[Total No. Of Questions: 12] **[Total No. Of Printed Pages: 2]**

UNIVERSITY OF PUNE
[4361]-11
F. E. Examination – 2013
Basic Mechanical Engineering
(2008 Course)

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

(1) Solve Q1or Q2,Q3 or Q4,Q5 or Q6 Q7 or Q8,Q9 orQ10,Q11 or Q12.
*(2) Answers to the **two sections** should be written in **separate answer-books**.*
(3) Black figures to the right indicate full marks.
(4) Use of logarithmic tables, slide rule, Molliercharts, electronic pocket calculator and steam tables is allowed.
(5) Assume suitable data, if necessary.

SCETION-1

Q. 1. A) Define C_p, C_v, Enthalpy, internal Energy. (2*4)
B) Explain Joules Experiment and the statement with neat sketch (3+3+2)

OR

Q.2. A) Differentiate Open and closed systems with 2 examples of each (4+4)
B) State Kelvin planks statement of 2^{nd} law of thermodynamics with neat sketch. An engine is supposed to produce 1000 w of mechanical work operating with efficiency of 49%.Determine the amount of heat supplied by source and Heat rejected to sink. (4+4)

Q.3. A) Define Mounting and accessories and List 3 mountings and 3 accessories. (4+4)
B) Draw neat sketch of window air conditioner and explain the working. (4+4)

OR

Q. 4. A) Draw block diagram of: Reaction turbine and reciprocating compressor. (4+4)

B) Draw neat sketch of two stroke petrol engine explain the working (4+4)

Q.5. A) Explain Hydroelectric power plant with neat sketch. (4+4)
B) Explain conductivity and insulation and give examples. (4+4)
C) Example Fourier's law. (2)

OR

Q.6. A) Explain wind power plant with neat sketch (4+4)
B) Explain Newton's law of cooling. Hot air at 150˚C flows over one side of plate maintained at 50˚C. Forced convection heat transfer heat transfer coefficient is 76W/m^2K. Calculate the heat gain rate by the plate through an area of 2 m^2. (4+4)
C) Mention energy conversion type between water in Dam- Turbine-Alternator. (2)

SECTION -2

Q. 7. A) Classify bearing and explain Collar bearing with sketch. (4+4)
B) Define Coupling, types of couplings and List application of couplings. (4+4)

OR

Q. 8. A) Define shaft, types of shafts. List applications of shaft. (2+3+3)
B) State function of governor and explain working of Watt governor. (4+4)

Q. 9. A) Define Hardness, Tensile strength, malleability, Elasticity. (2*4)
B) Explain Sand casting process with neat sketch. (4+4)

OR

Q. 10. A) State applications of ceramics, plastics, rubber and composite. (2*4)
B) Explain any 4 sheet metal operations with sketches. (2*4)

Q. 11. A) Draw a neat sketch of lathe machine and explain 2 operations with sketch. (4+4)
B) Explain Internal Grinding operation with sketch. (4+4)
C) Define CNC. (2)

OR

Q.12. A) Sketch and Explain drilling operations. (2*4)
B) Explain with block diagram NC machine and 2 applications. (4+4)
C) Sketch Gang Milling operation . (2)