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Question Paper Code: 51728

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Second Semester

Mechanical Engineering

15UME208 - BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to EEE and EIE branches)

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- In chain pins the arrow should be made of good quality of hardened and tempered steel wire of minimum tensile strength of
(a) 70 kg/mm^2 (b) 70 N/mm^2 (c) 70 KN/mm^2 (d) 70 kg/m^2
- The reading taken on the staff held at a point of unknown elevation is known as
(a) Foresight (F.S) (b) Back sight (B.S)
(c) Change point (d) Intermediate station
- If a beam having its end portion extended beyond the support, it is called
(a) Continuous beam (b) Cantilever beam
(c) Overhanging beam (d) Simply supported beam
- A mild steel rod of 12mm diameter and 200 mm length elongates 0.085 mm under an axial pull of 10kN. Determine the young's modulus of the material.
(a) $2.08 \times 10^{-5} \text{ KN/mm}^2$ (b) $2.08 \times 10^{-5} \text{ KN/m}^2$
(c) $2.08 \times 10^{-5} \text{ N/mm}$ (d) $2.08 \times 10^{-5} \text{ N/mm}^2$

5. The efficiency of the gas power plant is
 (a) 45% (b) 40% (c) 35% (d) 30%
6. 1 eV =
 (a) 1.6×10^{-13} J (b) 1.6×10^{-18} J
 (c) 1.6×10^{-17} J (d) 1.6×10^{-19} J
7. Name the material used for making crank shaft.
 (a) Aluminum alloy (b) Cast iron
 (c) Alloys steel (d) Special alloy
8. The inlet valve is opened _____ in advance to TDC position enabling the fresh charge to enter.
 (a) $15^\circ - 30^\circ$ (b) $20^\circ - 30^\circ$ (c) $5^\circ - 30^\circ$ (d) $10^\circ - 30^\circ$
9. Specific heat of ice (C_p ice) =
 (a) 2.1 J/kg K (b) 2.1 kJ/kg (c) 2.1 kJ/kg K (d) 2.1 kJ/kg/K
10. One ton of refrigeration =
 (a) 233.333 kJ/min (b) 253.333KJ/min
 (c) 233.333 KJ/s (d) 2.333 KJ/min

PART - B (5 x 2 = 10 Marks)

11. What do you mean by chain surveying
12. State the advantages and disadvantages of shell roofs.
13. List the four nuclear power plants in India.
14. Differentiate between boiler mounting and boiler accessories.
15. What are the properties of a good refrigerant?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) With a neat diagram explain Prismatic compass. (10)
- (ii) The following perpendicular offsets were taken at 10 meter intervals from a survey line to an irregular boundary line. 3.15m, 4.3m, 8.2m, 5.6m, 6.85m, 7.6m, 4.2m, 5.6m, 4.3m. Calculate the area enclosed between the survey line, the irregular boundary line, and first and last offsets, by the application of (i) Average ordinate rule (ii) Trapezoidal rule and (iii) Simpson's rule. (6)

Or

- (b) (i) Write a short notes on different types of cement varieties with is advantages and disadvantages. (8)
- (ii) Write the properties of ordinary Portland cement. (8)
17. (a) (i) What is Stone masonry? And explain its types with neat sketches. (8)
- (ii) What are the different points to be kept in mind in supervising stone masonry work? (8)

Or

- (b) (i) What do you mean by bridges and state the different classification of bridges? (8)
- (ii) What are the factors should be considered for the selection of site for the Dam? (8)
18. (a) (i) With a neat sketch explain the construction and working of hydro electric power plant. (10)
- (ii) Write the factors considered for the site selection of thermal power plant. (6)

Or

- (b) (i) Explain the important components and working principle of centrifugal pump with a neat diagram. (10)
- (ii) Differentiate between impulse and reaction turbine. (6)
19. (a) (i) Explain briefly about working principle of two stroke gasoline engine with neat sketches. (10)
- (ii) Differentiate between SI and CI engines. (6)

Or

- (b) (i) With a neat sketch explain about Cochran boiler. (8)
- (ii) Write a short note on fusible plug and spring loaded safety valve. (8)
20. (a) (i) Distinguish between vapour compression and vapour absorption refrigeration system. (6)
- (ii) Explain the construction and working principle of vapour absorption refrigeration system with neat sketch. (10)

Or

- (b) (i) With a neat sketch explain the construction and working of window type air conditioner with its merits and demerits. (10)
- (ii) State the merits and demerits of window and split type air conditioner. (6)
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