Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Automotive Transmission Systems **Semester: V**
Program: B.Tech Automotive Design Engineering **Time 03 hrs.**
Course Code: MEAD3002 **Max. Marks: 100**

Instructions: Use graph sheets, wherever applicable

SECTION A

S. No.		Marks	CO
Q 1	Discuss in brief the concept of hydrokinetic fluid coupling	**4**	**CO3**
Q 2	State the constructional details of: a. Differential b. Hotchkiss Drive	**4**	**CO1**
Q 3	Differentiate manual, semi-automatic and fully automatic transmission system	**4**	**CO4**
Q 4	Outline the key difference between fluid coupling and torque converter	**4**	**CO3**
Q 5	Summarize the importance of gearwheel scuffing resistance	**4**	**CO2**

SECTION B

Q 6	Determine the significance of gearbox housing, list all the types of housings and different types of seals used in packing **OR** Justify the importance of bearing lubrication clearly explaining the concept of lifetime lubrication in gearboxes	**10**	**CO2**
Q 7	With neat sketch explain the working of Wilson Gearbox in detail	**10**	**CO4**
Q 8	Explain gearbox ventilation and with neat sketch describe the design of breather system	**10**	**CO2**
Q 9	Explain the working of torque converter with the help of labelled diagram	**10**	**CO3**

SECTION-C

Q 10	Explain the working of Chevrolet PowerGlide Automatic Transmission system with neat and labelled sketch **OR** Explain the working of Chevrolet TurboGlide Automatic Transmission with neat and labelled sketch	**20**	**CO4**
Q 11	a. Explain in detail the procedure to determine the intermediate gear ratios of a four-speed gearbox with saw profile method. b. An engine develops at torque of 104 Nm at 2500 rev/min and drives through a gearbox having constant mesh gears of 15 and 30 teeth respectively. The second wheel on the main shaft has 36 teeth and the meshing pinion has 18 teeth. The rear axle ratio is 5 to 1 and the effective radius of the tires is 0.42m. If the overall transmission efficiency is 85%, calculate: i. Second gear ratio	**10** **3+4+3**	**CO1**

	ii. The torque in each shaft iii. Speed of the vehicle in second gear		