

--	--	--	--	--	--	--	--	--	--

Sixth Semester B.E. Degree Examination, June/July 2016
Automotive Transmission

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Explain the terms traction, traction effort and draw bar pull, with the help of performance curves. (10 Marks)
- b. A motor vehicle having total weight of 11144 N has road wheels of 0.01 mt effective diameter, the effective moment of inertia of four road wheel and rear axle together is 62.0 N/m², while that of engine and fly wheels is 6.2 N/m². The transmission efficiency is 90% and tractive resistance at a speed of 24 km/hr is 222.5 N, total available engine torque is 203.6 N-mt.
 - i) Determine the gear ratio of engine to back axle to provide maximum acceleration on 1 in 4 grade when travelling at 24 km/hr
 - ii) What is maximum acceleration
 - iii) Determine the engine rpm and power under these conditions. (10 Marks)
- 2 a. Discuss the necessity of clutch, in automobiles. (03 Marks)
- b. List and explain the various requirements of a good clutch. (07 Marks)
- c. Explain the construction and working of a single plate clutch and state the advantages. (10 Marks)
- 3 a. Discuss various clutch troubles. Give reasons. (06 Marks)
- b. Explain the working principle of a fluid coupling. (06 Marks)
- c. What do you mean by over running clutch? Discuss the necessity in vehicle transmission system. (08 Marks)
- 4 a. Distinguish fluid couplings over torque converters. (08 Marks)
- b. Explain the typical hydrodynamic transmission system with figure, state the advantages and disadvantages. (12 Marks)

PART – B

- 5 a. What are the functions of gear box in automobiles? (03 Marks)
- b. Explain the construction and working of a constant mesh gear box with a line diagram, showing all the components. (12 Marks)
- c. What is synchroniser? State the salient features. (05 Marks)
- 6 a. Draw and explain the working of Wilson planetary gear box. (10 Marks)
- b. What is over drive? Explain its working with sketch (10 Marks)
- 7 a. Explain the working principle of hydrostatic drive system. (05 Marks)
- b. Compare constant displacement pump Vs variable displacement pump. (07 Marks)
- c. Discuss about the applications and limitations of hydrostatic drives. (08 Marks)
- 8 a. Explain the working of Borg–Warner automatic transmission with the help of figure. (10 Marks)
- b. Explain the layout of electric transmission and state the limitations. (10 Marks)