Roll No. ☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ME) (2012 Onwards)   (Sem.–4)
THEORY OF MACHINES – II
Subject Code : BTME-402
M.Code : 59130

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION–A

Write briefly :

Q1. Draw the diagram of a body experiencing two force system, when (1) Body not in equilibrium (2) Body in equilibrium

Q2. What do you mean by compound pendulum?

Q3. Write the expression for balancing a single rotating mass.

Q4. Explain the term 'Partial balancing of primary force'?

Q5. Show pressure angle of a gear with the help of a diagram.

Q6. Give two advantages of a Cycloidal gear profile.

Q7. Draw diagram of reverted gear train.

Q8. With the help of diagram, differentiate between spinning and precession of a gyroscope.

Q9. What is the meaning of dimensional synthesis in a mechanism?

Q10. Write about dedendum of a gear.

SECTION-B

Q11. Explain the static force analysis of a Journal bearing considering frictional forces.

Q12. Write the expression for Correction Couple of a connecting rod of an engine.

Q13. Write the derivation to obtain the expression for variation in tractive effort of an engine.

Q14. Derive expression for minimum number of teeth on pinion to avoid interference with wheel.

Q15. Write in detail about three position synthesis for four bar mechanism.

SECTION-C

Q16. The number of teeth on each of the two equal spur gears in mesh is 40. The teeth have 20° involute profile and the module is 6mm. If the arc of contact is 1.75 times the circular pitch, find the addendum.

Q17. An epicyclic gear train consists of a sunwheel S, a stationary internal gear E and three identical planet wheels P carried on a star-shaped planet carrier C. The size of different toothed wheels are such that the planet C rotates at $\frac{1}{5}$ of the speed of the sunwheel S. The minimum number of teeth on any wheel is 16. Determine the number of teeth on different wheels of the train.

Q18. Explain the Gyroscope effect on the stability of two wheel vehicle while taking a turn.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.