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# SE-7475

## B. E. - IV (Sem - VII) (Mech.) Examination

**May / June – 2011**

## Automobile Engineering

*(Elective-I)*

Time : **3** Hours] [Total Marks : **100**

**Instructions :**

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
**Fillup strictly the details of ☛ signs on your answer book.**

Name of the Examination :

☛ **B. E. - IV (Sem - VII) (Mech.)**

Name of the Subject :

☛ **Automobile Engineering**

☛ Subject Code No. : **7 4 7 5** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Attempt all question.

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Use of calculator is permitted.

**1** (a) Answer the following. **10**

(i) What is the spring camber in suspension system?

(ii) Define air resistance.

(iii) Why parking brake is required ?

(iv) What are the advantages of front wheel drive ?

(v) Why two piece propeller shaft is better than single piece propeller shaft ?

(b) Explain various resistance accrued on auto vehicle. A trck weight is 45 kN, the frontal cross-section area is 4.2 square meter, which can operate on level road at a highest speed of 97 kmph. The mechanical efficiency is 93% and the transmission efficiency is 93%. Calculate the power required by the truck engine. **10**

**2** (a) Classify the types of brake. Discuss selection factor of brake. **7**

**OR**

(a) Explain with neat sketch vacuum brake. 7

(b) Write short note on independent front suspension system. 8

**OR**

(b) Discuss troubleshooting of suspension system with possible remedy. 8

3 Answer the following. (any **two**) 15

(i) Explain with neat sketch differential assembly system.

(ii) Write short note on design of hook joint.

(iii) Discuss troubleshooting of differential assembly system with possible remedy.

(iv) Write short note on design propeller shaft theory.

4 (a) Answer the following. 10

(i) Why gear box required in four wheel ?

(ii) Define clutch of auto vehicle.

(iii) State of type of ignition system in automobile.

(iv) Why free play provided in clutch ?

(v) What is difference between clutch and gear in automobile.

(b) Differentiate types of clutch. Following data are referred for single plate clutch : 10

Linings radios : Inner of 150 mm and Outer of 180 mm

The total spring force is 2.4 kN

Speed is 3500 RPM. Calculate maximum power transmitted.

5 (a) Explain troubleshooting of gear box. 7

**OR**

(a) Explain constant mesh gear box with neat sketch. 7

(b) Explain types of battery in auto vehicle.

**OR**

(b) Explain electronic ignition system. 8

6 Answer the following (any **two**) **15**

(i) Explain automotive transmission system.

(ii) Explain different type of engine use in automobile system.

(iii) Describe different type of engine use in power plant in automobile system.

(iv) The input shaft of an epicycle type gear box has two sun wheels each with 20 teeth splined to the shaft. Their corresponding annulie have 80 teeth each the out put shaft has sun running free on the shaft with 30 teeth, while the corresponding annulus has 60 teeth. Calculate first, second and reverse gear ratio.

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