

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
 B.Tech Degree S1 (S,FE) S2 (S) Examination May 2022 (2015 Scheme)



Course Code: BE10102

Course Name: INTRODUCTION TO MECHANICAL ENGINEERING SCIENCES

Max. Marks: 100

Duration: 3 Hours

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

Marks

- 1 a) State first law of thermodynamics. Write expression of first law for a system undergoing (i) a cycle and (ii) a process (6)
- b) Give three examples for renewable and non-renewable energy sources (3)
- c) With neat sketches explain the working of a two stroke petrol engine (6)
- 2 a) Explain the following (i) Available energy (ii) Principle of increase of entropy (6)
- b) Explain the working principle of impulse and reaction hydraulic turbine with examples for each. (6)
- c) State Zeroth law of thermodynamics and what is its significance (3)
- 3 a) Define thermodynamic property. Differentiate between intensive and extensive properties giving examples for each. (5)
- b) With neat sketch explain the working of liquid propellant rocket engine (5)
- c) Differentiate between SI and CI engine (5)

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

- 4 a) Explain with a neat sketch the major components of an automobile and their functions (10)
- b) Mention the application of refrigeration in process industries (5)
- 5 a) With neat sketch explain the working of summer and winter air conditioning system (9)
- b) Compare the Turbo prop and turbo jet engines used in aircraft. (6)
- 6 a) Differentiate between air conditioning and refrigeration (4)
- b) Define the following (i) dew point temperature (ii) specific humidity (iii) relative humidity (6)
- c) Give classification of automobiles based on 3 different criteria and give examples (5)

PART C

Answer any two questions. Each question carries 20marks

- 7 a) How are engineering materials classified? Give examples (7)
b) What is extrusion process? Explain different methods of extrusion (8)
c) What are the advantages of CNC machine over conventional machine (5)
- 8 a) Explain the following crystallographic structure (i)BCC (ii) FCC (5)
b) With neat sketch explain the electric arc welding (7)
c) Explain the destructive methods of material testing (8)
- 9 a) Define (i) ductility (ii) malleability (iii) toughness (iv) hardness (8)
b) Name five different operations performed on lathe (5)
c) Differentiate between soldering and brazing (7)
