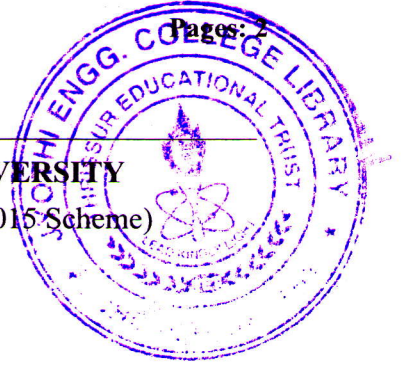


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S1,S2(S,FE) Examination May 2021 (2015 Scheme)



Course Code: BE101-02

Course Name: INTRODUCTION TO MECHANICAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two questions. Each question carries 15 marks

Marks

- | | | |
|---|---------------------------------------------------------------------------------------------------------------------|-----|
| 1 | a) What do you mean by the system and the surroundings? Explain the types of the thermodynamic systems. | (6) |
| | b) State and explain the Zeroth law of thermodynamics. | (4) |
| | c) Explain the principle of Entropy. | (5) |
| 2 | a) Write a brief note on "future scenario of energy in India." | (5) |
| | b) How are the steam turbines classified? Explain the working of any one type of turbine. | (5) |
| | c) What are the various types of water turbines? Where are they used? | (5) |
| 3 | a) Draw the theoretical P-V diagrams of spark ignition and compression ignition engines and name all the processes. | (5) |
| | b) Sketch and explain the working of a single stage air compressor. | (6) |
| | c) What is the method used to reduce the work of a compressor? | (4) |

PART B

Answer any two questions. Each question carries 15 marks

- | | | |
|---|--------------------------------------------------------------------------------------------|-----|
| 4 | a) Explain the basic concept of refrigeration. | (4) |
| | b) Explain with a neat sketch the working of a vapour compression refrigerator. | (6) |
| | c) What are the properties of a good refrigerant? | (5) |
| 5 | a) Explain with sketches the power transmission system in automobile. | (6) |
| | b) Explain the specifications used to describe an automobile engine. | (6) |
| | c) What is calorific value? Write the standards calorific value of petrol and diesel fuel? | (3) |
| 6 | a) Mention four applications of refrigeration in process industries. | (4) |

- b) Explain drag force and lift force using a neat sketch with respect to aerodynamics. (6)
- c) Write a short note on jet engines. (5)

PART C

Answer any two questions. Each question carries 20 marks

- 7 a) With a simple block diagram classify materials for engineering applications. (7)
- b) Explain why alloys find more application than pure metals? (6)
- c) Write a short note on composites and its applications. (7)
- 8 a) Draw a typical stress - strain diagram for a tensile test on mild steel. Discuss the information which may be obtained for such a test and its practical importance. (7)
- b) What is the composition of the synthetic foundry sand? State the necessity of each ingredient. (7)
- c) What is forging? Explain (6)
- 9 a) Differentiate between arc welding and gas welding. (6)
- b) What is milling operation? Distinguish between up and down milling operations. (8)
- c) Explain the advantages and limitations of a CNC machine. (6)
