

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (ME) (Sem.-6)
DESIGN OF MACHINE ELEMENTS-II

Subject Code : BTME-601

M.Code : 71185

Date of Examination : 02-07-22

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 SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

1. Answer briefly :

- a. What are the relative advantages and disadvantages of chain and belt drive?
- b. Write the characteristics of belt drive.
- c. State polygonal effect.
- d. Write the applications of Roller chain.
- e. Write the applications of worm and worm wheel.
- f. What is the function of a spring?
- g. What are journal bearings?
- h. Write the function of centrifugal clutches?
- i. What are the applications of band breaks?
- j. State Reynolds equation.

SECTION-B

2.
 - a. Explain the various steps for the design of flat belt.
 - b. Describe the conditions for gear tooth failure.
3.
 - a. Two springs of stiffness K_1 and K_2 are connected in series. What is the stiffness of connection?
 - b. What is the function of flywheel, discuss its design considerations.
4. Write the function of plate clutch with a neat sketch.
5. A railway wagon weighing 50 kN and moving with a speed of 8 km per hour has to be stopped by four buffer springs in which the maximum compression allowed is 220 mm. Find the number of turns in each spring of mean diameter 150 mm. The diameter of spring wire is 25 mm. Take $G = 84 \text{ kN/mm}^2$.
6. The ball bearings are to be selected for an application in which the radial load is 2000 N during 90 percent of the time and 8000 N during the remaining 10 percent. The shaft is to rotate at 150 r.p.m. Determine the minimum value of the basic dynamic load rating for 5000 hours of operation with not more than 10 percent failures.
7. Discuss the design of internal expanding breaks.

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.