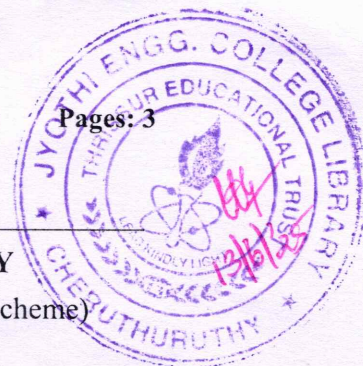


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
 B.Tech Degree S1 (S,FE) S2 (S,FE) Examination May 2025 (2019 Scheme)



Course Code: EST120
Course Name: BASICS OF CIVIL AND MECHANICAL ENGINEERING
(2019 -Scheme)

- Use separate answer sheets for Part 1 and Part 2
- No separate minimum marks are required to pass.

PART 1

BASIC CIVIL ENGINEERING

Max. Marks: 50

Duration: 90 min

PART A

Answer all questions, each carries 4 marks

Marks

- | | | |
|---|---|-----|
| 1 | Provide a brief overview of the Environmental Engineering discipline in Civil Engineering | (4) |
| 2 | Differentiate plinth area and carpet area of a building. | (4) |
| 3 | Discuss the principles of surveying. | (4) |
| 4 | Write a short note on pre-fabricated building components. | (4) |
| 5 | Differentiate between shallow and deep foundations. | (4) |

PART B

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

MODULE 1

- | | | |
|---|---|-----|
| 6 | (a) Explain the relevance of Civil Engineering in the overall infrastructural development of the country. | (4) |
| | (b) Discuss the components of a residential building with a neat sketch. | (6) |

OR

- | | | |
|---|---|-----|
| 7 | (a) Discuss the relevance of Kerala Building Rules. | (4) |
| | (b) Discuss the factors to be taken care of while selecting the site for buildings. | (6) |

MODULE 2

- | | | |
|---|--|-----|
| 8 | (a) Depict the desirable qualities of sand used in construction? | (4) |
| | (b) Discuss any three properties of hardened concrete. | (6) |

OR

- 9 (a) Discuss the properties of First Class Bricks (5)
- (b) Discuss any two modern construction materials (5)

MODULE 3

- 10 (a) Explain the classification of stone masonry. (6)
- (b) Discuss the water management in green buildings. (4)

OR

- 11 (a) Explain any two roof covering materials. (4)
- (b) Discuss the bonds in brick masonry with neat sketches. (6)

PART 2

BASIC MECHANICAL ENGINEERING

Max. Marks: 50

Duration: 90 min

PART A

Answer all questions, each carries 4 marks

Marks

- | | | |
|---|--|-----|
| 1 | Sketch the P-v and T-s diagram of a Diesel cycle. List the processes. | (4) |
| 2 | Define: Specific humidity, relative humidity, dry bulb temperature and dew point temperature. | (4) |
| 3 | List the classification of turbines based on head and specific speed. Give examples with field of application. | (4) |
| 4 | What is the purpose of runner and riser in casting? | (4) |
| 5 | Differentiate soldering and brazing. Give applications of each. | (4) |

PART B

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

MODULE 4

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

OR

- | | | |
|---|---|-----|
| 7 | a Explain the classification of IC Engines based on any three criteria. | (6) |
| | b With neat sketch explain CRDI engine? | (4) |

MODULE 5

- | | | |
|---|--|------|
| 8 | With the help of a neat sketch, explain the working of a positive displacement pump? | (10) |
|---|--|------|

OR

- | | | |
|---|--|------|
| 9 | Explain any two types of gear trains with neat sketch. | (10) |
|---|--|------|

MODULE 6

- | | | |
|----|--|------|
| 10 | Describe the following production process with application: -
i) Casting. ii) Forging | (10) |
|----|--|------|

OR

- | | | |
|----|---|------|
| 11 | With block diagram explain the parts of a drilling machine. List down various operations performed on a drilling machine. | (10) |
|----|---|------|
