Department of Mechanical Engineering
UBMC701 AUTOMOBILE ENGINEERING

QUESTION BANK

UNIT- I VEHICLE STRUCTURE AND ENGINES

Part A (Two Marks Questions)

1. Define Automobile. Give the typical specifications of an automobile
2. Name the fastest car and bike in the world.
3. What are the advantages of diesel engines in cars?
4. Why petrol engines are preferred for two wheelers?
5. Why not diesel engines are not preferred in commercial?
6. State the advantage of Uni body construction over Body on frame.
7. State the advantage of front engine rear wheel drive.
8. Differentiate between front wheel drive and rear wheel drive.
9. Where and why four wheel drives is used?
10. Define chassis, frame, body and suspension
11. What is chassis? How its design is related to vehicle aerodynamics?
12. List of the forces acting on a chassis frame
13. What are the functions of frame?
14. Why is the frame narrow at front?
15. What are the stresses to which the frame members are subjected to?
16. What are the types of frames?
17. State the requirements of bodies for various types of vehicles.
18. Differentiate between Coupe and Sedan car body types.
19. Name the different kind of resistances to vehicle motion
20. State the factors that affect the rolling resistance of a vehicle.
21. What is the need for gearbox in an automobile?
22. State the function of a clutch.
23. What is the material used for construction of piston and piston ring.
24. State the function of flywheel.
25. Sate the difference between carburetor and fuel injector

Part B (Six Marks Questions)

1. Differentiate between BoF vs UNI body construction of a Vehicle.
2. Explain integral and semi integral type vehicle body construction.
3. Explain with suitable reasons for usage of front engine rear wheel drive for most of the Vehicle layout
4. Explain about all wheel drive with suitable sketch
5. Draw a simple sketch of a solid frame with front engine and rear drive. Locate major components of the engine on the frame.
6. What are the different loads acting on chassis and explain briefly?
7. Discuss the factors that affect the resistances to vehicle motion

8. Justify the need of a gear box with suitable sketch
9. State any six engine components function, material and method of its manufacturing
10. Give reasons (i) For using single cylinder two stroke petrol engines on two wheelers.
    (ii) For using multi cylinder diesel engines in commercial vehicles.

Part C (Ten Marks Questions)

1. Briefly explain the different layouts of vehicle construction
2. Explain front engine rear wheel drive's salient features, advantage and disadvantages.
3. Compare and contrast rear engine rear wheel drive lay out with front engine rear wheel drive.
4. Explain the construction of various frames used in automobiles with neat sketch.
5. Explain vehicle experiences different resistance in its motion
6. List the engine parts with their functions, materials and method of its manufacture with neat sketch

UNIT II ENGINE AUXILIARY SYSTEMS

Part A (Two Marks Questions)

1. What are the compensating devices used in a simple carburetor?
2. State the different types of Carburetors with suitable example
3. Mention few drawback of simple carburetor.
4. State the advantage of gasoline injection system for SI engines
5. What type of fuel hose to be used for fuel and oil injection in automobile
6. What factors affect the Torque control module in EMS of Electronically injected gasoline engine
7. What is main purpose of fuel injection system in CI engine
8. What are the sequence of operation in unit injector
9. What are actuators in ECU?
10. What is the function of spark plug?
11. State the working principle of magneto coil ignition system
12. Differentiate between battery and magneto ignition system
13. What is the advantage of CRDi system
14. State the advantage of electronic ignition system
15. What are the different types of electronic ignition system,
16. State the advantage of distributor less ignition system
17. Why do we need to use superchargers in engines?
18. State the difference between turbocharger and supercharger.
19. What is a catalytic convertor? State its uses.
20. State the reactions that take place in three way catalytic convertor.

Part B (Six Marks Questions)

1. Explain the functioning of simple carburetor
2. Explain gasoline injection system
3. Write a short note on electronic control unit

4. Explain battery coil ignition system
5. Explain the working of ignition system with its own electric generator to provide the required necessary energy for the vehicle system
6. Discuss the merits and demerits of electronic ignition system
7. Explain rotary distributor pump system of diesel injection in CI engines.
8. Explain distributor less ignition system
9. Explain the functioning of turbocharger with a suitable sketch.
10. Explain the construction of three way catalytic converter system with a neat sketch

Part C (Ten Marks Questions)

1. With a neat sketch explain the electronically controlled gasoline injection system for SI engine
2. Describe CRDi system in detail
3. How electronically controlled unit diesel injector system function
4. Explain the key features and working principle of electronic ignition system
5. Explain the construction and working of Turbocharger with a neat sketch
6. Explain engine emission control by three way catalytic converter system

UNIT III TRANSMISSION SYSYTEMS

Part A (Two Marks Questions)

1. State the functions of clutch.
2. What is the function of pressure plate in a clutch?
3. What are the different types of clutches?
4. Write the main function of gear box.
5. What are the functions of universal joint?
6. State the function of differential unit.
7. What is meant by differential lock?
8. What is a fluid coupling?
9. State the functions of slip joint.
10. What is the function of a propeller shaft?
11. What are the requirements of an automotive transmission?
12. What are the requirements of a clutch?
13. What are the types of gear box?
14. What is the use of torque convertor?
15. State the forces act on the rear axle.

