

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S1 (S,FE) S2 (S,FE) Examination May 2024 (2015 Scheme)

**Course Code: BE 10102****Course Name: INTRODUCTION TO MECHANICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any two questions. Each question carries 15marks*

Marks

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|---|--|-----|
| 1 | a) Write two classical statements of second law of thermodynamics | (5) |
| | b) With neat sketch explain the working of a reciprocating air compressor | (6) |
| | c) Discuss any two important achievements of Indian space program | (4) |
| 2 | a) Define the following (i) control volume (ii) enthalpy (iii) Carnot efficiency (iv) available energy | (8) |
| | b) Explain the working of open cycle and closed cycle gas turbine | (7) |
| 3 | a) With neat sketches explain the working of a four stroke petrol engine | (7) |
| | b) Explain the concept of thermodynamic equilibrium | (4) |
| | c) List the important sources power used in India | (4) |

PART B*Answer any two questions. Each question carries 15marks*

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|---|---|-----|
| 4 | a) Explain the different methods of food preservation | (7) |
| | b) With neat diagram explain the power transmission system in rear wheel drive automobile | (8) |
| 5 | a) What are the factors affecting human comfort in an air conditioning system | (5) |
| | b) Write a note on the aerodynamic forces and their significance for a body in flight | (6) |
| | c) Write any four industrial application of refrigeration | (4) |
| 6 | a) With neat diagram explain the working of different types of jet engines and their applications | (8) |
| | b) Explain the different psychrometric properties of air and their significance | (7) |

PART C*Answer any two questions. Each question carries 20marks*

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| 7 | a) What are alloys? Give three examples with their compositions and applications | (6) |
| | b) With neat sketches explain different types of forging operations | (8) |
| | c) Define the following (i) unit cell (ii) crystal lattice (iii) packing factor | (6) |

- 8 a) Explain the non-destructive methods of testing material (7)
- b) Name two products that can be produced by (a) forging (b) casting (c) rolling (d) extrusion (8)
- c) What is a CNC machine and what are its advantages (5)
- 9 a) What is a composite? Give examples with their applications (6)
- b) Make a comparison of welding , soldering and brazing (8)
- c) Differentiate between the up milling and down milling process (6)
