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Fifth Semester B.E. Degree Examination, June/July 2024 Automotive Transmission

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the need of transmission and power for propulsion with diagram. (10 Marks)
b. Describe the various resistance to motion of the automobile. (10 Marks)

OR

- 2 a. Determine the gear ratio of a four speed gear box for a vehicle of weight 13341.6N powered by an engine giving 20.6kW at 1800 rpm. The vehicle has a frontal-area 2.23m and has a wheel dia. 0.71m. The maximum gradient that the car has to negotiate is 1 in 4. The tractive resistance may be taken as 50N per 2240N of the car. The wind resistance is given by $0.03679NV^2$, where A is the frontal area in M^2 and V is the vehicle speed in km/hr. Assume that the transmission efficiency is 0.75 and that at top gear, the car is expected to go over a grade of 1 in 40. State any other assumptions you make. (10 Marks)
b. Explain with neat sketch Constant Mesh gear box. (10 Marks)

Module-2

- 3 a. What is the necessity of clutch, requirement of clutch and clutch materials? (10 Marks)
b. Explain with neat sketches of Cone and Centrifugal clutch. (10 Marks)

OR

- 4 a. Explain the working fluid requirements and its characteristics. (10 Marks)
b. Explain with neat sketch, fluid coupling and advantages, limitations and applications. (10 Marks)

Module-3

- 5 a. Explain with neat sketch of components of Automatic transmission system. (10 Marks)
b. Explain Epicyclic gear train with neat sketch. (10 Marks)

OR

- 6 a. Explain with sketch Ford. T. Model gear box. (10 Marks)
b. Explain with sketch of Overdrives. (10 Marks)

Module-4

- 7 a. Explain constant and variable displacement pump and motor with sketches. (10 Marks)
b. Explain with layout of hydraulic control system. (10 Marks)

OR

- 8 a. Explain basic four speed hydraulic control system. (10 Marks)
b. Explain neat sketch, Hydramantic transmission system. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Explain the Construction and Working of Automobile differential.
b. Explain the configuration of EV.

(10 Marks)

(10 Marks)

OR

- 10 a. Explain Construction and Working of PM - DC Machine.
b. Explain the Construction and Working of WF – DC Machine

(10 Marks)

(10 Marks)
