Total No. of Questions :10] *[Total No. of Printed Pages :4*

Roll No .....

ME - 704

B.E. VII Semester

Examination, December 2012

Automobile Engineering

Time : Three Hours

Maximum Marks : 100 ***Minimum Pass Marks :35***

Note: Answer *one* question from each unit.

UNIT - I

1. (a) How do you classify chassis? What are main criteria? Give advantages & disadvantages. (10)

   (b) What kind of aerodynamics consideration are carried out in body profiling of vehicle? Explain in brief. (10)

OR

2. (a) Explain different angles related to wheel alignment with neat sketches. Also explain the front wheel assembly. (10)

   (b) Discuss basic consideration of automobile safety in detail. (10)

UNIT - II

3. Explain the following (any four) : (20)

   (a) Centre point steering

   (b) Power steering

   (c) Ackermann's principle of steering.

   (d) Backlash in steering gears.

   (e) Directional stability of vehicle.

OR

4. (a) What is under - steering & oversteering? Discuss their effects on steering characteristics of a vehicle. (10)

   (b) Explain steering ratio. Describe different types of steering gears. (10)

UNIT - III

5. A conical friction clutch with cast iron contact surface transmits 130 H.P. at 1500 rpm. The cone angle is 20° & the coefficient of friction 0.20. If the mean dia of the bearing surface is 37.5cm. & the intensity of normal press is not to exceed 30 N/cm^2, find the breadth of the conical surface & the axial load required. (20)

OR

6. (a) What are hydraulic brakes? On what principle this braking system works? Describe its construction & working with the help of suitable diagram. (10)

(b) A multiplate friction clutch is required to transmit 72KW at 3600 rpm. The plates are alternately steel & phosphor bronze & they run in oil. The coefficient of friction is 0.071. The mean axial press is 0.14 N/mm^2 & the internal radius of the friction surface is 0.8 of the external radius, which is 125 mm. Find out the no. of plates required. (10)

UNIT - IV

7. (a) What is independent suspension system? Describe any one independent suspension system employed to modern day automobiles. (10)

   (b) On a downward slope of 1 in 30, a 50 KN bus rolls - down at 18kmph with its engine closed (non - operative) road resistance at this speed is just sufficient to prevent any acceleration. If the effective width & hight of the bus front is 2.0m.& 2.35 respectively, determine :-

   (i) Road resistance

   (ii) Power of the engine to run up the same slope at double the speed, when road resistance remains the same. (10)

OR

8. Write short notes on :- (20)

   (a) servo action of brakes.

   (b) self energization brakes.

   (c) shackles.

(d) Mechanical brakes

(e) Tandem brakes.

UNIT - V

9. Explain the following :- (20)

(a) Solenoid switch.

(b) Provision of windscreen nozzle on an automobile

(c) Emission control of automobile.

(d) Catalytic convertors.

OR

10. What is fuel pump? Explain in detail about the following with neat sketch :- (20)

(a) Mechanical fuel pump.

(b) Electrical fuel pump.

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