

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

Course Code: AU 301**Course Name: AUTO TRANSMISSION**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any three full questions, each carries 10 marks.*

Marks

- 1 a) What do you mean by the torque capacity of an automotive clutch? What are the major factors affecting the same? (5)
- b) Explain the constructional details and working of an electromagnetic clutch. (5)
- 2 a) Give a comparison of a Diaphragm spring and coil spring clutch. (4)
- b) Explain the constructional details and working of a multi-plate diaphragm clutch. (6)
- 3 a) What are the advantages of a synchromesh gear box? (3)
- b) Explain the working principle of a synchromesh gear box with suitable sketches. (7)
- 4 What is the purpose of a transfer gearbox? Explain the constructional details of a transfer gear box with high and low gear outputs. (10)

PART B*Answer any three full questions, each carries 10 marks.*

- 5 a) Discuss the advantages and limitations of hydrodynamic drives. (4)
- b) Explain the constructional details and working of a four element torque converter. (6)
- 6 a) What is the significance of rotary flow and vortex flow of fluid inside a torque converter? (4)
- b) Explain the working of a Lock-up torque converter. (6)
- 7 a) Explain the principle of operation of planetary gear system. What are the advantages of using planetary gear system? (4)
- b) What are the laws of planetary gear system? Explain the law of neutral, reverse and overdrive. (6)
- 8 Explain the different mode of operation in a Simpson gearbox with a suitable sketch. (10)

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) Explain the causes for Cavitations in a hydrostatic transmission. What are its effects? (5)
- b) Give a comparison of Hydrostatic drive with Hydrodynamic drive. (5)
- 10 Explain the performance characteristics of different types of hydrostatic pump and motor combinations. (10)
- 11 What are the different types of CVTs? With a suitable sketch explain the constructional details and working of Toroidal type CVT. (10)
- 12 With suitable sketches, explain the constructional details and working of the following components of an automatic transmission system. (10)
- a) Vacuum valve b) Gear shift valve c) Governor valve
- 13 a) What are the advantages of AMT over conventional transmission? (4)
- b) Explain the working of an AMT with suitable layout sketch showing the important input and output sensors and controllers. (6)
- 14 What are the important inputs for an ECTi system? Explain the working of an ECTi system with suitable block diagram. (10)
