Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

First Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: EST120

Course Name: BASICS OF CIVIL & MECHANICAL ENGINEERING

PART I: BASIC CIVIL ENGINEERING

(2019 Scheme)

Max. Marks: 50 Duration: 90 min

PART A

Answer all questions, each carries 4 marks.

1 Discuss about Group A and Group C buildings as per NBC.

2 What are the major constituents of cement and what are its properties?

3 What are the properties and uses of first class bricks?

4 Define a) Pitch b) Ridge c) Wall plate d) Batten

5 What is the importance of green building? List out any four materials used in the construction of green building. (5x4=20)

PART B

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

Module-I

6 a) Discuss the role of a civil engineer in the infra structural development of a country. (4)

b) List out the different activities which are prohibited as per CRZ norms. (6)

OR

7 a) Discuss about the minimum size requirements of rooms for a residential building as per NBC. (4)

b) With neat sketch explain the different components of a building. (6)

Module-II

8 a) What is rapid hardening cement? What are its advantages and uses? (4)

b) Discuss about the primary classification of surveying. (6)

OR

9 a) Explain the different classifications of timber. (4)

b) Explain the properties and uses of any two composite materials used in building construction (6)

Module-III

10 a) With neat sketch explain strap footing. (4)

b) Draw the plan and elevation of one brick thick wall with Flemish Bond. (6)

OR

11 a) What are the various aspects to be considered in fire safety of buildings? (4)

b) With neat sketch explain king post roof truss. (6)

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PART II: BASIC MECHANICAL ENGINEERING

(2019 Scheme)

Max. Marks:50 Duration: 90 min

PART A

Answer all questions, each carries 4 marks.

12 With the help of a block diagram explain the fuel system of CI engines. (4)

13 What is meant by priming of a pump? Why is it necessary in a centrifugal pump? (4)

14 Why gear drives are called positive drives, Whereas belt and rope drives are not considered positive? (4)

15 Compare CAD and CAM. (4)

16 Explain the advantages and disadvantages of rapid manufacturing systems. (4)

PART B

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

Module-IV

17 Calculate the ideal air standard thermal efficiency based on the Otto cycle for a petrol engine with a cylinder bore of 50mm and stroke of 75 mm and a clearance volume of 21.3 cm^3. (10)

OR

18 a) 1 kg of air at temperature of 15^0C and pressure of 100 kPa is taken through a Diesel cycle .The compression ratio is 15 and the heat added is 1850 KJ Calculate the ideal cycle efficiency? (8)

b) Give the comparison between two stroke and four stroke engines. (2)

Module-V

19	a)	With the help of a neat sketch, explain the working of a simple unitary air conditioning system.	(6)
	b)	Define humidity ratio and relative humidity.	(4)

OR

20		Explain with a neat sketch, the working of a Pelton turbine	(10)

Module-VI

21	a)	Explain the general procedure used in making a sand mould for the casting	(4)
	b)	Describe the direct extrusion and indirect extrusion with sketches	(6)

OR

22		Discuss any four operations that can be performed on a lathe with simple sketches.	(10)

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