

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Second Semester B.Tech Degree Examination July 2021 (2019 scheme)

Course Code: EST120

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.

- | | | Marks |
|---|---|-------|
| 1 | What are the responsibilities of an engineer in ensuring the safety of built environment? | (4) |
| 2 | What are the principles of surveying? | (4) |
| 3 | List out the different varieties of timber available in Kerala. | (4) |
| 4 | Differentiate between stretcher and header bond. | (4) |
| 5 | Write a note on ramp. | (4) |

PART B

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

Module-I

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|---|--|-----|
| 6 | a) Mention the factors to be considered while selecting the site for a building. | (5) |
| | b) Draw a neat sketch showing important parts of a residential building. | (5) |

OR

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| 7 | List out the major disciplines of civil engineering and explain their role in the infrastructural framework. | (10) |
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Module-II

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| 8 | a) Enumerate the physical and chemical properties of ordinary Portland cement. | (5) |
| | b) Write a note on water proofing materials. | (5) |

OR

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| 9 | List out the modern construction materials used for construction. Explain any four. | (10) |
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Module-III

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| 10 | a) Explain the circumstances where pile foundations are adopted. | (5) |
| | b) Explain well foundation with neat sketch. | (5) |

OR

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| 11 | Explain various elements of a green building design. | (10) |
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PART II: BASIC MECHANICAL ENGINEERING

Max. Marks: 50

Duration:90 min

PART A

Answer all questions, each carries 4 marks.

Marks

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|----|---|-----|
| 12 | What is meant by compression ratio? Why is it limited to 6 to 10 in petrol engines? | (4) |
| 13 | With the help of a block diagram explain the CRDI system. | (4) |
| 14 | Differentiate between comfort air conditioning and industrial air conditioning. | (4) |
| 15 | Explain the concept of gear train ?Name important types of gear trains | (4) |
| 16 | Explain how metals are joined in a village smithy shop. | (4) |

PART B

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

Module-IV

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| 17 | The minimum pressure and temperature in an Otto cycle are 100kPa and 300K.The compression ratio is 5 and the peak pressure is 2.1MPa Find out (1) Heat supplied /kg of air (2) Heat rejected/kg of air (3) Work done /kg of air (4) Theoretical thermal efficiency (5) Mean effective pressure | (10) |
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OR

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| 18 | a) Explain the working of 4 stroke diesel engine with neat sketches. | (6) |
| | b) Give the comparison between CI and SI engines. | (4) |

Module-V

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| 19 | a) With the help of a neat sketch, explain the working of a vapour compression refrigeration system? Also show the process in p-h and T-S diagrams. | (8) |
| | b) Explain why Carnot refrigerator is not practically possible. | (2) |

OR

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| 20 | a) Differentiate between window air-conditioner and split air conditioner. | (5) |
| | b) Explain the working of Francis turbine, also give the field of application. | (5) |

Module-VI

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|----|---|-----|
| 21 | a) With a block diagram explain the processes involved in a CNC system. | (6) |
| | b) How does welding differ from brazing and soldering processes? | (4) |

OR

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| 22 | Describe the working of a Drilling machine with the help of a block diagram and indicate its main parts. | (10) |
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