Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Second Semester B.Tech Degree (S, FE) Examination January 2024 (2019 Scheme)

Course Code: EST 120

Course Name: BASICS OF CIVIL AND MECHANICAL ENGINEERING

(2019 -Scheme)

PART 1 : BASIC CIVIL ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 4 marks Marks

1		Explain built up area and Floor area ratio (FAR).	(4)
2		Discuss the qualities of a good building stone.	(4)
3		List down the uses of ceramics in construction.	(4)
4		Define (a) Ultimate bearing capacity of soil (b) Safe bearing capacity of soil.	(4)
5		Discuss the functions of MEP.	(4)

PART B

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

MODULE 1

6	a	Discuss any five factors to be considered in the selection of site for a residential building.	(5)
	b	Explain the role of NBC and CRZ norms in building rules and regulations prevailing in our country.	(5)

OR

7		List the types of buildings as per occupancy according to Kerala Building rules. Explain any four.	(10)

MODULE 2

8		Explain any five tests for proper quality control of bricks.	(10)

OR

9	a	Explain the principles of surveying with neat sketches.	(5)
	b	List the characteristics of a good timber.	(5)

MODULE 3

10		Draw the elevation and plan of one and a half brick thick wall with English bond.	(10)

OR

11	a	Explain any two types of shallow foundation with the help of neat sketches.	(5)
	b	Compare the water management systems in conventional and green buildings.	(5)

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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 Why cooling system is necessary in an IC engine? (4)

13 Explain the functions of following parts in an IC engine i) Piston ii) Connecting rod iii) Crank iv) Spark plug (4)

14 Why closed bottles which contain cold water sweats when placed at room temperature? Explain the concept (4)

15 What is priming in centrifugal pumps (4)

16 Describe the concepts of Rapid prototyping and Additive manufacturing. (4)

PART B

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

MODULE 4

17 Draw a neat figure of MPFI engine and explain its working. What are the advantages of MPFI engine over conventional petrol engines? (10)

OR

18 i) With the help of a figure explain the working of a water cooling system in IC engines? (7)

ii) Explain the type of lubrication system used in a 2 stroke engine? (3)

MODULE 5

19 Discuss any three types of gear trains (10)

OR

20 With the help of neat diagram explain the construction and working of Pelton wheel turbine (10)

MODULE 6

21 With block diagram explain the working of a lathe? List down various operations performed in a lathe. (10)

OR

22 (a) Define the following operations (6)

(i) Casting
(ii) Forging
(iii) Rolling

(b) List the advantages of CNC machines? (4)

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