

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY****B.Tech S1 (S,FE) S2 (S,FE) Degree Examination December 2025 (2019 Scheme)****Course Code: EST120****Course Name: BASICS OF CIVIL AND MECHANICAL ENGINEERING  
(2019 -Scheme)****PART 1:  
BASIC CIVIL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions, each carries 4 marks*

Marks

- |   |   |     |
|---|---|-----|
| 1 | Briefly discuss floor area ratio.                         | (4) |
| 2 | Briefly discuss the components of a residential building. | (4) |
| 3 | Write a short note on Total Station surveying.            | (4) |
| 4 | Discuss the modern uses of gypsum.                        | (4) |
| 5 | Write a short note on bearing capacity of soil.           | (4) |

**PART B***Answer one full question from each module, each question carries 10 marks.***MODULE 1**

- |   |  |     |
|---|--|-----|
| 6 | (a) Discuss any three major disciplines of Civil Engineering.            | (6) |
|   | (b) Briefly discuss CRZ norms focussing on environmental sustainability. | (4) |

**OR**

- |   |  |     |
|---|--|-----|
| 7 | (a) Explain any two classification of buildings based on occupancy.                        | (6) |
|   | (b) Discuss the responsibility of an engineer in ensuring the safety of built environment. | (4) |

**MODULE 2**

- |   |  |     |
|---|--|-----|
| 8 | (a) Discuss the properties of good bricks.                 | (4) |
|   | (b) Discuss any three market forms of steel with sketches. | (6) |

**OR**

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|---|---|-----|
| 9 | (a) Discuss the qualities of good building stone. | (4) |
|   | (b) Explain the any three types of concrete.      | (6) |



**MODULE 3**

- 10 (a) Discuss any two types of shallow foundation with neat sketches. (6)  
(b) Compare English and Flemish Bond in brick masonry. (4)

**OR**

- 11 (a) Explain the functions of floor. (5)  
(b) Explain fire safety in buildings. (5)

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## PART 2: BASIC MECHANICAL ENGINEERING

### PART A

*Answer all questions, each carries 4 marks*

Marks

- |   |  |     |
|---|--|-----|
| 1 | Sketch the P-v and T-s diagram of an Otto cycle and list the processes involved. | (4) |
| 2 | Explain simple vapour compression system.  | (4) |
| 3 | Differentiate between Impulse turbine and Reaction turbine.                      | (4) |
| 4 | What are the advantages of casting over other manufacturing processes?           | (4) |
| 5 | Differentiate between welding and forging.                                       | (4) |

### PART B

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

#### MODULE 4

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|---|--|------|
| 6 | Explain the working cycle of Diesel engine and derive its air standard efficiency. | (10) |
|---|--|------|

**OR**

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|---|--|-----|
| 7 | a Describe with the help of neat sketch the working of 4 stroke SI engine. | (6) |
|   | b With neat sketch explain MPFI.   | (4) |

#### MODULE 5

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|---|---|------|
| 8 | Explain the working of a rotodynamic pump with the help of neat sketch. | (10) |
|---|---|------|

**OR**

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|---|---|------|
| 9 | Sketch different type of gear drives and mention their application? | (10) |
|---|---|------|

#### MODULE 6

- |    |  |      |
|----|--|------|
| 10 | Explain the following production processes with the help of neat sketch<br>i) Welding.      ii) Rolling. | (10) |
|----|--|------|

**OR**

- |    |  |      |
|----|--|------|
| 11 | Explain the elements of CNC systems with block diagram. List the advantages of CNC machines. | (10) |
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