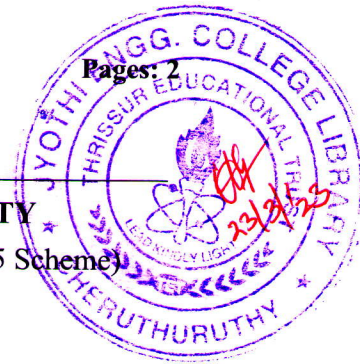


Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S1 (S, FE) S2 (S) Examination February 2023 (2015 Scheme)

**Course Code: ME100****Course Name: BASICS OF MECHANICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

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

Marks

- 1 a) Give the statements of (i) Second law of thermodynamics, (ii) Clausius inequality theorem and (iii) Principle of increase of entropy. (9)
- b) Draw the p-V diagram of a diesel cycle and define the terms (i) Compression ratio, (ii) Expansion ratio, and Cut-off ratio as applied to the Diesel cycle (6)
- 2 a) Describe the working principle of a four stroke diesel engine with the help of a sketch. (10)
- b) Why petrol engines are called as SI engines and diesel engines called as CI engines? (5)
- 3 a) Distinguish between impulse turbine and reaction turbine (6)
- b) Describe the working of a reciprocating pump giving a neat sketch. (9)

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

- 4 a) Describe a vapour compression refrigeration system, giving the layout of the system. Draw the refrigeration cycle in a p-H diagram. (10)
- b) Give the sketch of a window air conditioner and indicate the important components. (5)
- 5 a) Draw a Psychrometric chart indicating the different thermodynamic property lines represented in it. Represent the following processes in the chart from any state point: (1) Sensible heating; (2) Humidification, (3) Dehumidification & Cooling. (9)
- b) Distinguish between an open belt drive and crossed belt drive, used for power transmission. (6)
- 6 a) Describe the major component systems in an automobile. (10)
- b) What is a Gear Train? Give the working principle of any one type of gear train. (5)

**PART C**

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

- 7 a) Describe the important mechanical properties of engineering materials. (10)  
b) Describe different types of Extrusion methods giving sketches. (10)
- 8 a) Define rolling process. Differentiate between cold rolling and hot rolling. (10)  
Describe the working of a two high rolling mill giving a sketch.  
b) Describe the up milling and down milling methods, giving neat sketches. (10)
- 9 a) Give the block diagram of a lathe and describe the principal parts. List out the important operations performed in a lathe. (10)  
b) What are NC machines and CNC machines? Distinguish between them on the basis of working concepts. (10)

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