Total No. of Questions :10]

SEAT No. :

P3268

[Total No. of Pages :2

[5670]-537

B.E. (Mechanical)

AUTOMOBILE ENGINEERING

(2015 Pattern) (Semester-I) (End Semester) (Elective-II) (402045A)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***All questions carry equal marks.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data if necessary.***

Q1) a) Write a short note on current scenario in Indian Auto/ancillary industries. **[5]**

b) Explain with neat sketch of Overdrive. **[5]**

OR

Q2) a) Why the necessity of gear box? Explain the working principle of synchromesh type (Synchronizer) with neat sketch. **[5]**

b) Explain how the Wheel alignment and its balancing performed in a service station. **[5]**

Q3) a) Explain with neat sketch of rack and pinion type of steering gear box. **[5]**

b) What do you understand from terms: Centre point steering, cornering force angle & scrub radius? **[5]**

OR

Q4) a) Explain with neat sketch of rubber type of suspension. **[5]**

b) Explain with neat sketch of vacuum assisted brake. **[5]**

Q5) a) What are different types of resistance on vehicles and explain them. **[6]**

b) Explain with neat sketch of stability of vehicle. **[6]**

c) What is Vehicle testing on chasis dynamometer? What are the parameters can be measured on it? Explain any one parameter in details. **[6]**

OR

P.T.O.

Q6) a) A passenger car travelling at 80.45 KM/Hr. is accelerated up a gradient of 1 in 20. The gross vehicle weight is 11026.4N. It has a frontal area of 1.858 m^2 and the air resistance coefficient may be assumed as 0.0167. The rolling resistance is 221.7N. At the above speed, the engine develops 58.88 KW at engine speed of 4000 RPM. Rear axle ratio is 5:1 and transmission efficiency = 95%.

Calculate :

i) The total tractive resistance. **[3]**

ii) The tractive effort available at the wheel. **[3]**

iii) The acceeration while ascending the above gradient. **[3]**

b) Describe with neat sketch of seat belt and enlist their type. **[9]**

Q7) a) Explain with neat sketch of lithium battery. **[6]**

b) Explain the vehicle maintenance, and servicing chart for clutch and gear box. **[10]**

OR

Q8) Write the short notes on any four: **[16]**

a) Electronic Control Module.

b) Wind Screen Wiper.

c) Fuel & Oil Gauges.

d) Speedometer & Odometer

e) Positive and negative earth system

Q9) a) Write short notes of the following. **[8]**

i) Hybrid Vehicles. ii) Challenges & future scope

b) Explain with neat sketch Solar operated vehicles and gives its merits & demerits. **[8]**

OR

Q10)a) Explain with neat sketch of Electric vehicle layout, construction & working. **[8]**

b) How use of Evs, HEVs will affect environment & pollution issues in near future? **[8]**

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