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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Second Semester B.Tech Degree (R,S) Examination May 2024 (2019 Scheme)

Course Code: EST 120

Course Name: BASICS OF CIVIL AND MECHANICAL ENGINEERING
(2019 -Scheme)

PART 1 : BASIC CIVIL ENGINEERING

Max. Marks: 50

Duration: 90 min

PART A

Answer all questions, each carries 4 marks

Marks

- | | | |
|---|---|-----|
| 1 | Explain the relevance of Civil Engineering in the infrastructural development of country. | (4) |
| 2 | Discuss the objectives of surveying. | (4) |
| 3 | Explain 4 properties of hardened concrete. | (4) |
| 4 | Differentiate between load bearing and framed structure. | (4) |
| 5 | What is green building? Discuss on the principles of green building. | (4) |

PART B

Answer one full question from each module, each question carries 10 marks.

MODULE 1

- | | | |
|---|---|-----|
| 6 | a) Define a) floor area b) carpet area | (4) |
| | b) Explain with a neat sketch the components of a residential building. | (6) |

OR

- | | | |
|---|--|-----|
| 7 | a) What is the significance of NBC and KBR in planning a building? | (4) |
| | b) Discuss on the applicability and classification of CRZ. | (6) |

MODULE 2

- | | | |
|---|---------------------------------------|-----|
| 8 | a) Differentiate between PCC and RCC. | (4) |
| | b) What are the properties of cement? | (6) |

OR

- | | | |
|---|--|-----|
| 9 | a) Discuss on uses of plastics in buildings. | (4) |
| | b) What are the market forms of steel? Discuss in detail on any three market forms of steel. | (6) |

MODULE 3

- 10 a) Explain any two types of shallow foundation with neat sketches. (4)
b) Compare English bond and Flemish bond. Draw the plan and elevation of English bond of one brick thick wall. (6)

OR

- 11 a) Write short note on ramp. (4)
b) Explain the commonly used roof covering materials, specifying the condition of application. (6)

PART 2: BASIC MECHANICAL ENGINEERING

Max. Marks: 50

Duration: 90 min

PART A

Answer all questions, each carries 4 marks

Marks

- 12 Write notes on CRDI and MPFI engine (4)
13 With neat sketch describe water cooling system of IC engine (4)
14 What are the desirable properties of moulding sand? (4)
15 Briefly explain any two secondary manufacturing process (4)
16 Write notes on Rapid and Additive manufacturing (4)

PART B

Answer one full question from each module, each question carries 10 marks.

MODULE 4

- 17 Derive equation for efficiency of Otto cycle (10)

OR

- 18 Explain working of 4 stroke petrol engines with the help of neat sketch and mark the thermo-dynamic processes in a P-V diagram. (10)

MODULE 5

- 19 a. Sketch and name any two types of Gear trains (10)
b. Write notes on selection of Pumps

OR

- 20 Explain working of Vapour Compression Refrigeration system with the help of neat sketch and mark the thermo-dynamic processes in a T-S diagram (10)

MODULE 6

- 21 With the aid of a block diagram describe the important parts of the Lathe machine. (10)
What are the machining operations that can perform on a Lathe?

OR

- 22 Explain Arc welding with suitable sketches and describe common types of weld (10)
defects.
