



C14-EE-306

**4247**

**BOARD DIPLOMA EXAMINATION, (C-14)**

MARCH / APRIL - 2019

**DEEE - III SEMESTER EXAMINATION**

**GENERAL MECHANICAL ENGINEERING**

Time : 3 Hours]

[Total Marks : 80

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**PART - A**

**3×10=30**

- Instructions :**
- (1) Answer **ALL** questions.
  - (2) Each question carries **THREE** marks.
  - (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 Define (a) ultimate stress and (b) factor of safety.
- 2 A hole of 20mm diameter is to be pierced in steel plate. If the ultimate shear stress of the plate is  $400 \text{ N/mm}^2$  and the force exerted by the punch is 251 KN. Find the thickness of the plate.
- 3 Define torsion and write torsion equation.
- 4 A solid shaft of 100mm diameter transmits 80KW at 180 RPM. Find the torque transmitted by the shaft and maximum shear stress induced.
- 5 Compare SI and CI engine.
- 6 State the functions of (a) piston rings and (b) connecting rod.
- 7 What are the essential characteristics of a good boiler?
- 8 Define governing of a steam turbine. Mention various methods of governing.
- 9 What are the main elements of a centrifugal pump?
- 10 List the types of lubricant with examples.

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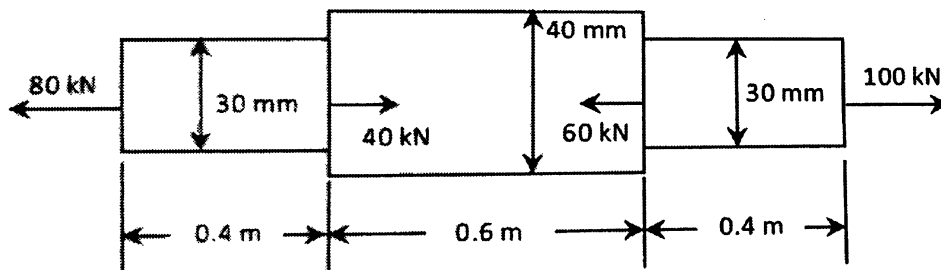
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## PART - B

10×5=50

- Instructions :**
- (1) Answer any **FIVE** questions.
  - (2) Each question carries **TEN** marks.
  - (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11 Explain Stress-Strain diagram for a ductile material indicating the salient points ?
- 12 A bar of various sections is loaded as shown in Fig. Determine the total elongation if  $E = 2 \times 10^5 \text{ N/mm}^2$ .



- 13 A hollow shaft is required to transmit 400kw at 240 rpm. The maximum torque is 20% greater than the mean. The permissible shear stress is  $60 \text{ N/mm}^2$ . The twist in a length of 4m is not to exceed  $15^\circ$ . The ratio between diameters is  $2/3$ ; calculate inner and outer diameters of the shaft. Take  $G = 80\text{KN/mm}^2$ .
- 14 Explain the working of two-stroke petrol engine with neat sketch.

- 15 State the differences between spark ignition engine and compression ignition engines.
- 16 Draw a neat sketch of Babcock and Wilcox boiler showing the path of flue gases and water. Describe its working.
- 17 Write short notes on the following : (a) Feed check valve (b) Steam stop valve.
- 18 What is meant by priming in a centrifugal pump? State the purpose of priming.

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