CBCS SCHEME

18AU55

Fifth Semester B.E. Degree Examination, July/August 2021
Automotive Transmission

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 100

Note: *Answer any FIVE full questions.*

1　a. Discuss the necessity and requirement of the clutch in detail.　　　**(10 Marks)**
　　b. Sketch and explain the construction and working of centrifugal clutch.　　**(10 Marks)**

2　a. Sketch and explain the construction and working of multiplate clutch.　　**(10 Marks)**
　　b. An automobile power unit gives a maximum torque of 13.56N-m. The cultch is of a single plate dry type having effective clutch lining on both sides of the plate. The coefficient of friction is 0.3 and the maximum axial pressure is 8.29×10^4Pa and external radius of the friction surface is 1.25 times the internal radius. Calculate the dimensions of the clutch plate and the total axial pressure that must be exerted by the clutch springs.　　**(10 Marks)**

3　a. Differentiate between fluid fly wheel and torque converter.　　**(05 Marks)**
　　b. Sketch and explain the principle and characteristics of fluid flywheel.　　**(10 Marks)**
　　c. Sketch and explain the working of oneway clutch.　　**(05 Marks)**

4　a. Sketch and explain the construction and working of torque converter.　　**(10 Marks)**
　　b. How transmission efficiency of torque converter can be increased? Sketch and explain any one method.　　**(10 Marks)**

5　a. Discuss the different resistances offered to the vehicle motion.　　**(10 Marks)**
　　b. Calculate the power required in an engine fitted on truck whose weight is 25kN. Frontal cross sectional area is $3.25m^2$ and which can run on level road at highest speed of 80Kmph. The mechanical efficiency of an engine is 80% and transmission efficiency is 90%. Assume $C_r = 0.02$ and $C_a = 0.035$.　　**(10 Marks)**

6　a. Sketch and explain the working of synchromesh gearbox.　　**(10 Marks)**
　　b. In a gearbox the clutch shaft pinion has 14 teeth and low gear main shaft pinion 32 teeth. The corresponding lay shaft pinions have 36 and 18 teeth. The near axle ratio is 3.7:1 and the effective radius of the rear tyre is 0.355m. Calculate the car speed in the above arrangement at an engine speed of 2500rpm.　　**(10 Marks)**

7　a. Sketch and explain the working principle of Epicyclic Transmission.　　**(10 Marks)**
　　b. Sketch and explain the Ford – T model gearbox.　　**(10 Marks)**

8　a. Sketch and explain the Wilson Planetary transmission.　　**(10 Marks)**
　　b. Sketch and explain the working of overdrive.　　**(10 Marks)**

9　a. Explain the working of constant and variable displacement pump with line diagrams.　　**(10 Marks)**
　　b. Discuss the limitation and advantages of Hydrostatic drive systems.　　**(10 Marks)**

10　a. Explain the working of Electric transmission with a layout. Highlight the limitation.　　**(10 Marks)**
　　b. With a neat diagram, explain the working of Borge –Warner automatic transmission system.　　**(10 Marks)**

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