



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

(An Autonomous Institution affiliated to VTU, Belagavi)

**Sixth Semester, B.E. - Automobile Engineering**

**Make-up Examination; March/April - 2022**

**Automotive Transmission**

*Time: 3 hrs*

*Max. Marks: 100*

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

## UNIT - I

- |      |   |    |
|------|---|----|
| 1 a. | Sketch and explain the working of a single plate clutch.  | 8  |
|      | b. What are the desired features of a good clutch?  | 4  |
|      | c. Write a note on clutch friction materials.   | 8  |
| 2 a. | What are the main functions of a clutch?  | 4  |
|      | b. Discuss the trouble shooting for any three common problems encountered during clutch operation.  | 6  |
|      | c. An automobile clutch has a clutch plate of 160 mm inside and 240 mm outside diameters. Six springs in 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) Factors of safety for the new clutch   |    |
|      | ii) The amount of wear of the clutch facing that will take place before the clutch starts slipping given $Cof = 0.3$ ( Assume coefficient of friction for facing)   |    |

## UNIT - II

- |      |   |    |
|------|---|----|
| 3 a. | Sketch and explain single stage torque converter.                                   | 10 |
|      | b. Explain the working principle of the fluid coupling with necessary sketch.       | 10 |
| 4 a. | When does maximum torque multiplication occurs in a torque converter?               | 2  |
|      | b. Differentiate between fluid fly wheel and torque converter.                      | 5  |
|      | c. Mention the working fluids used in fluid coupling and their required properties. | 8  |
|      | d. List the advantages and disadvantages of fluid fly wheel.                        | 5  |

## UNIT - III

- |      |   |    |
|------|---|----|
| 5 a. | Sketch and explain the working of sliding mesh gear box with various gear position.     | 10 |
|      | b. Sketch and explain the principle of operation of continuously variable transmission. | 10 |
| 6 a. | Explain in detail the various types of selector mechanism used in automobile.           | 10 |
|      | b. List and discuss various resistances offered to the motion of the vehicle.           | 10 |

## UNIT - IV

- |      |  |    |
|------|--|----|
| 7 a. | Sketch and explain the working of over drive.  | 10 |
|      | b. What is an epicyclic gear box? Describe its operation with the help of neat sketch. | 10 |

- 8 a. Explain the different types and controls of planetary gear set. 10
- b. Explain Wilson planetary transmission. 10

**UNIT - V**

- 9 a. Explain the smoothness control of automatic transmission with the help of accumulator principle. 10
- b. Write a note on;
- i) Functions of hydraulic system in automatic transmission 10
  - ii) Automatic transmission fluid
- 10 a. Sketch and explain any one of the types of automatic transmission. 10
- b. Explain in detail electronic control system for automatic transmission. 10

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