Total No. of Questions : 12]

SEAT No. :

P2668

[Total No. of Pages : 3

[5154]-38
B.E. (Mechanical)
AUTOMOBILE ENGINEERING
(2008 Pattern) (402045 A) (Elective - II) (Semester - I)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer 3 questions from Section -I and 3 questions from Section - II.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of electronic pocket calculator is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What are vehicle specifications? Describe specification of any one medium vehicle of your choice. **[8]**

b) What is chassis? What are the various components of chassis? Indicate their functions. **[8]**

OR

Q2) a) Discuss various types of car bodies and explain any one in details. **[8]**

b) Sketch a neat layout of a front wheel drive and explain its working. **[8]**

Q3) a) Describe with neat sketch function and working of multi-plate clutch. **[8]**

b) What is the purpose of clutch plate? Explain with sketch kinds of clutch plates used in automobile. Explain function of various components of it. **[8]**

OR

Q4) a) Describe the operation of non-slip differential used in automobiles. **[8]**

b) Explain with neat sketch the following: **[8]**

i) Epicyclic ii) Overdrive.

P.T.O.

Q5) a) Describe Live rear axle and Dead rear axle. **[6]**

b) Explain in detail construction features of tubed and tubeless tyres in vehicles. **[6]**

c) Sketch recirculating ball type steering gear and explain its working. **[6]**

OR

Q6) a) Explain how the wheel Alignment and its balancing performed in a service station. **[8]**

b) What do you understand from terms: Oversteering, Understeering, Cornering Force and Slip Angle? **[10]**

SECTION - II

Q7) a) Distinguish between independent suspension and conventional suspension system. **[10]**

b) Explain self leveling suspension system. **[8]**

OR

Q8) a) Classify Brakes and explain Anti-skid Braking System (ABS) with neat sketch. **[10]**

b) Explain Hydro gas suspension system in details. Also state its advantages over other brake system. **[8]**

Q9) a) Explain with neat sketch charging system used in automobiles. **[8]**

b) Explain in brief electrical car layout. **[8]**

OR

Q10)a) Describe vehicle electrical systems with neat labelled layout. **[8]**

b) Explain starting system used in automobile vehicle. **[8]**

Q11)a) List instruments used for active and passive safety in vehicles. Explain any two (either active or passive) of them in detail. **[8]**

b) Write note on Vehicle Performance Parameters. **[8]**

OR

Q12)a) Write note on Vehicle Performance Parameters **[6]**

b) The coefficient of rolling resistance for a truck weighing 62293.5 N is 0.018 & the coefficient of air resistance is 0.00281 in the formula $R = Kw + KaA\ V^2N$, where A is m^2 of frontal area and V. The speed in Km/h. The transmission efficiency in the top gear of 6.2:1 is 90% and that in second gear of 15:1 is 80%. The frontal area is 5.574 m^2. If the truck has to have a minimum speed of 88Km/h in the top gear, calculate : **[10]**

i) The engine B.P. required.

ii) The engine speed, if the driving wheels an effective diameter 0.8125m.

iii) The max grade the truck can negotiate at the above engine speed in second gear.

iv) The max drawbar pull, available on level road engine speed in second gear.