Automobile Technology

Unit 1 Automobile Engines

3 Marks

1. What is an Engine?
    - An engine is a prime mover which converts heat energy into mechanical energy
    - Engine is heart of automobile

2. What are the types of Engines?
   Engines are of two types and they are externals combustion engines and internal combustion engines.
   External combustion engine: In externals combustion engines, the **combustion of fuel takes place outside the engines**—for example, the steam engine.
   Internal combustion engines: In internal combustion engines, the **combustion of fuels takes place insides the engine**.
   Two-stroke and four-stroke petrol & diesel engine are examples of an internal combustion engine.

3. List out Basic Engine components.
    - Cylinder block
    - Cylinder head
    - Gaskets
    - Crank case
    - Oil pan
    - Cylinder liners
    - Piston
    - Piston rings
    - Connecting rod
    - Crank shaft
    - Fly wheel

4. What is the function of Cylinder block?
    - Cylinder block is the main block of the engine which contains cylinders
    - It provides housing for the crank and cam shafts and other engine parts
    - It forms the basic frame work of the engine and other parts are attached to it
    - Cylinder blocks are made of alloy cast iron and Now a days aluminum alloy cylinder blocks are being widely used in mopeds and cars

5. What is the purpose of Gaskets?
    - In the engine, the gasket is placed between the cylinder head and cylinder block to prevent leakage, to ensure metallic tight fit joint and also to maintain compression in the cylinder.
    - The gasket should be able to withstand the high pressure and extreme temperature.

    - Gaskets are placed
        - Between the cylinder head and the cylinder block
        - Between crankcase and oil pan.
        - In the cylinder block and manifold.

6. What is Crank case?
    - The oil pan and the lower part of the cylinder block together is called crank case
    - It acts as the case of the engine.
    - It supports the crank shaft and cam shaft
    - Crank case is made of ferrous alloy or semi steel to provide stronger and harder casting

7. What is the function of Oil pan?
    - Oil pan or sump is used for storage of lubricating oil
    - A gasket is used between crankcase and oil pan.

8. What are Cylinder liners?
    - Liner is a bore or sleeve fitted into the cylinder block
    - The piston slides in the liner
    - A cylinder liner provides a smooth sliding surface that allows the reciprocating motion of a piston.

9. What is the main function of piston?
    - The function of the piston is to compress the fresh charge during the compression stroke and to transmit the force produced due to combustion of the charge to the connection rod
    - Piston is generally made of cast iron and aluminum alloy

10. Write a note on crank shaft.
    - Crank shaft converts the reciprocating motion of the piston into rotary motion.
    - The main parts of the crank shaft are crank pins, main journals, balance weights, webs and flywheel flange,
    - It contains oil passage for lubrication
    - Crank shaft is made of High carbon steel alloyed by copper, chromium and silicon

11. What is the function of the fly wheel?
    - Fly wheel is mounted on the crank shaft.
    - The function of the fly wheel is to maintain the speed fairly constant.
    - Fly wheel stores excess energy during the power stroke and returns it during the other stroke.

12. List out the types of cooling system
    - Air cooling system
    - Water Cooling system
        - Thermosyphon system
        - Pump Circulation system

13. What are the components of water cooling system
    1. Radiator
    2. Radiator pressure cap
    3. Fan
    4. Water pump
    5. Thermostat valve.

14. What is the purpose of radiator?
    - The purpose of the radiator is to cool the water received from the engine.

- The radiator consists of three parts upper tank, core and lower tank.
- Upper and lower tanks are joined by the core.
- Radiator is usually made of copper or brass in order to provide rapid dissipation of heat.

15. What are the types of radiator core?
    - Tubular with fins
    - Honey comb (or) Cellular

16. Explain thermostat valve.
    - Thermostat valve is a kind of check valve which opens and closes with temperature effect.
    - It helps in raising the temperature of coolant during cold season which warms the engine to bring it to the operating temperature.
    - Thermostat is located between the engine water outlet and radiator upper tank

17. What are the types of thermostats?
    - Bellows type thermostat
    - Wax type thermostat

18. What is lubrication?
    Lubrication is the process of reducing the friction between the moving parts

19. What is the purpose of Lubrication?
    - To reduce the friction between the moving parts
    - To minimize the wear and tear
    - To provide the cooling effect
    - To provide the cooling actions
    - Forms a good seal between piston rings and cylinder walls

20. List the properties of lubricants
    - Viscosity
    - Physical stability
    - Chemical stability
    - Resistance against corrosion

- Pour point
- Flash point
- Cleanliness

21. What is service ratings of oil?

    The lubricating oil is rated as to its viscosity by number. It is also rated by service designation.

    There are six service rating three for gasoline and three for diesel engines

22. What is SAE number?

    SAE means The Society of Automotive Engineers has recommended SAE Viscosity number for lubricating oils.
    Oils are classified as (i) Winter grades marked as W and (ii) Other than winter grades

23. What are the types of Lubrication system?
    - Petroil lubrication system
    - Splash Lubrication system
    - Pressure lubrication system
    - Semi pressure lubrication system

24. List the types of oil filters
    - Cartridge type
    - Edge type
    - Centrifugal type

25. What is the function of Oil Pumps?

    The function is to supply oil under pressure to the various engine parts. The pump is locates inside the crankcase below the oil level.

26. Mention the different types of oil pumps.

    1.Gear Pump
    2. Rotor pump
    3. Plunger pump
    4. Vane pump