BME - Solution.

Paper Code - U127 -103 (ESE)

Marking Scheme and Solution Of End Semester exam BME

Q1)

a) Any Six Lathe machine operations................................6 M

b) Definition of grinding--2 M

   Diagram of surface grinding machine.............................2 M

   Explanation of surface grinding machine.........................2 M

c) Diagram of sand casting process ....2 M

   Explanation of sand casting process.............................2 M

<div align="center">OR</div>

Q2)

a) Explanation of Counter boring.............................2 M

   Explanation of Counter sinking ....2 M

   Explanation of Reaming ....2 M

b) Classification of welding process------------------------------2 M

   Sketch of gas welding --2 M

   Explanation of gas welding ----------------------------------2 M

c) Labelled diagram of Sensitive drilling machine...........................4 M
                    OR Radial Drilling machine

Q3)

a) Minimum six points of classification of I. C. Engine...................................6 M

b) Sketch of domestic refrigerator---2 M
        OR Vapour Compression cycle
   Explanation of domestic refrigerator-------------------------------------2 M

c) Sketch of Centrifugal compressor with all labelled...............................4 M

<div align="center">OR</div>

Q4)

a) Sketch of window air conditioner---2 M

Explanation of window air conditioner--------------------------------------4 M

b) Sketch of centrifugal pump---2 M

Explanation of centrifugal pump--2 M

c) Minimum four points of Comparison of S. I. and C.I. Engines…………..4 M

Note - Solution of MCQ is marked as in bold letters-----

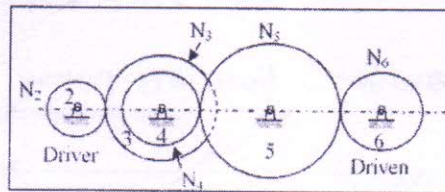Q.5) Attempt following multiple choice questions:

01. During a Cycle consisting of 4 processes, the heat transfers are 60kJ, -8 kJ, -34 kJ and 6 kJ. Determine the net work for the cycle   [02]

    a) 12 kJ   b) 30 kJ   c) 40 kJ   **d) 24 kJ**

02. What will be the maximum efficiency of a heat engine operating between 227^0 C and 27^0 C_____   [02]

    a) 30%   **b) 40%**   c) 20%   d) 60%

03. A gear train is made up of five spur gears. Gear 2 is driver and gear 6 is driven member N2, N3, N4, N5 and N6 represent number of teeth on gears 2,3,4,5 and 6 respectively. Gear 3 and 4 are mounted on same shaft. The gear (s) which act(s) as idler(s) is/are   [02]

    a) Only 2   b) ~~Only 4~~   c) Only 5   d) Both 3 and 5

04. In the gearing machine tool, the motor shaft is connected to gear 4 and rotates at 975 rpm .the gear wheels B, C, D and E are fixed on parallel shaft rotating together. Gear C and D are mounted on same shaft. What is speed of gear F? The number of teeth on each gear is given below   [02]

Gear	A	B	C	D	E	F
No of Teeth	20	50	25	75	26	65

    a) 50   b) 52   c) ~~54~~   d) 56

05. The measurement of a thermodynamics property known as temperature is based on_____   [02]

    a) Zeroth law of thermodynamics   b) First law of thermodynamics

    c) Second law of thermodynamics   d) Third law of thermodynamics

06. Grinding wheel is made up of_____   [02]

a) Steel   b) cast iron   c) ceramic   **d) abrasive**

07. Carbon content of mild steel can be_____ [02]
    a) 0.51%   b) 0.85%   **c) 0.15%**   d) 1.25%

08. The property of material to be drawn into the sheets is known as ----------- [02]
    a) Resilience   **b) malleability**   c) ductility   d) toughness

09. Bevel gears are used to transmit motion between ------------ shafts. [01]
    a) Two perpendicular   b) to inclined   c) two parallel   d) all of above

10. The following is ferrous material [01]
    a) Zinc   b) Tin   c) brass   **d) cast iron**

11. Which among the following is correct relation between COP of heat pump and COP [01]
    of refrigerator?
    a) $[COP]_{H.P.} = 1 + [COP]_{ref}$ b) $[COP]_{H.P.} = 1 - [COP]_{ref}$

    c) $[COP]_{H.P.} = [COP]_{ref}$ d) none of the above

12. The power transmitted by means of belt drives depends upon. [01]
    a) Velocity of the belt   b) Tension under which the belt is placed on the pulleys

    c) Arc of contact between the belt and smaller pulley   **d) all of the above**