

Model Question Paper
ELEMENTS OF MECHANICAL ENGINEERING
(14EME14/14EME24)

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

MODULE 1

1)	a.	Define fuel, calorific value. Describe two types of the calorific values of fuel.	(6 Marks)
	b.	With the help of Temperature –Enthalpy diagram explain the generation of steam at constant pressure.	(10 Marks)
	c.	Distinguish between Non-renewable and renewable energy resources.	(4 Marks)

OR

2)	a.	With a neat sketch explain the working of Babcock and Wilcox Boiler.	(10 Marks)
	b.	With the help of line diagrams, describe how solar energy and hydel energy can be used to generate electric power.	(10 Marks)

MODULE 2

3)	a.	With a neat sketch explain the working of Parson's turbine.	(8 Marks)
	b.	With neat sketches explain the working of a 4 stroke Petrol engine.	(8 Marks)
	c.	Differentiate between Open-cycle and Closed-cycle gas turbines.	(4 Marks)

OR

4)	a.	With a neat and labeled sketch explain the working of Francis turbine.	(8 Marks)
	b.	Following observations are taken during a trial on 4 stroke petrol engine. Brake drum diameter=60.03cm, full brake load on drum=250 N, brake drum speed=450 rpm, Calorific value of petrol= 40 MJ/kg, brake thermal efficiency= 32% , mechanical efficiency= 80% , Specific gravity of fuel=0.82. Calculate a) Indicated Power b) Brake power c) indicated thermal efficiency, and d) fuel consumption in kg/hr and	(8 Marks)

		liters/sec.	
	c.	Differentiate between Reaction and impulse water turbines.	(4 Marks)
MODULE 3			
5)	a.	With suitable sketch explain Taper Turning by swiveling the compound rest.	(6 Marks)
	b.	Define Robot. List out the advantages and disadvantages of a robot.	(8 Marks)
	c.	Define automation. List out the advantages and disadvantages of automation.	(6 Marks)
OR			
6)	a.	Define automation. Classify different types of automation.	(8 Marks)
	b.	Discuss the various industrial applications of Robot	(8 Marks)
	c.	Define Boring, Reaming, Tapping, Counter Sinking operations.	(4 Marks)
MODULE 4			
7)	a.	Compare soldering and brazing processes.	(4 Marks)
	b.	Define a composite material. How are composite materials classified? Give example for each.	(8 Marks)
	c.	State the composition and application of any four ferrous metals.	(8 Marks)
OR			
8)	a.	What are the differences between soldering and welding processes?	(4 Marks)
	b.	What are the key applications of composite materials in Aerospace and Automotive industries?	(10 Marks)
	c.	State the composition, properties and applications of high carbon steels.	(6 Marks)
MODULE 5			
9)	a.	With a suitable sketch explain the working of Vapour absorption refrigeration system.	(10 Marks)
	b.	With suitable sketches explain the working of Room air conditioning	(10 Marks)

		system.	
OR			
10)	a.	With a suitable sketch explain the working of Vapourcompression refrigeration system.	(4 Marks)
	b.	Define the terms a) Refrigeration b) Refrigerating effect c) Ton of Refrigeration d) Ice making capacity, and e) Refrigeration cycle.	(8 Marks)