Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Second Semester B.Tech Degree Regular and Supplementary Examination June 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		Define (a) Plinth Area (b) FAR (c) Built up Area (d) Carpet Area.	(4)
2		What are the principles of surveying? Explain.	(4)
3		What is the importance of bonding in brick masonry constructions?	(4)
4		What is National Building Code? Classify buildings as per NBC of India.	(4)
5		List any 4 types of timber, stating their use in building construction.	(4)

PART B

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

MODULE 1

6		What are the various components of a building? Briefly explain with a properly labelled, neat sketch.	(10)

OR

7	a	Discuss the points to be considered while selection of a site for building.	(5)
	b	How transportation engineering is relevant in the development of a country?	(5)

MODULE 2

8		Explain, with sketches, any 5 market forms of steel sections. State their uses in construction.	(10)

OR

9	a	State the properties of cement concrete.	(5)
	b	List five types of cement and their uses.	(5)

MODULE 3

10		Explain, with neat sketches, the difference between English bond and Flemish bond.	(10)

OR

11	a	What is an escalator? How is it different from an elevator?	(4)
	b	Discuss any six types of flooring materials.	(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		What are the important assumptions made in arriving at air standard cycle?	(4)
13		Write short note on hybrid engines.	(4)
14		How does a central air conditioning system vary from a unitary system?	(4)
15		What are the advantages and disadvantages of gear drives?	(4)
16		What is rapid prototyping? Write its advantages.	(4)

PART B

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

MODULE 4

17	a	Explain various processes involved in a Carnot cycle with P-V and T-S diagram	(5)
	b	An Engine working on Otto cycle takes in air at a pressure and temperature of 100 kPa and 300 K. Find out the air standard efficiency of the engine if the clearance volume of the engine is 16% of the cylinder volume. Also find the maximum pressure of the cycle, if the maximum temperature is limited to 600^0C	(5)

OR

18	a	Explain the working of two stroke SI engine with a neat sketch.	(6)
	b	With the help of a block diagram, explain the fuel and air systems of SI engine.	(4)

MODULE 5

19	a	Explain the working of vapour compression refrigeration system with a neat sketch.	(6)
	b	Explain the desirable properties of a good refrigerant.	(4)

OR

20	a	Explain the working of Pelton turbine with a neat sketch	(6)
	b	A centrifugal pump discharges water at a rate of 300 litres/minute against a head of 20 m when running at 300 rpm. Calculate the power required to run the pump if the overall efficiency of the pump is 50 %.	(4)

MODULE 6

21		What is casting? With the help of a neat sketch, explain the process of sand mould casting. Write any two applications of casting.	(10)

OR

22		Explain the components of a Drilling machine with a neat diagram. List out the operations performed in it.	(10)

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