Reg. No. :

Question Paper Code : 91095

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Fifth Semester

Automobile Engineering

AT 2301/AU 51/10122 AU 503 – AUTOMOTIVE TRANSMISSION

(Regulation 2008/2010)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the need of automotive transmission system in a vehicle?
2. Write the functions of release lever in a single plate coil spring clutch.
3. Derive an expression which relates engine speed with vehicle speed.
4. What is meant by double declutching?
5. With a sketch differentiate fluid coupling and torque converter.
6. List the advantages of polyphase torque converter.
7. Why epicyclic gear trains are generally preferred in automatic transmission?
8. Write about Cotal electromagnetic gear box.
9. What is meant by hydrodynamic drive.
10. List the types of hydrostatic drives.

PART B — (5 × 16 = 80 marks)

11. (a) Describe the construction and working principle of single plate diaphragm spring clutch with a neat sketch.

Or

(b) Write about : (2 × 8 = 16)

(i) Multiplate clutch

(ii) Electromagnetic clutch.

12. (a) The gear ratios for a small passenger car are : 1st gear and reverse gear = 3.8:1, 2nd gear = 2.24:1, 3rd gear =1.38:1, Top gear = 1:1. Sketch a section through a sliding type gear box with four forward and one reverse speeds and explain clearly how the different speed ratios obtained. Assume the counter shaft speed is half that of the engine speed and the smallest pinion is not to have less than 15 teeth.

Or

(b) Explain the working principle of Warner and later Warner gear synchronizer.

13. (a) Illustrate the working principle of fluid coupling with neat sketches. Also discuss about its performance characteristics.

Or

(b) Discuss the principle of operation, constructional details and performance characteristics of multi stage torque convertor.

14. (a) Explain the construction and working of Wilson gear box with neat sketch.

Or

(b) Discuss about the hydraulic control system used in automatic transmission system.

15. (a) Explain the constructional details and working of hydrostatic drives with neat sketch.

Or

(b) (i) Explain the working principle of modified Ward Leonard control system with neat sketch. (10)

(ii) Write the advantages and disadvantages of Early ward Leonard control system. (6)