CBCS Scheme

15EME14/24

First/Second Semester B.E. Degree Examination, June/July 2018
Elements of Mechanical Engineering

Time: 3 hrs.

Max. Marks: 80

Note: *1. Answer any FIVE full questions, choosing*
ONE full question from each module.
2. Draw neat sketch wherever required.

Module-1

1   a. Differentiate between conventional and non conventional energy sources (any five).
                                                                                    (05 Marks)
    b. With a schematic layout, explain the nuclear power plant.   **(05 Marks)**
    c. Explain the three processes of utilization of solar energy.   **(06 Marks)**

OR

2   a. With a neat sketch, explain the BabCock and WilCock boiler.   **(10 Marks)**
    b. Explain the following :
       i) Dryness fraction
       ii) Latent heat of vaporisation
       iii) Enthalpy
       iv) Location and function of an economizer.   **(06 Marks)**

Module-2

3   a. Explain the working of a Delaval turbine with neat sketch.   **(06 Marks)**
    b. Differentiate between open and closed cycle gas turbine (any four).   **(04 Marks)**
    c. With a neat sketch. Explain the Pelton wheel.   **(06 Marks)**

OR

4   a. Explain the four stroke petrol engine with neat sketch and PV diagram.   **(08 Marks)**
    b. A single cylinder 4-stroke IC engine has a bore of 180mm, stroke of 200mm and a rated
       speed of 300 rpm. The mean effective pressure is 6 bar. At full load, the torsion on the brake
       drum was 200N-m and 4kg of fuel was consumed in one hour. If the calorific value of the
       fuel is 42,000 kJ/kg, calculate the BP, IP, mechanical efficiency, indicated thermal
       efficiency and brake thermal efficiency.   **(08 Marks)**

Module-3

5   a. With a neat sketch, explain the taper turning by swiveling of compound rest. **(06 Marks)**
    b. Explain the following with neat sketches i) counter boring ii) reaming.   **(04 Marks)**
    c. With neat sketches, explain slot and face milling.   **(06 Marks)**

OR

6 a. Define robot. Explain the classification of robots with neat sketches. (10 Marks)
  b. Enumerate applications, advantages and disadvantages. (2 each). (06 Marks)

Module-4

7 a. Explain the applications of ferrous and non ferrous metals (three each). (06 Marks)
  b. Define composites. Enumerate the classification of composites. (06 Marks)
  c. Enumerate the applications of composites in automotive and air craft industries (two each) (04 Marks

OR

8 a. Enumerate the differences between soldering and brazing (any six). (06 Marks
  b. Explain the different flames of welding with sketches. (06 Marks
  c. List the applications of welding and soldering (two each). (04 Marks

Module-5

9 a. List the diserable properties of a good refrigerant (any six). (06 Marks
  b. Enumerate the uses of refrigerations (any 4). (04 Marks
  c. Explain : i) COP ii) Ton of refrigeration iii) Types of refrigerant (any four). (06 Marks

OR

10 a. With a neat sketch explain vapour absorption refrigeration. (08 Marks
  b. Explain the construction and working of room air condition with neat sketch. (08 Marks

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