

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2022
AU3CO10 Automotive Transmission
Programme: B.Tech. Branch/Specialisation: AU

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. The following is known as positive clutch:
- | | | |
|-------------------------|------------------------|---|
| (a) Single plate clutch | (b) Cone clutch | 1 |
| (c) Dog clutch | (d) Centrifugal clutch | |
- ii. In Disc clutch, the clutch disc acts as a:
- | | | |
|--------------------|-------------------|---|
| (a) Driving member | (b) Driven member | 1 |
| (c) Neutral member | (d) All of these | |
- iii. In which type of manual transmission, the double-declutching is used?
- | | | |
|---------------------------|--------------------------|---|
| (a) Constant-mesh gearbox | (b) Sliding-mesh gearbox | 1 |
| (c) Synchromesh gearbox | (d) Epicyclic gearbox | |
- iv. Where is the overdrive located?
- | | | |
|--|--|---|
| (a) Between engine and transmission | | |
| (b) Between transmission and rear axle | | 1 |
| (c) Between transmission and propeller shaft | | |
| (d) Between transmission and differential | | |
- v. Which of the following is/are components of an electric drive?
- | | | |
|---------------------------------------|--|---|
| (a) Control unit and power modulator | | |
| (b) Electric motor and control system | | 1 |
| (c) Input command | | |
| (d) Sensing device and electric motor | | |
- vi. In Ward Leonard speed control method for lowering the speed of the motor is:
- | | | |
|-----------------------------|-------------------------------|---|
| (a) Reduce armature voltage | (b) Increase armature voltage | 1 |
| (c) Increase field current | (d) Decrease field current | |

P.T.O.

[2]

- vii. The fluid coupling is most efficient as drive ratio approaching to:
(a) 1:1 (b) 2:1 (c) 1.5:1 (d) 3:1 **1**
- viii. The component of the torque converter that allows multiplication of torque is the: **1**
(a) Turbine (b) Impeller (c) Pump (d) Stator
- ix. The major purpose of an electronically controlled automatic transmission is:
(a) Eliminates gear clutches
(b) Eliminates gear shift lever **1**
(c) Reduces the number of automatic transmission components
(d) Reduces shift shock and achieves more efficient transmission of engine torque
- x. An automatic transmission in a rear-wheel drive vehicle does not go into either drive or reverse mode. Which of the following is the most likely cause?
(a) A defective vacuum modulator **1**
(b) A defective governor
(c) A defective pump
(d) An incorrectly adjusted throttle valve cable
- Q.2 i. State the principle of operation of clutch. **2**
ii. State the properties of good clutch lining. **3**
iii. Explain the working of centrifugal clutch with sketch. **5**
- OR iv. Explain the working of multiplate clutch with sketch. **5**
- Q.3 i. What is the need of double declutching in manual gearbox? **2**
ii. Explain construction and working of planetary gearbox with neat sketch. What are the advantages of planetary gearbox over manual gearbox? **8**
- OR iii. Explain the construction and working of synchromesh gearbox with sketch. What are the advantages of synchromesh gearbox over sliding mesh and constant mesh gearbox? **8**
- Q.4 i. State principle of operation of hydrostatic drive. **3**
ii. Compare hydrostatic drive with hydrodynamic drive. Explain construction and working of Jenny hydrostatic drive. **7**

[3]

- OR iii. Explain the principle of modified ward Leonard type of control for electric drive-in vehicles with sketch. **7**
- Q.5 i. Why differential is used in automobile? Mention the components of a differential. **4**
ii. Explain construction and working of fluid coupling with sketch. **6**
- OR iii. Explain the construction and working of torque converter with sketch. **6**
- Q.6 Attempt any two:
i. What is meant by automatic transmission? Write merits and demerits of automatic transmission. **5**
ii. Explain Chevrolet "Turbo glide" transmission with suitable sketch. **5**
iii. Explain "ECT-i" Automatic Transmission with intelligent electronic controls system. **5**

Marking Scheme
AU3CO10 Automotive Transmission

Q.1	i.	The following is known as positive clutch: (c) Dog clutch	1					
	ii.	In Disc clutch, the clutch disc acts as a: (b) Driven member	1					
	iii.	In which type of manual transmission, the double-declutching is used? (a) Constant-mesh gearbox	1					
	iv.	Where is the overdrive located? (c) Between transmission and propeller shaft	1					
	v.	Which of the following is/are components of an electric drive? (b) Electric motor and control system	1					
	vi.	In Ward Leonard speed control method for lowering the speed of the motor is: (a) Reduce armature voltage	1					
	vii.	The fluid coupling is most efficient as drive ratio approaching to: (a) 1:1	1					
	viii.	The component of the torque converter that allows multiplication of torque is the: (d) Stator	1					
	ix.	The major purpose of an electronically controlled automatic transmission is: (d) Reduces shift shock and achieves more efficient transmission of engine torque	1					
	x.	An automatic transmission in a rear-wheel drive vehicle does not go into either drive or reverse mode. Which of the following is the most likely cause? (c) A defective pump	1					
Q.2	i.	Principle of operation of clutch.	2					
	ii.	Any three properties of good clutch lining 1 marks for each	3					
	iii.	Working of centrifugal clutch Sketch	5					
	OR iv.	Working of multiplate clutch Sketch	5					
Q.3	i.	Need of double declutching in manual gearbox	2					
	ii.	Construction of planetary gearbox Working of planetary gearbox Sketch Any two advantages of planetary gearbox 0.5 mark for each (0.5 mark * 4)	2 marks 2 marks 2 marks 2 marks					8
	OR iii.	Construction synchromesh gearbox Working of synchromesh gearbox Sketch Any two advantages of synchromesh gearbox	2 marks 2 marks 2 marks 2 marks					8
Q.4	i.	Principle of operation of hydrostatic drive.						3
	ii.	Hydrostatic drive with hydrodynamic drive Comparison Construction of Jenny hydrostatic drive Working of Jenny hydrostatic drive	2 marks 2 marks 3 marks					7
	OR iii.	Modified ward Leonard type of control for electric drive-in vehicles Principle Construction Sketch	2 marks 2 marks 3 marks					7
Q.5	i.	Use of differential in automobile Components of a differential	2 marks 2 marks					4
	ii.	Construction of fluid coupling Working of fluid coupling Sketch	2 marks 2 marks 2 marks					6
	OR iii.	Construction torque converter Working of torque converter Sketch	2 marks 2 marks 2 marks					6
Q.6		Attempt any two:						
	i.	Automatic transmission Any two merits 1 mark for each (1 mark * 2) Any two demerits 1 mark for each (1 mark * 2)	1 mark 2 marks 2 marks					5
	ii.	Chevrolet "Turbo glide" transmission Sketch	3 marks 2 marks					5
	iii.	"ECT-i" Automatic Transmission Sketch	3 marks 2 marks					5
