

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

First Semester B.Tech Degree Regular and Supplementary Examination December 2020 (2019 Scheme)

**Course Code: EST120****Course Name: BASICS OF CIVIL AND 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 the difference between floor area and carpet area.
- 2 List the properties of good building bricks. Explain any five.
- 3 Explain sieve analysis.
- 4 Differentiate Ramps and escalators.
- 5 Draw neat sketch of the following foundations: (i) Isolated stepped footing; (5x4=20)  
(ii) Cantilever footing; and (iii) Continuous footing (iv) Combined footing.

**PART B***Answer one full question from each module, each question carries 10 marks***Module-I**

- 6 Explain the components of a residential building with a neat diagram. (10)

**OR**

- 7 Explain the role of NBC, KBR & CRZ norms in building rules and regulations prevailing in our country. (10)

**Module-II**

- 8 What are the different kinds of cement available and what are their uses? (10)

**OR**

- 9 a) What are the objectives of surveying? (3)  
b) Explain the types of steel sections and steel reinforcement that are available. (7)

**Module-III**

- 10 a) Explain the different types of foundation. (5)  
b) Differentiate English bond and Flemish bond with neat sketch. (5)

**OR**

- 11 a) Explain the commonly used roof covering materials. (5)  
b) What are the factors to be considered in the selection of flooring materials? (5)

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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 Why petrol engines are called as SI engines and diesel engines are called as CI engines? (4)
- 13 What is meant by scavenging and how is it achieved in a two stroke engine? (4)
- 14 Describe any four desirable properties of refrigerants. (4)
- 15 Compare conventional machine tools and CNC machines. (4)
- 16 Describe the working of a cluster rolling mill giving a sketch. (4)

**PART B**

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

**Module-IV**

- 17 Explain the air standard Diesel cycle with P-V and T-S diagrams. Derive the expression for its efficiency. (10)

**OR**

- 18 a) Explain the CRDI system in automobiles. (5)
- b) A Carnot engine, working between 650 K and 310 K, produces 150 kJ of work. Find thermal efficiency and heat added during the process. (5)

**Module-V**

- 19 a) A centrifugal pump discharges water at a rate of 200 litres/minute against a head of 16 m when running at 300 rpm. Calculate the power required to run the pump if the overall efficiency of the pump is 50 %. (3)
- b) Explain the working of a single plate clutch with neat sketch. (7)

**OR**

- 20 a) Explain the split air conditioner and its working. (4)
- b) With the help of a neat sketch explain the working of a reciprocating pump. (6)

**Module-VI**

- 21 What is casting? With the help of a neat sketch explain the process of sand mould casting. (10)

**OR**

- 22 Give the block diagram of a lathe, indicate the principal parts and list out the important operations performed on a lathe. (10)

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