

Automobile Engineering
(ME-305, Dec. 2006)

Time: 3 Hours

Max. Marks: 60

Note: Question No. 1 is compulsory. Attempt any four questions from section B and two questions from section C.

Section-A

1. (a) List out various components of a chassis.
(b) What is piston displacement? How it is calculated?
(c) Sketch 4-cylinder Multi point Fuel injection systems.
(d) What is the thermostat? Describe the pellet-type thermostat.
(e) List out the different types of loads on the frame.
(f) Sketch torque converter.
(g) What is the difference between Elliot and reverse Elliot?
(h) Draw the line diagram of a Automobile Power Transmission system.
(i) Draw the Automobile Battery Charging Circuit.
(j) What is meant by engine tune-up.

Section-B

2. Explain "Mechanical fuel pump" working principle.
3. Sketch and explain the working of radiator cooling system for diesel truck engines.
4. Explain with a neat sketch about sliding mesh Gear box.
5. Define (a) Camber (b) Caster (c) King pin Inclination (d) Toe-in and Toe-out
6. Briefly describe the following:
 - (a) Self energizing brakes
 - (b) Disc brakes

Section-C

7. In four strata diesel engine, the following observations are taken during a test:
Bore 10 cm, Brake wheel dia-60 cm, Stroke 15 cm, Band thickness-5 mm, Speed 450 rpm, Load on band-21 kgs, Spring balance reading 3 kgs, Area of indicator diagram 4.15 cm², length of indicating diagram 6.25 cm, spring No. 13 ie, 11 kgs/cm²/cm, specific fuel consumption 0.22kg/BHP/hr, heating value of fuel 10,000Kcal/kg.
Determine BHP, IHP, Mechanical efficiency, Indicated thermal efficiency, brake thermal efficiency.
8. (a) What are the methods of fuel injection in Diesel engine? Explain.
(b) What are the different methods of Engine cooling systems? Explain water cooling systems.
9. (a) Explain the working procedure of a hydraulic braking system.
(b) Sketch and explain the salient features of a variable rate leaf spring.