Total No. of Questions – [05] Total No. of Printed Pages 02

G.R. No.	

Paper Code - U128-1011 (BE-FS)

MAY 2019/ENDSEM

F. Y. B. TECH. (COMMON) (SEMESTER - II)

COURSE NAME: Basic Mechanical Engineering

COURSE CODE: ME12173

(2017 PATTERN)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4 and Q.5**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Explain any six sheet metal operations [6]

b) Explain Lathe machine with block diagram. State various operations performed On it [6]

c) Write short note on sand casting process [4]

OR

Q.2) a) Give classification of metal joining process. Explain Metal arc welding in detail [6]

b) Explain different Drilling machine operations [6]

c) Explain any four milling operations [4]

Q.3) a) Explain with neat sketch the working of four stroke S. I. Engine? [6]

b) Give the comparison between fire tube and water tube boilers [4]

c) Define one ton of refrigeration and C.O.P [4]

OR

Q4) a) Explain with neat sketch any one fire tube boiler. [6]

b) Explain with neat sketch working of window air conditioner [4]

c) Compare S. I. and C.I. Engines [4]

Q.5) Attempt following multiple choice questions:

01. In a non flow reversible 300 kJ of heat leaves the system consisting of a gas. The internal Energy of the gas remains the same. Calculate the work done. [2]

a) 200kJ b) 240 KJ c) -300 kJ d) 260 kJ

02. What will be the maximum efficiency of a heat engine operating between 227^0 C and 27^0 C_____ [2]

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

03. Gear 1 rotates 1200rpm 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

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 [2]

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. According to first law of thermodynamics [2]

a) Total internal energy of a system during a process remains constant

b) Total energy of a system remains constant

c) Work done by a system is equal to the heat transferred by the system

d) None of the above

06. Grinding wheel is made up of_____ [2]

a) Steel b) cast iron c) ceramic d) composite

07. Carbon content of mild steel can be_____ [2]

a) 0.51% b) 0.85% c) 0.15% d) 1.25%

08. The total capacity of the material to absorb energy without fracture is called [2]

a) Resilience b) malleability c) ductility d) toughness

09. Spur gears are used to transmit motion between ---------- shafts. [1]

a) Two perpendicular b) to inclined c) two parallel d) all of above

10. The following is not a ferrous material [1]

a) stainless steel b) alloy steel c) brass d) cast iron

11. Which among the following is correct relation between COP of heat pump and COP of refrigerator? [1]

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 property which is important in wire drawing is [1]

a) malleability b) plasticity c) ductility d) resilience