

FACULTY OF ENGINEERING

B.E. 3/4 (AE) II Semester (Main) Examination, April / May 2013

Subject: Performance of Testing of Automotive Vehicles

Time: 3 Hours

Max.Marks: 75

*Note : Answer all questions from Part A. Answer any Five questions from Part B.***PART – A** (10 x 2.5 = 25 Marks)

1. Name the forces and moments acting on a car body.
2. What is aerodynamic drag coefficient of a vehicle?
3. Why is cone clutch more effective than plane clutch?
4. What are the engine requirements for various operating conditions?
5. Explain SAE rating.
6. Explain the importance of vehicle safety.
7. Draw the braking arrangements of air brakes.
8. Explain anti rolling bar and torsion bar.
9. Explain the procedure for testing of engine.
10. List any six engine testing noise.

PART – B (50 Marks)

11. Explain briefly the following: (10)
 - (a) Air resistance
 - (b) Rolling resistance
 - (c) Grade resistance
12. Derive an expression for frictional torque acting on the ring of single plate clutch (single disc). (10)
13. A petrol engine uses, per kwh .026 kg of fuel of calorific value 44000 kJ/kg the mechanical efficiency is 78% and the compression ratio is 5.6 to 1. Calculate: (10)
 - (a) The brake thermal efficiency
 - (b) The indicated thermal efficiency
 - (c) The ideal air standard efficiency
 - (d) The efficiency ratio
14. To transfer the circular input motion of the pinion in to a linear rack output movement of a rack and pinion steering system design a mechanism with neat sketch. (10)
15. Explain the following: (10)
 - (a) Rigid axle-beam with semi-elliptics springs
 - (b) Short swing arm
 - (c) Transverse double wish bone
 - (d) MacPherson leg strut
16. Explain the effect of atmospheric temperature pressure and humidity on vehicle performance. (10)
17. Explain with neat sketch (10)
 - (a) Position of CG on track of a vehicle
 - (b) Determination of height of a vehicle's CG
 - (c) Determination of centre of gravity (CG) of a vehicle.