

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019**

**Course Code: AU206**

**Course Name: AUTO TRANSMISSION (AU)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any three full questions, each carries 10 marks*

Marks

- |   |                                                                                                                         |      |
|---|-------------------------------------------------------------------------------------------------------------------------|------|
| 1 | a) Explain the term Tractive effort                                                                                     | (3)  |
|   | b) Explain with a neat diagram the working of centrifugal clutch                                                        | (7)  |
| 2 | a) Derive the equation for torque capacity of a cone clutch based on constant pressure and constant wear condition      | (10) |
| 3 | a) What are the advantages of constant mesh gearbox when compared to sliding mesh gearbox?                              | (5)  |
|   | b) Explain the different shifting patterns used in an automobile for the shifting of gears                              | (5)  |
| 4 | a) Explain the methodology used to ensure that two gears are not engaged simultaneously in a gearbox with a neat sketch | (10) |

**PART B**

*Answer any three full questions, each carries 10 marks*

- 5 a) In the Wilson gearbox, the number of teeth of various gears are: (10)

$T_{S1}=15$	$T_{R1}=60$
$T_{S2}=20$	$T_{R2}=70$
$T_{S3}=20$	$T_{R3}=70$
$T_{S4}=26$	$T_{R4}=50$

Calculate all the gear ratios

- 6 a) Explain with a neat sketch, construction and working of Ford T model gearbox (10)
- 7 a) With a neat sketch, explain the construction and working of a torque converter (10)
- 8 a) Explain the characteristics of a typical torque converter with neat graphs (5)
- b) List down the advantages and disadvantages of a fluid flywheel when compared to a torque converter (5)

**PART C**

*Answer any four full questions, each carries 10 marks*

- 9 a) With a neat diagram explain the working of toroidal CVT. What are the methods adopted for the control of speed in toroidal CVT? (10)
- 10 a) Explain on the hydraulic control system for an automatic transmission (10)
- 11 a) Compare hydrostatic and hydrodynamic transmission systems (5)
- b) Compare hydrostatic and conventional manual transmission systems (5)
- 12 a) Explain the Janney Hydrostatic drive with a neat sketch (10)
- 13 a) Explain the electro hydraulic systems used in an automatic gearbox and list down its components (10)
- 14 a) Explain initial or early Ward Leonard control system with a neat circuit diagram (10)