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C14-M-502

**4650**

**BOARD DIPLOMA EXAMINATION, (C-14)**

**SEPTEMBER/OCTOBER - 2020**

**DME—FIFTH SEMESTER EXAMINATION**

**DESIGN OF MACHINE ELEMENTS—II**

*Time : 3 hours ]*

*[ Total Marks : 80*

**PART—A**

3×10=30

**Instructions :** (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Compare flexible drives with rigid drives.
2. Explain briefly different belt joints.
3. List the applications of gear drives.
4. Write about the materials used for manufacturing of gears.
5. Explain the function of a flywheel. Where is it used?
6. State any three differences between flywheel and governor.
7. Write the applications of brakes.
8. Differentiate between brake and clutch.
9. Distinguish between a radial cam and a cylindrical cam.
10. Define the terms related to cams (a) dwell and (b) base circle.

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. A leather belt of 6 mm thickness transmits an absolute maximum power of 8.1 kW. The angle of lap is  $150^\circ$  and the coefficient of friction is 0.25. Find the width of the belt required if the limiting stress is  $1.75 \text{ N/mm}^2$ . The mass of the belt is  $1 \text{ Mg/m}^3$ .
12. (a) Explain simple centrifugal governor with a simple sketch.  
(b) How chain drives are classified? Explain them briefly.
13. Explain the back gear assembly of a lathe with a neat sketch.
14. Design a reverted gear train having 4 gears to give a speed reduction of 9. All gears are to be same module and no gear is to have less than 16 teeth.
15. A flywheel has a mass moment of inertia  $800 \text{ kg-m}^2$  and is running at 400 r.p.m. The coefficient of fluctuation of speed is 2.8%, determine maximum fluctuation of energy that the flywheel can control.
16. Explain the working principle of simple band brake with a neat sketch.
17. Explain the two theories applicable for designing friction clutches with relevant formulas.
18. Explain the construction of displacement diagram for a follower having SHM.

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