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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Automobile Engineering

Semester End Examination; May/June - 2018

Automotive Transmission

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. List and discuss the various requirements of a clutch. 8
- b. Compare dry and wet types of friction clutches. 4
- c. Sketch and explain the working of semi-centrifugal clutches. 8
- 2 a. What is clutch slip? Illustrate the reasons, symptoms, effect and remedial steps related to clutch slip. 8
- b. List the materials used in clutch facings. 2
- c. An automobile clutch has a clutch plate of 160 mm inside and 240 mm outside diameters. Six springs in the clutch provide a total force of 4.8 kN. When the clutch is new and each spring is compressed 5 mm. The maximum torque developed by the automobile engine is 250 Nm. Determine; 10
- i) Factor of safety for the new clutch
- ii) The amount of wear of the clutch facing that will take place before the clutch starts slipping. Assume coefficient of friction for the facing is 0.3.

UNIT - II

- 3 a. Explain by means of a neat sketch the construction of a fluid flywheel and discuss the principle of torque transmission. 10
- b. List the advantages and disadvantages of fluid flywheel. 5
- c. Discuss the prominent faults occurring in fluid flywheel. 5
- 4 a. What is torque converter? Analyze the various phases of torque converter. 8
- b. Differentiate between fluid flywheel and torque converter. 4
- c. When does maximum torque multiplication occur in a torque converter? Explain the construction of single stage torque converter. 8

UNIT - III

- 5 a. List and discuss the various resistances offered to the motion of the vehicle. 8
- b. Discuss the terms tractive effort and draw bar pull. 4
- c. Explain in detail the various types of selector mechanism used in automobiles. 8
- 6 a. What is transfer box? Explain the construction and working of transfer box with a neat sketch. 10

- b. With the help of a neat sketch, explain the construction and working of constant mesh gear box and show various gear positions. 10

UNIT - IV

- 7 a. What is an epicyclic gear box? Describe its operations with the help of neat sketch. 10
b. What is an Over Drive? List the advantages of Over Drive. 6
c. List the advantages of epicyclic gear box over ordinary crash type gear box. 4
- 8 a. Explain the construction and working of Over Drive and discuss its method of control. 10
b. Explain the different types and controls of planetary gear set. 10

UNIT - V

- 9 a. List the functions of hydraulic system in automatic transmission. 4
b. Discuss in details automatic transmission Fluid. 6
c. With the help of a diagram, explain the operation of any type of automatic transmission. 10
- 10 a. Discuss the significance of transmission fluid cooler in automatic transmission. 4
b. Discuss the starting controls and shift interlocks used in automatic transmission. 6
c. Explain in detail electronic control system for automatic transmission. 10

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