Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech S1 (Special Improvement) Examination January 2021 (2019 scheme)

Course Code: EST 120
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.

1 What is floor area ratio for a building as per KBR? What is its significance?

2 Explain the significance of initial and final setting time of cement.

3 Discuss the advantages of pre-fabricated construction.

4 Define (a) Stretcher (b) Header (c) King Closer (d) Queen Closer

5 List out any four different types of shallow foundation. (5x4=20)

PART B

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

Module-I

6 a) Explain any two classifications of buildings based on occupancy as per National Building Code. (4)

b) Discuss the relevance of NBC and CRZ norms in building rules and regulations prevailing in our country. (6)

OR

7 a) Differentiate between floor area and carpet area. (4)

b) Explain the responsibilities of an engineer in ensuring the safety of the built environment. (6)

Module-II

8 a) Discuss the objectives of surveying. (4)

b) Discuss any six requirements of a good brick. (6)

OR

9 a) List out any four acoustic insulation and thermal insulation materials. (4)

b) What are the different grades of OPC? Mention their uses and properties. (6)

Module-III

10 a) What is HVAC system? Explain any three types of HVAC system. (4)

b) What is pile foundation? List out the classification of piles based on its function. (6)

OR

11 a) List out the different floor covering materials. Explain the properties of any two. (4)

b) Draw the plan and elevation of one brick thick wall with English bond (6)

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PART II: BASIC MECHANICAL ENGINEERING

Max. Marks: 50 Duration:90 min

PART A

Answer all questions, each carries 4 marks.

12 Sketch the P-V and T-S diagram of diesel cycle and list the processes (4)

13 Define (i) Brake thermal efficiency (ii) Indicated thermal efficiency (iii) Mechanical efficiency and (iv) Volumetric efficiency of an IC engine. (4)

14 Explain heating and Dehumidification process. Also show the process in psychrometric chart. (4)

15 Describe the working of a single plate clutch. (4)

16 List down the typical applications of the following processes. (4)
Casting, Forging, Rolling and Extrusion.

PART B

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

Module-IV

17 In an air standard Diesel cycle, the compression ratio is 16 and at the beginning of compression the temperature is 15^0C and the pressure is 0.1MPa. Heat is added until the temperature at the end of constant pressure process is 1480^0C.Calculate (1)The cut off ratio(2)The heat supplied per kg of air(3)The cycle efficiency (10)

OR

18 a) Explain the working of 2 stroke SI engine with neat sketches. (7)

b) Explain the fuel system for petrol engines. (3)

Module-V

19		With the help of a neat sketch explain the working of an air conditioning system for hot and humid outdoor conditions.	(10)

OR

20	a)	Describe the working of a Kaplan turbine with a suitable sketch.	(6)
	b)	A Pelton turbine with a head of 450m generates 13 MW at 450rpm. Calculate discharge of the turbine if the overall efficiency is 80%.	(4)

Module-VI

21	a)	Explain the arc welding process with a neat sketch showing the important parts.	(6)
	b)	Describe the additive manufacturing process.	(4)

OR

22		Explain the working of a drilling machine with block diagram.	(10)

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