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## Fifth Semester B.E. Degree Examination, June/July 2024 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. List the common clutch troubles. Explain their causes and remedies. (05 Marks)
- b. With neat sketch, explain construction and working principle of single plate clutch and state the advantages. (10 Marks)
- c. What are the requirements of good clutch? (05 Marks)

**OR**

- 2 a. What is the need of clutch? With neat sketch explain construction and working principle of a vacuum operation clutch. (10 Marks)
- b. With neat sketch explain construction and working principle of a multi plate clutch and state the advantages. (10 Marks)

### Module-2

- 3 a. Sketch and explain the construction and working principle of fluid flywheel. (10 Marks)
- b. With the help of graph discuss the performance characteristics of a torque converter. (10 Marks)

**OR**

- 4 a. With a neat sketch, explain the construction and working principle of torque converter. (10 Marks)
- b. What is one way clutch? Explain any two with neat sketch. (10 Marks)

### Module-3

- 5 a. Explain the various resistances to the vehicle with the help of graphs. (07 Marks)
- b. Explain the following : (06 Marks)
  - i) Tractive effort
  - ii) Acceleration
  - iii) Draw bar pull.
- c. Explain with neat sketch the construction and working of constant mesh gear box. (07 Marks)

**OR**

- 6 a. Explain with neat sketch the construction and working of synchromesh gear box. (10 Marks)
- b. A four speed gear box is to be constructed for providing the ratio's of 1.0, 1.46, 2.28 and 3.93 to 1 as nearly as possible. The diametral pitch of each gear is 3.25mm and smallest pinion is to have atleast 15 teeth. Sketch a section through a sliding type gear box and determine the suitable number of teeth of the different gears. What is then the distance between the main and lay shaft. (10 Marks)

### Module-4

- 7 a. With neat sketch, explain components and working of epicyclic gear box. (10 Marks)
- b. With neat sketch, explain construction and working of Wilson gear box. (10 Marks)

OR

- 8 a. An epicyclic gear train of sun and planet type is as shown in Fig Q8(a). The pitch diameter of internally toothed ring 'D' is approximately 228mm and the module is 4mm. When the ring is stationary, the spider 'A' which carries three planet wheel 'C' of equal size is to make one revolution for every five revolutions of the spindle carrying the sun wheel B. Determine suitable number teeth for all the wheel and the exact pitch circle diameter of ring D. If torque of 30Nm is supplied to sun wheel B, what will be the torque required to keep the ring stationary.

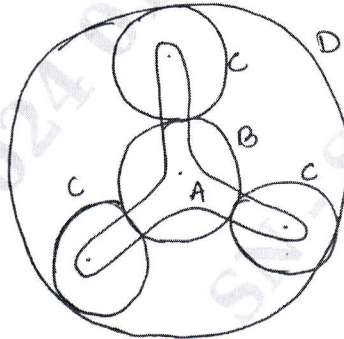


Fig Q8(a)

- b. With neat sketch explain construction and working of Ford-T model gear box. (10 Marks)

**Module-5**

- 9 a. What is hydrostatic drive? Explain with neat sketch principle of hydrostatic drive system. (10 Marks)
- b. Write a short note on ;
- Variable displacement and constant displacement motor
  - Constant displacement pump and variable displacement motor
  - Constant displacement pump and constant displacement motor. (10 Marks)

OR

- 10 a. With neat sketch, explain the working of Brog-Warner automatic transmission system. (10 Marks)
- b. With the help of block diagram, explain the working Automatic transmission. (10 Marks)

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