

Seat No.	
----------	--

SL-233

Total No. of Pages : 2

F.E. (All Branches) (Semester-I & II)
Examination, May - 2017
BASIC MECHANICAL ENGINEERING
Sub. Code : 59186

Day and Date : Thursday, 18-05-2017

Time : 10.00 a.m. to 1.00 p.m.

Total Marks : 100

- Instructions :
- 1) Solve any three questions from each section.
 - 2) Figures to the right indicate full marks.
 - 3) Assume any additional data if required and mention it clearly.

SECTION-I

- Q1) a) In what respect are the heat and work interactions are [4]
i) Similar and ii) Dissimilar.
- b) Differentiate Macroscopic & Microscopic view in thermodynamics. [4]
- c) In certain steady flow process 15 kg of fluid per minute enter at pressure of 1 bar, density 25 kg/m³ velocity 140 m/s, internal energy 1000 kJ/kg. The fluid properties at exit are pressure 6 bar, density 5 kg/m³, velocity 200 m/s, and internal energy 800 kJ/kg. During the process the fluid rejects 75 kJ/s of heat and rises through 60 meters. [8]
Determine:
i) Change in enthalpy in kJ/kg
ii) Work done during process in kW.
- Q2) a) Describe the working of Four Stroke CI engine with neat sketch. [8]
b) Sketch the Joule cycle with T-S and P-V diagram. Derive an expression for its air standard efficiency. [8]
- Q3) a) Explain the working and construction of Window Air conditioner. [8]
b) Enumerate the required properties of an ideal refrigerant. [8]

P.T.O.

- Q4) a) State statements of Second Law of Thermodynamics. [6]
b) Differentiate between Four Stroke and Two Stroke Engine. [6]
c) Write a Note on Solar Refrigeration. [6]

SECTION-II

- Q5) a) Differentiate between renewable and non-renewable sources of energy with examples. [4]
b) Draw neat sketch of geothermal power plant. [4]
c) What is wind energy? Explain a typical wind mill with neat sketch. [8]

- Q6) a) Explain with neat sketch Francis turbine. [6]
b) A cross belt connects two pulleys of 500 mm,diameter, 2m apart. The initial tension in the belt is 500N, if the co-efficient of friction between belt and pulley is 0.3. Find the power transmitted at 700 rpm. Also calculate the length of belt. [10]

- Q7) a) Define Manufacturing Process. Explain Metal Joining Processes with its application. [8]
b) Define metal removing process. Explain Turning in detail. [8]

- Q8) Write a Short Note on Following. [18]
a) Photovoltaic Cell
b) Muff Coupling
c) Steps in Sand Casting

