CBCS SCHEME

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17EME14/24

Second Semester B.E. Degree Examination, June/July 2019
Elements of Mechanical Engineering

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Distinguish between non–renewable and renewable sources of energy. **(06 Marks)**
b. With neat sketch describe working hydroelectric power plant. **(08 marks)**
c. What are bio fuels? Compare them with petroleum based fuels. **(06 Marks)**

OR

2 a. What is a boiler? Classify them. **(06 marks)**
b. Briefly describe stream formation with the help of T–H diagram. **(04 marks)**
c. Explain working of Babcock and Wilox boiler with a neat sketch. **(10 marks)**

Module-2

3 a. Distinguish between impulse and reaction steam turbines. **(06 Marks)**
b. Explain working of Kaplan water turbine. **(08 Marks)**
c. Compare petrol engine with diesel engine. **(06 Marks)**

OR

4 a. A four stroke single cylinder internal combustion engine has a volume of 6 litres and runs at 300 rpm. At full load, tight side and slack side tensions of belt dynometer are 700N and 300N respectively. The diameter of pulley dynometer is 1m. The mass of fuel is 4 kg/hr with a calorific value of 42000kJ/kg. If the indicated mean effective pressure is 6 bar, determine the brake power, indicated power, mechanical efficiency, indicated thermal efficiency and brake specific fuel consumption. **(10 Marks)**
b. With neat sketches explain working of four stroke petrol engine. **(10 Marks)**

Module-3

5 a. What is machine tool? Explain thread cutting and taper turning operations with neat sketches. **(08 Marks)**
b. Differentiate between reaming and boring. **(06 marks)**
c. Sketch and explain slot milling and end milling. **(06 Marks)**

OR

6 a. Compare NC machine tool with CNC machine. **(04 Marks)**
b. What is automation? Enlist advantages and limitation of robot physical configuration with neat sketches. **(16 Marks)**

Module-4

7 a. State the composition, properties of any four ferrous metals. (08 marks)
b. How are composite materials classified? Enlist their application in biomedical and military. (08 Marks)
c. Sketch and explain electric arc welding. (04 Marks)

OR

8 a. State the composition and applications of any four non ferrous metals. (08 Marks)
b. Compare welding with brazing. (06 marks)
c. Sketch and explain gas welding. (06 Marks)

Module-5

9 a. What is refrigeration? What are desirable properties of a good refrigerant? (06 marks)
b. Compare refrigeration system with air conditioning. (04 Marks)
c. Explain the principle and working of vapour absorption refrigeration with neat sketch. (10 Marks)

OR

10 a. Name commonly used refrigerants for different applications. (05 marks)
b. What is principle of refrigeration? Name essential parts of refrigerator and briefly explain their functions. (05 marks)
c. Explain the principle and working of room air conditioner with neat sketch. (10 Marks)

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