

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER B.TECH DEGREE EXAMINATION (R,S), MAY 2024**(2020 SCHEME)****Course Code: 20EST120****Course Name: Basics of Civil and Mechanical Engineering****Max. Marks: 100****Duration: 3 Hours****PART I BASIC CIVIL ENGINEERING****Part I to be answered in pages 1 to 15****PART A****(Answer all questions. Each question carries 4 marks)**

1. List the major disciplines of Civil Engineering and explain any two in detail.
2. Outline the importance of NBC.
3. Explain the principles of surveying.
4. Explain the qualities of a good brick and its uses.
5. Summarize the energy management system in green buildings.

PART B**(Answer one full question from each module, each question carries 10 marks)****MODULE I**

6. a) Explain the components of a residential building with a neat sectional diagram. (6)
- b) Explain the responsibility of a Civil Engineer in ensuring the safety of built environment. (4)

OR

7. a) Describe the objectives and classification of CRZ norms. (6)
- b) Discuss the difference between plinth area and carpet area. (4)

MODULE II

8. a) Explain the qualities of good timber. (5)
- b) Discuss the physical properties of ordinary Portland cement. (5)

OR

9. a) Enumerate the types of cement concrete and describe the constituent materials. (5)
- b) Outline any five structural steel sections. Explain the uses of each. (5)

MODULE III

10. a) Compare English bond and Flemish bond with neat sketches. (5)

- b) Explain the civil engineering aspects of MEP and HVAC in a commercial building. (5)

OR

11. a) Discuss the water management system in green building. (5)
b) Explain any five functions of foundations. (5)

PART II BASIC MECHANICAL ENGINEERING

Part II to be answered in pages 16 to 30

PART A

(Answer all questions. Each question carries 4 marks)

12. Draw the P-V and T-S diagram of Carnot cycle, also list the processes involved.
13. Give the concept of hybrid engine.
14. Define Dry Bulb Temperature and Wet Bulb Temperature.
15. Differentiate between Impulse and Reaction turbine.
16. Sketch cluster rolling mill and label the parts.

PART B

(Answer one full question from each module, each question carries 10 marks)

MODULE IV

17. Explain the working of a four-stroke diesel engine with proper sketches. (10)

OR

18. Derive an expression to represent the efficiency of an Otto cycle. (10)

MODULE V

19. Explain vapour compression refrigeration system with suitable diagram. (10)

OR

20. Describe the working of Pelton turbine with a neat sketch. (10)

MODULE VI

21. Explain the steps in making sand mould for sand casting. (10)

OR

22. a) Mark the main parts of a lathe machine with a suitable sketch. (5)
b) Compare up milling and down milling process. (5)
