Unit-III	Discuss the component part of I.C Engine with neat sketch.	CO2	Understand
53	Unit-III	Explain the construction and working of four stroke petrol engines.	CO2	Understand
54	Unit-III	Draw and explain valve timing diagram of four stroke engine.	CO2	Understand
55	Unit-III	State and explain turning moment diagram for four stroke engines.	CO2	Understand
56	Unit-III	Explain the construction and working of two stroke petrol engines.	CO2	Understand
57	Unit-III	Write comparison between two stroke and four stroke engines.	CO2	Apply
58	Unit-III	Write comparison between C.I and S.I engines.	CO2	Apply
59	Unit-IV	How are engineering material classified?	CO4	Understand

60	Unit-IV	Discuss briefly the properties of materials.	CO4	Understand
61	Unit-IV	What is ferrous material? Give the characteristics and application of ferrous material?	CO4	Remember
62	Unit-IV	What is pig iron? What is the composition of pig iron? How is pig iron produced?	CO4	Remember
63	Unit-IV	State the classification of pig iron.	CO4	Remember
64	Unit-IV	State the properties of pig iron.	CO4	Remember
65	Unit-IV	What is cast iron? What is the composition of cast iron? How is cast iron produced?	CO4	Remember
66	Unit-IV	State the classification of cast iron?	CO4	Remember
67	Unit-IV	State the properties and uses of cast iron?	CO4	Understand
68	Unit-IV	What is wrought iron how is wrought iron is manufactured?	CO4	Remember
69	Unit-IV	State the properties and uses of wrought iron?	CO4	Understand
70	Unit-IV	What is carbon steel? Give the classification of carbon steel.	CO4	Remember
71	Unit-IV	What do you mean by alloy steel? Name the different alloying steel materials.	CO4	Remember
72	Unit-IV	What are ceramics? Give its properties and applications?	CO4	Remember
73	Unit-IV	What is asbestos? Give its properties and applications.	CO4	Remember
74	Unit-IV	What is abrasive? Give its properties and applications.	CO4	Remember
75	Unit-IV	Write short notes on (i) Heat insulator (ii) sound insulator (iii) Refractory materials (iv) Abrasive materials.	CO4	Understand
76	Unit-IV	What do you mean by metal casting? Write steps of metal casting.	CO4	Remember
77	Unit-IV	Explain the following types of casting (i) Die-casting (ii) Centrifugal casting (iii) investment casting (iv) Gravity or Permanent Mould casting.	CO4	Understand
78	Unit-IV	Classify Moulding process.	CO4	Understand
79	Unit-IV	What is pattern making. Define pattern used for casting.	CO4	Remember
80	Unit-IV	Name some common material for making patterns.	CO4	Remember
81	Unit-IV	Name the different types of patterns. Sketch any three and state field of application.	CO4	Remember

82	Unit-IV	What is hot working? What are its advantage and disadvantage.	CO4	Understand
83	Unit-IV	What is cold working? What are its advantage and disadvantage.	CO4	Understand
84	Unit-IV	Differentiate between hot working and cold working process.	CO4	Apply
85	Unit-IV	State the principle of cold extrusion.	CO4	Remember
86	Unit-IV	Explain with neat sketch direct extrusion and indirect extrusion.	CO4	Understand
87	Unit-IV	Explain Forging? What are its advantage and disadvantage.	CO4	Understand
88	Unit-IV	State the classification of Forging process.	CO4	Remember
89	Unit-IV	Explain different types of forging operation with neat sketches.	CO4	Understand
90	Unit-IV	What is hot and cold rolling process.	CO4	Remember
91	Unit-IV	Distinguish between hot and cold rolling operations.	CO4	Apply
92	Unit-IV	Sketch and explain three types of flames and show the different zones in each of them.	CO4	Understand
93	Unit-IV	Explain electric arc welding with neat sketch? Name the principal equipment required for arc welding. What are its advantage and disadvantage?	CO4	Understand
94	Unit-IV	Explain the process of soldering and brazing in brief.	CO4	Understand
95	Unit-IV	Distinguish between soldering and brazing.	CO4	Apply
96	Unit-V	What is machine tool? What is the main process of machine tool? How will you classify machine tool?	CO5	Understand
97	Unit-V	What is lathe machine? How would you classify lathe machine?	CO5	Understand
98	Unit-V	Draw a neat sketch of lathe machine and indicate main components on it.	CO5	Understand
99	Unit-V	List different operation which can be performed on a lathe.	CO5	Remember
100	Unit-V	Write short notes on milling machine. State its classification.	CO5	Understand
101	Unit-V	Explain different types of milling machine operations.	CO5	Understand
102	Unit-V	What is shaping machine? How will you classify shaping machines.	CO5	Understand
103	Unit-V	Explain the quick return motion of a shaper.	CO5	Understand

104	Unit-V	Describe a planer giving a neat sketch.	CO5	Understand
105	Unit-V	How does a planer differ from a shaper.	CO5	Understand
106	Unit-V	Explain drilling machine with its classification.	CO5	Understand
107	Unit-V	Explain the different types of drilling machine operations.	CO5	Understand
108	Unit-V	What are uses of Grinding machines? Name the different types of grinding machines.	CO5	Remember