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Question Paper Code : 20186

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Second Semester

Electrical and Electronics Engineering

BE 3255 — BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to : Electronics and Instrumentation Engineering/Environmental Engineering/Instrumentation and Control Engineering)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State any four sub disciplines of civil engineering.
2. What is being dealt in Energy Engineering?
3. Define a contour used in land surveying.
4. Give an example each for thermal and acoustic insulation materials.
5. List any four types of foundations used for buildings / structures.
6. Distinguish between a gravity dam and an arch dam.
7. What is the principle behind an hydro-electric power plant?
8. Distinguish between single acting and double acting reciprocating pumps.
9. What is the basic principle of refrigeration?
10. What are the advantages of a split-type air conditioner?

PART B — (5 × 13 = 65 marks)

11. (a) (i) With respect to a building explain the following terminologies : floor area, plinth area, carpet area, built-up area, floor space index, set back distance and floor height. (7)
- (ii) What are the different types of buildings? Give examples. (6)
- Or
- (b) (i) Write a detailed account of automobile engineering as a sub discipline of mechanical engineering. (8)
- (ii) State the importance of inter disciplinary concepts in mechanical engineering. (5)

12. (a) For each of the following building material, write notes on application, availability and limitations.
- (i) Stones (3)
 - (ii) River Sand (4)
 - (iii) Cement (3)
 - (iv) Steel (3)

Or

- (b) (i) Explain the uses of gypsum in building construction. (6)
(ii) Explain the concept of prefabrication. (7)
13. (a) With neat sketches, explain the construction of masonry using stones and bricks.

Or

- (b) Write a detailed notes on the following:
- (i) Rain water harvesting (4)
 - (ii) Solid waste management (4)
 - (iii) Green Buildings (5)
14. (a) Classify the power plants based on the input to the plant and explain each of them with respect to their cost, usefulness and environmental impact.

Or

- (b) With neat sketches, explain the working of two stroke and four stroke internal combustion engines.
15. (a) With a neat sketch, explain the lay out of a typical home refrigerator. State the advancement in technology today.

Or

- (b) Write a detailed account on psychometry and its process.

PART C — (1 × 15 = 15 marks)

16. (a) Explain the significance of highways and railways for the transportation network in India, in Civil Engineering point of view.

Or

- (b) Discuss the evolution of hybrid engines with respect to automobile industry.
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