Seat
No.

F.Y. B.Tech. (All Branches) (Semester - I & II) (Revised) Examination, May - 2019
BASIC MECHANICAL ENGINEERING
Sub. Code : 71820

Day and Date : Friday, 17 - 05 - 2019   Total Marks : 70

Time : 10.00 a.m. to 12.30 p.m.

Instructions :   1)   Attempt any three questions from each section.

2)   Figures to right indicate full marks.

3)   Assume any additional data if required and mention it clearly.

SECTION - I

Q1) a)   Define Thermodynamic System and Classify it.   [5]

b)   In steady flow process 405 kw of work is done by machine. The specific volume of fluid pressure and velocity at inlet are, $0.37 m^3/kg$, 6bar and 16m/s resp.

These values at outlet are $0.62 m^3/kg$, 1 bar and 270m/s resp. Discharge is at 32m depth from inlet section. Total heat loss between inlet and outlet section is 9kj/kg Mass flow rate of fluid is 3kg/sec. Find change in Internal Energy.   [7]

Q2) a)   Compare S. I. and C. I. Engine with example.   [5]

b)   Derive an expression air standard efficiency for Otto cycle. Explain that the efficiency of an air standard Otto cycle is a function of compression only.   [6]

Q3) a)   Explain with neat sketch vapour compression refrigeration cycle.   [6]

b)   Explain with neat sketch window air conditioner.   [5]

P.T.O.

Q4) Write short Notes (Any Two) : [12]
  a) Second Law of Thermodynamics.
  b) Four stroke Diesel Engine.
  c) Properties of Refrigerant.

SECTION - II

Q5) a) Describe the working of Biogas power plant with neat diagram. State its advantages and disadvantages. [8]
  b) Write the differences between renewable and non renewable energy resources. [4]

Q6) a) Derive the expression for length of Open belt drive. [7]
  b) Explain the Pelton wheel with neat sketch. [5]

Q7) a) Explain with neat diagrams any two metal cutting operations performed on Lathe machine. [6]
  b) Explain with neat sketch the Electric Arc Welding. [5]

Q8) a) Explain in detail the steps in casting process with neat sketches. [6]
  b) Define : [5]
    i) Pitch circle
    ii) Dimetral Pitch
    iii) Addendum
    iv) Circular Pitch
    v) Module

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