

B.E./B.TECH. Degree Examination, December 2020  
Fifth Semester  
**AE16502 – AUTOMOTIVE TRANSMISSION**  
(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

**PART A - (8 X 2 = 16 marks)**

1. Choose the best one to transmit the torque through a clutch depends upon the
  - a. Coefficient of friction
  - b. Spring force
  - c. Contact surfaces
  - d. All of the above
2. Torque transmitting capacity of the fluid coupling within 3% slip is
  - a.  $T = C * N^3 * D^6$
  - b.  $T = C * N^2 * D^7$
  - c.  $T = C * N^2 * D^5$
  - d.  $T = C * N^7 * D^5$
3. A hydraulic coupling belongs to the category of
  - a. Power absorbing machine
  - b. Power developing machine
  - c. Energy transfer machine
  - d. Energy generating machine
4. In toroidal continuously variable transmission system replace the belts and pulleys with
  - a. Wheels
  - b. Discs and power rollers
  - c. Variable displacement pumps
  - d. Motor
5. Categorize the clutches based on the operation.
6. Compare single-stage torque converter with a multi stage torque converter.
7. Draw the layout of automotive transmission and also specify the salient features.
8. Distinguish the four main differences between the hydrostatic drive and hydrodynamic drive.

**PART B - (4 X16 = 64 marks)**

09. (a) Discuss in detail the construction and operation of a multi plate clutch (16)  
with a neat sketch.

**(OR)**

- (b) Suggest and explain a gearbox for three wheeler application with Power flow diagram for different gear ratios. **(16)**

10. (a) Select and explain the best method to transmit the constant torque from engine to gearbox in hydrodynamic transmission with a neat sketch. **(16)**

**(OR)**

- (b) Illustrate the performance characteristics of the fluid coupling and torque converter with a graph. **(16)**

11. (a) Suggest the name of the gearbox where four epicyclic trains of gears interconnected which is used to transmit the power from the engine to the rear wheel. Explain the first gear and second gear with neat sketches and deduce the gear ratios. **(16)**

**(OR)**

- (b) Discuss in detail about the hydraulic control system of the automatic transmission system with a neat sketch. **(16)**

12. (a) Categorize the various techniques that can be used to vary the engine torque continuously and explain any two with a neat sketches. **(16)**

**(OR)**

- (b) Categorize the various types of hydrostatic systems and explain any three with neat sketches. **(16)**