Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Second Semester B.Tech Degree Examination July 2021 (2019 scheme)

Course Code: EST120
Course Name: BASICS OF CIVIL & MECHANICAL ENGINEERING
(**2019 Scheme**)
PART I: BASIC CIVIL ENGINEERING

Max. Marks: 50   Duration: 90 min

PART A
Answer all questions, each carries 4 marks.   Marks

1   What are the responsibilities of an engineer in ensuring the safety of built environment?   (4)

2   What are the principles of surveying?   (4)

3   List out the different varieties of timber available in Kerala.   (4)

4   Differentiate between stretcher and header bond.   (4)

5   Write a note on ramp.   (4)

PART B
Answer one full question from each module, each question carries 10 marks
Module-I
6   a)   Mention the factors to be considered while selecting the site for a building.   (5)

    b)   Draw a neat sketch showing important parts of a residential building.   (5)

OR

7   List out the major disciplines of civil engineering and explain their role in the infrastructural framework.   (10)

Module-II
8   a)   Enumerate the physical and chemical properties of ordinary Portland cement.   (5)

    b)   Write a note on water proofing materials.   (5)

OR

9   List out the modern construction materials used for construction. Explain any four.   (10)

Module-III
10   a)   Explain the circumstances where pile foundations are adopted.   (5)

     b)   Explain well foundation with neat sketch.   (5)

OR

11   Explain various elements of a green building design.   (10)

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PART II: BASIC MECHANICAL ENGINEERING

Max. Marks: 50   Duration:90 min

PART A

Answer all questions, each carries 4 marks.   Marks

12	What is meant by compression ratio? Why is it limited to 6 to 10 in petrol engines?	(4)
13	With the help of a block diagram explain the CRDI system.	(4)
14	Differentiate between comfort air conditioning and industrial air conditioning.	(4)
15	Explain the concept of gear train ?Name important types of gear trains	(4)
16	Explain how metals are joined in a village smithy shop.	(4)

PART B

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

Module-IV

17	The minimum pressure and temperature in an Otto cycle are 100kPa and 300K.The compression ratio is 5 and the peak pressure is 2.1MPa Find out (1) Heat supplied /kg of air (2) Heat rejected/kg of air (3) Work done /kg of air (4) Theoretical thermal efficiency (5) Mean effective pressure	(10)

OR

18	a)	Explain the working of 4 stroke diesel engine with neat sketches.	(6)
	b)	Give the comparison between CI and SI engines.	(4)

Module-V

19	a)	With the help of a neat sketch, explain the working of a vapour compression refrigeration system? Also show the process in p-h and T-S diagrams.	(8)
	b)	Explain why Carnot refrigerator is not practically possible.	(2)

OR

20	a)	Differentiate between window air-conditioner and split air conditioner.	(5)
	b)	Explain the working of Francis turbine, also give the field of application.	(5)

Module-VI

21	a)	With a block diagram explain the processes involved in a CNC system.	(6)
	b)	How does welding differ from brazing and soldering processes?	(4)

OR

22	Describe the working of a Drilling machine with the help of a block diagram and indicate its main parts.	(10)

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