

CBCS SCHEME

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18AU55

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025 Automotive Transmission

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss the various requirements of a clutch. (10 Marks)
- b. Describe the working of a single plate clutch with relevant figure. (10 Marks)

OR

- 2 a. Discuss with a neat sketch the working of a hydraulic operation of a clutch. (10 Marks)
- b. Describe the working of a centrifugal clutch with suitable figure. (10 Marks)

Module-2

- 3 a. Describe the working of sprag clutch and roller one way clutch with suitable figure. (10 Marks)
- b. Describe the working of a fluid coupling with suitable figure. (10 Marks)

OR

- 4 a. Compare and contrast between fluid flywheel and torque converter. (06 Marks)
- b. Explain the performance of a torque converter with suitable graph. (06 Marks)
- c. Describe the torque converter with relevant figure. (08 Marks)

Module-3

- 5 a. With suitable figure discuss the total resistances to motion of a vehicle. (10 Marks)
- b. Describe the road performance curves : Acceleration, Gradability and draw bar pull with suitable figure. (10 Marks)

OR

- 6 a. Explain the constructional details of a constant mesh gear box. (10 Marks)
- b. A sliding mesh type of gear box with forward speeds only is to be designed. The gear box should have the following gear ratios available approximately : 1.0, 1.5, 2.5 and 3.9. The centre distance between the layshaft and the main shaft is 78 mm and the smallest gear is to have at least 16 teeth with a diametral pitch of 3.25 mm. Calculate the number of teeth of the various gears and the exact gear ratios thus available. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. $42 \div 8 = 50$, will be treated as malpractice.

Module-4

- 7 a. Describe with a neat sketch the working of Wilson planetary transmission. (10 Marks)
b. An epicyclic gear consists of three wheels A, B and C. Wheel A has 72 internal teeth and C has 32 external teeth. The wheel B gears with both A and C and is carried on an arm which rotates about the centre of A at 18 rpm. If the wheel A is fixed, determine the speed of wheel B and C. (10 Marks)

OR

- 8 a. Describe the working of an overdrive with relevant figure. (10 Marks)
b. Discuss the ford –T model gear box with suitable figure. (10 Marks)

Module-5

- 9 a. Describe the variable displacement pump with relevant figure. (10 Marks)
b. Discuss the merits and demerits of plunger type pump and plunger type motor. (10 Marks)

OR

- 10 a. Describe the working of a Borge – Warner gear box with suitable figure. (10 Marks)
b. Discuss and compare the manual transmission and automatic transmission. (10 Marks)

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