

Sample Question Paper – I

COURSE : AUTOMOBILE ENGINEERING GROUP
COURSE CODE : AE
SEMESTER : FOURTH
SUBJECT : AUTOMOBILE SYSTEMS
MAX MARKS : 80

9057

TIME: 3 HOUR

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q 1: A) Attempt any FOUR of the following:

08 Marks

- a) Draw a neat sketch of Elliot Type stub axle.
- b) Define Turning Radius.
- c) What are the salient features of Saloon Car?
- d) Define Air Resistance.
- e) Define Gradiability.

Q.1: B) Attempt any TWO of the following:

08 marks

- a) State four properties of brake fluid.
- b) State any four advantages of independent suspension system over rigid axle suspension system.
- c) State four properties of the refrigerants used in HVAC system, name any two refrigerants used in car.

Q.2 : Attempt any THREE of the following:

12 Marks

- a) What is the effect of Camber on Steering control and tier wear.
- b) What is the function of the compressor and expansion valve in car HVAC system.
- c) Define – 1) Bouncing 2) Rolling.
- d) State two merits and demerits of Hydraulic braking system.

Q.3) : Attempt any TWO of the following:

12 Marks

- a) With a neat sketch explain the 'Ackermann steering Mechanism'
- b) Compare drum brake and disc brake with six important parameter.
- c) What is Torsion Bar? Where it is used? With a neat sketch explain its construction and working.

Q.4) : Attempt any FOUR of the following:

16 Marks

- a) Draw a neat layout of the Air Braking system & label all the parts.
- b) Explain inflation of 'Air bag' during a head of collision.
- c) State four advantages of power steering used in an automobile.
- d) What are the different human comfort conditions considered in car air conditioning
- e) With a neat sketch explain the operation of Telescopic type Hydraulic shock absorber.
- f) Explain the stability of a vehicle on slope.

Q.5) Attempt any TWO of the following:

12 Marks

- a) Explain the painting procedure during manufacturing of buses.
- b) With a neat sketch, explain the rack and pinion type steering gear box.
- c) Explain the working of a tandem master cylinder. Draw its neat sketch.

Q.6) Attempt any TWO of the following:

12 Marks

- a) With neat sketch explain the vapour compression cycle.
- b) Draw a schematic layout of air suspension system and explain its working.
- c) What are the materials used in body construction and discuss its suitability.