

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATION, MAY 2023

Fifth Semester

AE18504 – AUTOMOTIVE TRANSMISSION**(Regulation 2018)****TIME: 3 HOURS****MAX. MARKS: 100**

- CO 1** Apply the basic concepts in selection of the clutch and gear box for a vehicle.
- CO 2** Select the elements of automatic transmission based on the simplicity, application and cost.
- CO 3** Compare the salient features of various automatic transmission systems.
- CO 4** Discuss the need and functions of different types of automatic transmission systems used in vehicles.
- CO 5** Explain the features of hydrostatic drive & electric drive with merits and demerits.

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. Differentiate between a single plate coil spring clutch and a diaphragm spring clutch.	1	3
2. Briefly discuss how gear ratios affect the performance of an automobile.	1	2
3. Identify the factors that affect the torque capacity of a fluid coupling.	2	2
4. What is the need of stator in a torque converter?	2	2
5. Summarize the advantages of using a Wilson type gearbox in heavy-duty vehicles.	3	2
6. How does an overdrive system affect fuel efficiency and engine performance?	3	3
7. Why is there a need for automatic transmission in modern vehicles?	4	3
8. How does a ShiftFX electronic shift transmission differ from traditional automatic transmissions?	4	3
9. Compare with hydrodynamic and hydrostatic system.	5	2
10. How does the variation of current affect the torque of an electric drive?	5	3

PART- B (5 x 14 = 70 Marks)

	Marks	CO	RBT LEVEL
11. (a) Discuss in detail the constructional features of a multi plate clutch, and explain clearly the functions of each major component of the multi plate clutch.	(14)	1	3

(OR)

- (b) Describe in detail, the construction and working of a 4 forward and 1 reverse constant mesh gear box with neat sketch. Draw the power flow diagrams in all gears. (14) 1 3
12. (a) Describe with a neat sketch the construction and working principle of a hydrodynamic fluid coupling. (14) 2 2
- (OR)**
- (b) Describe with a neat sketch the construction and working principle of a multistage torque converter. (14) 2 2
13. (a) Explain how second and third gear are obtained in Wilson gear box with a neat sketch. Deduce that gear ratio. (14) 3 3
- (OR)**
- (b) Explain about the construction and working of an epicyclic gear train with a neat sketch. (14) 3 3
14. (a) With the help of neat sketch explain the construction and working of the Chevrolet Turboglide Transmission. (14) 4 3
- (OR)**
- (b) Explain with the help of a suitable diagram the principle and working of any one automatic transmission system and describe the method of control employed in this type of transmission. (14) 4 3
15. (a) Describe about the Janny hydrostatic drive with respect to construction, working and merits and demerits. (14) 5 2
- (OR)**
- (b) Explain the principle of Ward Leonard type control system for electric drive. (14) 5 2

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

- | | | Marks | CO | RBT LEVEL |
|-----|--|-------|----|-----------|
| 16. | Why manual transmission cars are more fuel efficient than automatic transmission cars? Discuss with an example and relevant diagram. | (10) | 4 | 3 |