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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

First Semester B.Tech Degree Regular and Supplementary Examination December 2023 (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	What is the necessity of implementing Coastal Regulatory Zone (CRZ) norms?	(4)
2	Explain the principles of surveying.	(4)
3	List any 4 types of timber used for building construction. State where they are used.	(4)
4	What is bearing capacity of soil? What is its significance?	(4)
5	What is a bond? What do you understand by bonding in brickwork?	(4)

PART B

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

MODULE 1

6	List the various civil engineering disciplines and write how each discipline contribute to infrastructural development.	(10)

OR

7	a)	What are the criteria for selection of a site for an educational building?	(4)
	b)	Explain the classification of building based on occupancy as per NBC.	(6)

MODULE 2

8	a)	Explain the properties of cement concrete.	(4)
	b)	What are the properties of first class bricks?	(6)

OR

9	a)	List the qualities of a good building stone.	(4)
	b)	Explain the uses of architectural glass, ceramics and plastics in building construction.	(6)

MODULE 3

10 (a) Differentiate between header and stretcher bond, with a neat sketch. (4)

(b) What are the functions of floor covering materials? Suggest floor covering material for class rooms, restrooms, kitchen, and garage, stating valid reasons. (6)

OR

11 a) What is the abbreviation for MEP? Why MEP design is important in building construction? (4)

b) What is a green building? How the usage of water is managed in green buildings? (6)

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PART 2 : BASIC MECHANICAL ENGINEERING

Max. Marks: 50   Duration: 90 min

PART A

Answer all questions, each carries 4 marks   Marks

12   Write a short note on i) compression ratio ii) Expansion ratio (4)

13   Explain the concept of multi point fuel injection. (4)

14   Explain sensible cooling, sensible heating, and dehumidification process. Also show the processes on a Psychrometric chart. (4)

15   Explain differences between open belt drive and cross belt drive. (4)

16   What are the major steps involved in CAD? (4)

PART B

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

MODULE 4

17 a   With the help of P-V Diagram derive an expression for air standard efficiency of Otto cycle in terms of compression ratio and adiabatic index. (6)

b   The temperature of air at the beginning and end of adiabatic compression in an engine working on Otto cycle are 300 K and 600 K respectively. What is the compression ratio of the engine? Also calculate its air standard efficiency. Take $\gamma= 1.4$ (4)

OR

18 a   With the help of neat sketches explain the working of 4 stroke CI engine (6)

b   Explain the main differences between two stroke and four stroke engines. (4)

MODULE 5

19   a.   With the help of a neat sketch explain the components and working of a   (10)
Centrifugal pump.

OR

20   a   Explain the process of reversed Carnot cycle with P-V and T-S diagram.   (7)

    b   Define: specific humidity, relative humidity and dew point temperature   (3)

MODULE 6

21   a   With a suitable diagram, explain the direct extrusion and indirect extrusion   (6)
process.

    b   Explain rolling process with the help of neat sketch.   (4)

OR

22   a   With the help of a Block diagram, explain the function of important parts of a   (10)
Lathe. List any four operations performed in it.

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