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C14-M-502

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2021

DME - FIFTH SEMESTER EXAMINATION

DESIGN OF MACHINE ELEMENTS - II

Time : 3 hours]

[Total Marks : 80

PART—A

4×5=20

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **four** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the advantages of silent chain over a roller chain.
2. Write any three differences between belt drive and chain drive.
3. A gear of 40 teeth has pitch circle diameter of 360 mm. What is its module and circular pitch?
4. List four important gear trains.
5. State any three differences between flywheel and governor.
6. Draw a simple sketch of watt governor and label the parts.
7. What is the function of clutch?
8. State the different types of brakes.
9. List different types of cams.
10. List different types of followers.

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PART—B

15×4=60

- Instructions :** (1) Answer *any four* questions.
(2) Each question carries **fifteen** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** Differentiate between belt and chain drives.
- 12.** A set of gear has to transmit 30 kW power when the pinion rotates at 400 r.p.m. The gear ratio is 1 : 4, the permissible stresses for pinion and drive gear materials are 130 N/mm² and 110 N/mm² respectively. The pinion gear has 22 teeth and face width 12 times the module. Compute (a) module and (b) face width.
- 13.** Explain the working of an epicyclic gear train with a neat sketch.
- 14.** (a) Two pulleys of diameters 500 mm and 250 mm are connected by an open flat belt drive. Central distance between them is 1.5 m. Find the angle of contact.
(b) List the applications of flywheel.
- 15.** Explain the porter governor with a neat sketch.
- 16.** Draw the cam profile to move a knife edged follower with uniform velocity :
(a) Outward stroke during 90° of cam rotation
(b) Dwell for the next 30° of cam rotation
(c) Return stroke during 120° of cam rotation
(d) Dwell for the remaining part of cam rotation
The stroke of the follower is 30 mm and the minimum radius of the cam is 40 mm. The axis of the follower is passing through the axis of the cam.
- 17.** Explain the working of block brake with a neat sketch.
- 18.** Explain the working of multi-plate clutch with a neat sketch.

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