SQ-06

Seat No.	

Total No. of Pages : 2

F.Y.B.Tech. (Semester -I & II)
Examination, June-2025
BASIC MECHANICAL ENGINEERING
Sub. Code : 71820/72510

Day and Date : Monday, 23/06/2025 **Total Marks : 70**

Time : 10:30 a.m. to 01:00 p.m.

Instructions : 1) Attempt any three questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION-I

Q1) A) Explain Heat and Work. **[5]**

B) A chilled water of 15 kg/s enters the system for air conditioning a tall building with a velocity of 60 m/s at a height of 40 m from the ground. The water leaves the system with a velocity of 20 m/s at a height of 70 m. The enthalpies of water entering in and leaving out are 30 kJ/kg and 50 kJ/kg respectively. The rate of work done by a pump in the line is 40 kW. Find out the rate at which heat is removed from the building. **[6]**

Q2) A) Describe the working of four stroke CI engine with a neat sketch. **[6]**

B) Represent Joule cycle on T-S diagram and obtain an expression of air standard efficiency. **[6]**

P.T.O.

Q3) A) Define the following terms. **[6]**

i) Moist air

ii) Saturated air

iii) Degree of saturation

iv) Relative Humidity

B) Explain the working of vapour compression refrigeration system with schematic diagram. **[5]**

Q4) Write short notes. **[12]**

A) System boundary and surrounding.

B) Window air conditioning

C) Components of I. C engine.

SECTION-II

Q5) A) Explain the working of hydroelectric power plant with a neat sketch. **[6]**

B) Explain the construction and working of Biogas plant. **[6]**

Q6) A) Explain the working of Pelton wheel turbine with a neat sketch. **[5]**

B) Derive an expression to find the length of belt for open belt drive system. **[7]**

Q7) A) Explain milling operation with a neat sketch. **[5]**

B) Explain arc welding operation in detail. **[6]**

Q8) A) Explain with a neat sketch the flat plate collectors. **[6]**

B) Write applications of compressed air. **[5]**