Part B (Six Marks Questions)

1. Explain the single plate clutch with neat sketch.
2. Explain the working of a cone clutch
3. Explain the operation of centrifugal clutch.
4. Explain the working principle of synchromesh gear box with neat sketch.
5. Explain the gear shift mechanism of a typical gear box.

6. Explain the working principle of fluid flywheel with neat sketch and mention the limitations.
7. Explain the principle of working of torque convertor with neat sketch
8. Explain the working of universal joint with neat sketch.
9. Explain the purpose and working of differential unit
10. What are the functions of a Hotchkiss drive? Compare its merits with torque tube drive.

Part C (Ten Marks Questions)

1. Explain the semi centrifugal clutch with neat sketch.
2. Explain the working of sliding mesh gear box with neat sketch
3. Explain the working of a constant mesh gear box.
4. Explain the construction and working of a differential unit with neat sketch.
5. Explain the working principle of torque tube drive with neat sketch.
6. Explain the working principle of hotch kiss drive with neat sketch.

UNIT IV STEERING, BRAKES AND SUSPENSION SYSTEMS

Part A (Two Marks Questions)

1. Define wheel track and wheel base.
2. Give a brief note on damper.
3. Distinguish between disc brake with drum brake.
4. What is meant by bleeding of brakes?
5. Define steering gear.
6. What are the four types of wheels?
7. What is the purpose of Toe -in and Toe-out?
8. What are the different types of tyres used in automobile?
9. What are the different types of springs used in suspension system?
10. Define king pin inclination.
11. Give the function of tyre?
12. Define caster and camber.
13. What are the benefits of anti -lock brake system?
14. What is Pneumatic and Hydraulic Braking Systems in a Automobile?
15. What do you understand by Traction control?

Part B (Six Marks Questions)

1. Sketch and explain various steering geometries
2. Explain with the help of simple diagram the different types of stub axles.
3. Explain a typical power steering system
4. Explain the wheel alignment system
5. What is the necessity of a steering gear box?
6. Explain the working of shock absorber with neat sketch
7. Explain the working of torsion bar with neat sketch.
8. Explain the working of rear independent suspension system with neat sketch

9. Explain the working of front independent suspension system with neat sketch.
10. What are the objectives and components of suspension system

Part C (Ten Marks Questions)

1. Explain the steering geometry with neat sketch.
2. Explain the Ackerman principle of steering with neat sketch.
3. Explain the working of power steering with neat sketch.
4. Explain the working principles of hydraulic brake with neat sketch.
5. Explain the pneumatic or air brakes with neat sketch.
6. Write short note on ABS and Traction control.

UNIT V ALTERNATIVE ENERGY SOURCES

Part A (Two Marks Questions)

1. State few alternative source of energy?
2. What is a fuel cell?
3. Write the composition of LPG and CNG.
4. Define detonation and pre-ignition.
5. What is the need for CNG?
6. State the use of Natural gas as source of chief fuel
7. What is Gasohol? State its uses
8. What is bio-diesel? State its uses
9. What is bio-ethanol? State its uses
10. List the advantages of hydrogen fuel used in automobiles.
11. What is a hybrid vehicle?
12. What are the advantages of an electric car?
13. What are the advantages of hybrid system?
14. State the advantages of fuel cell.
15. What are the types of fuel cell?

Part B (Six Marks Questions)

1. How bio diesel is produced? Explain and its usage in automobiles.
2. What is Liquefied Petroleum Gas? How is it produced? Explain LPG in details.
3. Why gasohol is used in automobile?
4. Explain the use of Hydrogen as a fuel to CI engine
5. Explain the usage of gasohol fuel in automobiles.
6. What modification is done for efficient utilization of renewable energy
7. State the functioning of fuel cell.
8. Explain the construction and lay out of Hybrid Vehicles
9. Explain the working of an electric car.
10. State the advantages and disadvantage of use of renewable source of energy.

Part C (Ten Marks Questions)

11. Discuss the operation of an LPG propelled vehicle with neat sketch.
12. Compare bio-diesel with diesel engine in Performance ,Combustion and Emission Characteristics
13. Explain the Performance ,Combustion and Emission Characteristics of CI engines with these alternate fuels
14. Explain the operation of hydrogen fueled vehicle with neat sketch.
15. Explain the working principle of fuel cell with neat sketch.
16. Explain the concept of hybrid vehicles with neat sketch.