

CBCS SCHEME

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15AU64

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Automotive Transmission

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. With the neat sketch, explain construction and working of single plate clutch. Mention advantages and disadvantages. (12 Marks)
- b. Explain in brief requirements of a good clutch. (04 Marks)

OR

- 2 a. With a neat sketch, explain working of a Hydraulic clutch. (08 Marks)
- b. A plate clutch has three discs on the driving shaft and two disc on the driven shaft, providing four pair of contact surfaces. The outside diameter of the contact surface is 240mm and inside diameter is 120mm. Assuming uniform pressure and $\mu = 0.3$, find the total spring load pressing the plate together to transmit 23 KW power at 1475 rpm. If there are 6 springs each of stiffness 13kN/m and each of the contact surfaces has worn away by 1.25mm, find the maximum power that can be transmitted, assuming uniform wear. (08 Marks)

Module-2

- 3 a. What is Fluid Coupling? With neat sketch, explain its working. (10 Marks)
- b. With a neat sketch, explain working of Ball and Roller one – way clutch. (06 Marks)

OR

- 4 a. With the neat sketch, explain the working of single stage torque converter. (10 Marks)
- b. Discuss the performance characteristics of a torque converter. (06 Marks)

Module-3

- 5 a. Explain the various resistances to the vehicle, with help of graphs. (08 Marks)
- b. Explain the following :
i) Tractive effort ii) Acceleration iii) Gradeability iv) Draw bar pull. (08 Marks)

OR

- 6 a. Explain the construction and working of constant mesh gear box with figure and mention advantages. (10 Marks)
- b. In a gear box the clutch shaft pinion has 14 teeth and low gear main shaft pinion 32 teeth. The corresponding lay shaft pinions have 36 and 18 teeth. The rear ratio is 3.7:1 and the effective radius of rear type is 0.355m, calculate the car speed in the above arrangement at an engine speed of 2500 rpm. (06 Marks)

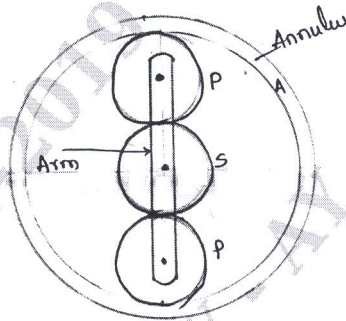
Module-4

- 7 a. Explain the construction of Wilson planetary gear system, with neat sketch and mention its applications. (12 Marks)
- b. Mention the advantages and disadvantages of over drive. (04 Marks)

OR

- 8 a. An Epicyclic gear train as shown in fig. Q8(a) has a sun wheel 'S' of 30 teeth and two planet wheels 'P' and 'P' of 50 teeth each. The planet wheels mesh with internal teeth of a fixed annulus 'A'. The driving shaft is connected to an arm, which carries the planet wheels. The driving shaft carrying the sun wheel transmits 4KW at 300 rpm. Determine the speed of the driver shaft and the torque transmitted if the overall efficiency is 95%. (10 Marks)

Fig.Q8(a)



- b. With neat sketch, explain working principle of over drive. (06 Marks)

Module-5

- 9 a. Compare Constant displacement pump Vs Variable displacement pump. (06 Marks)
b. List the different system of a hydrostatic drives. Explain the principles of the same. (10 Marks)

OR

- 10 a. With the help of line diagram, explain the working of Automatic transmission. (08 Marks)
b. Explain the layout of Electric transmission and state the limitations. (08 Marks)
