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

G.R. No.	

Paper Code - U127-103 (RE-F & FF)

JUNE 2018/RE-EXAM

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

b) Explain different Drilling machine operations [6]

c) Draw labelled diagram of lathe machine [4]

OR

Q.2) a) what is forging? Explain different forging operations [6]

b) Explain any six sheet metal operations [6]

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

Q.3) a) Explain the working of Babcock and Wilcox boiler [6]

b) Explain with neat sketch the working of four stroke S. I. Engine? [4]

c) Compare Centrifugal and Reciprocating pump. [4]

OR

Q4) a) Explain with neat sketch the working of Four stroke C. I. Engine? [6]

b) Explain the working of single stage reciprocating compressor with the help of schematic diagram. [4]

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

Q.5) Attempt following multiple choice questions:

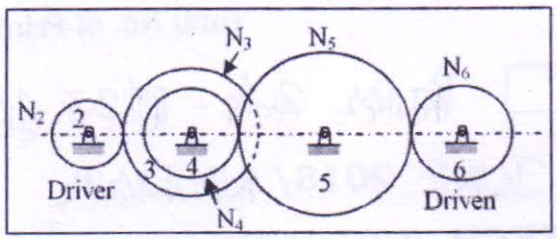
1. What will be the maximum efficiency of a heat engine operating between 227^0 C and 27^0 C_____ [2]

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

2. A Carnot engine has an efficiency of 0.5. 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 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 [2]

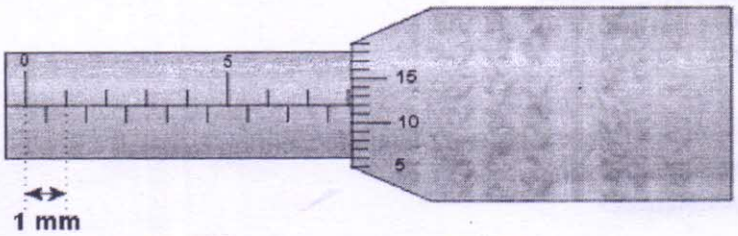


a) Only 2 b) Only 4 c) Only 5 d) Both 3 and 5

4. Gear 2 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

5. Micrometer Screw gauge observation is as shown in diagram below: What is final value of the measurement? [2]



a) 8.12 mm b) 8.62 mm c) 11.12 mm d) none of the above

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 without fracture is called [2]

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

8. Bronze 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 mild steel can be_____ [1]

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

12. Total amount of energy in the universe is_____ [1]

a) Increasing b) decreasing c) constant d) All of the above