

Total No. of Questions – [05]

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DEC 2019/BACKLOG

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 lathe operations [6]
b) What is grinding? Explain surface grinding process. [6]
c) Write short note on sand casting process [4]

OR

- Q.2) a) Explain following drilling operations [6]
1 counter boring
2 counter sinking
3 reaming
b) Give classification of metal joining process. Explain Gas welding in detail [6]
c) Draw labelled diagram of sensitive drilling machine [4]

- Q.3) a) Give the detail classification of internal combustion engine. [6]
b) Explain with neat sketch working of Domestic refrigerator. [4]
c) Draw sketch of centrifugal compressor. [4]

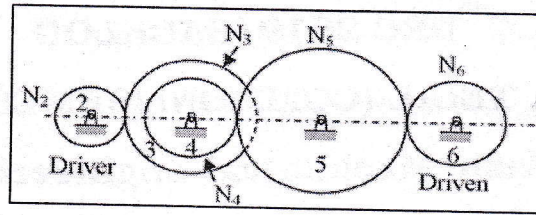
OR

- Q.4) a) Explain with neat sketch working of window air conditioner. [6]
b) Explain with neat sketch working of centrifugal pump [4]
c) Compare S. I. and C.I. Engines. [4]

Q.5) Attempt following multiple choice questions:

- a. 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
- b. What will be the maximum efficiency of a heat engine operating between 227° C and 27° C [02]
a) 30% b) 40% c) 20% d) 60%

- c. 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 [02]



- d. 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) Only 2 b) Only 4 c) Only 5 d) Both 3 and 5
- e. 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
- f. Grinding wheel is made up of _____ [02]
- a) Steel b) cast iron c) ceramic d) abrasive
- g. Carbon content of mild steel can be _____ [02]
- a) 0.51% b) 0.85% c) 0.15% d) 1.25%
- h. The property of material to be drawn into the sheets is known as _____ [02]
- a) Resilience b) malleability c) ductility d) toughness
- i. Bevel gears are used to transmit motion between _____ shafts. [02]
- a) two perpendicular b) to inclined c) two parallel d) all of above
- j. The following is ferrous material [02]
- a) Zinc b) Tin c) brass d) cast iron