

Dec.

Marking Scheme and Solution of Backlog exam (2018) of BME

U118-1011 (BE-FF)

Q1)

- a) Classification of metal joining process.....2 M
- Sketch of Gas welding .....2 M
- Explanation of gas welding-----2 M
- b) Any three forging operations.....6 M
- c) Diagram of lathe machine .....4 M

OR

Q2)

- a) Classification of drilling operation.....2 M
- Any four operations of drilling.....4 M
- b) Explanation of Any Six sheet metal operations.....6 M
- c) Sketch of sand casting.....4 M

Q3)

- a) Sketch Babcock and Wilcox boiler.....2 M
- Explanation of Babcock and Wilcox boiler .....4 M
- b) Sketch of 4 stroke SI engine .....2 M
- Explanation of 4 stroke SI engine .....2 M
- c) Minimum 4 points of comparison .....4 M

OR

Q4)

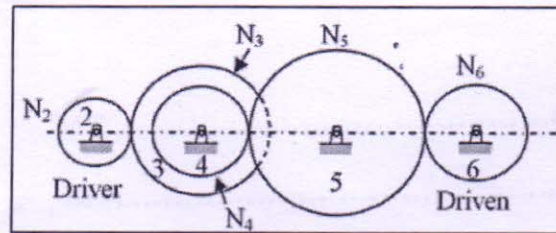
- a) Sketch of window air conditioner .....3 M
- Explanation of window air conditioner .....3 M
- b) Diagram of centrifugal pump.....2 M
- Explanation of centrifugal pump .....2 M

c) Ton of Refrigeration.....2 M

COP.....2 M

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

- Q. 5)
1. What will be the maximum efficiency of a heat engine operating between  $230^{\circ}\text{C}$  and  $30^{\circ}\text{C}$  \_\_\_\_\_ [2]  
a) 30%                      b) **40%**                      c) 20%                      d) 60%
  2. A Carnot engine has an efficiency of 0.8 The COP of refrigerant working with the same temperature limit is? [2]  
a) 0.5                      b) 1                      c) 2                      d) **1.25**
  3. A gear train is made up of five spur gears. Gear 2 is driver and gear 6 is driven member  $N_2, N_3, N_4, N_5$  and  $N_6$  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 [2]



- a) Only 2                      b) Only 4                      c) **Only 5**                      d) Both 3 and 5
4. Gear 2 rotates 1600rpm in counter clockwise direction and engages with gear 3. Gear 3 and Gear 4 are mounted on same shaft. Gear 5 engages with Gear 4. The number of teeth on Gear 2, 3, 4 and 5 are 20, 40, 15 and 30 respectively. The angular speed of gear 5 is \_\_\_\_\_ [2]  
a) 300 rpm                      b) 350 rpm                      c) 250 rpm                      d) **400 rpm**
5. First law gives concept of----- [2]  
a) **Internal energy**                      b) Entropy                      c) Temperature                      d) Enthalpy
6. The measurement of a thermodynamics property known as temperature is based on \_\_\_\_\_ [2]  
a) **Zeroth law of thermodynamics**                      b) First law of thermodynamics  
c) Second law of thermodynamics                      d) Third law of thermodynamics
7. The total capacity of the material to absorb energy up to elastic limit is called [2]  
a) **Resilience**                      b) malleability                      c) ductility                      d) toughness
8. Brass is an alloy of \_\_\_\_\_ [2]  
a) **Copper and zinc**                      b) copper and brass                      c) copper and lead                      d) copper and tin
9. Grinding wheel is made up of \_\_\_\_\_ [1]  
a) Steel                      b) cast iron                      c) **ceramic**                      d) composite
10. Key which is made of mild steel is inserted between \_\_\_\_\_ [1]



- a) Shaft and axle      b) Axle and hub      c) **Shaft and hub**      d) All of above

11. Carbon content of cast iron can be \_\_\_\_\_

[1]

- a) 0.51%      b) **2.5%**      c) 0.15%      d) 1.25%

12. If COP of refrigerator is 2 then COP of heat pump is \_\_\_\_\_

[1]

- a) 1      b) 2      c) **3**      d) 4