

III B. Tech II Semester Regular Examinations, July -2023
AUTOMOBILE ENGINEERING
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks

UNIT-I

1. Explain the different lubrication systems and discuss the main parts of the lubrication systems. List out its advantages and disadvantages. [14M]
(OR)
2. a) Explain briefly about the defects in chassis frame. [7M]
b) Differentiate between turbo charging and super charging. [7M]

UNIT-II

3. a) With help of neat sketch, explain the construction and operation of Hotchkiss Drive. [7M]
b) Explain the working principle and application of a free wheel drive in a Transmission system. [7M]
(OR)
4. a) Explain in detail about any one type of Synchromesh Gear Box with neat Sketches. [7M]
b) What are the effects of wheel bearing layout on axle loading? [7M]

UNIT-III

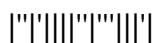
5. a) Discuss air suspension system with a sketch. [7M]
b) How wheel alignment done in automobiles? Explain. [7M]
(OR)
6. a) Explain the construction and working of davis steering gear mechanism. [7M]
b) Define camber, castor, king pin rake angles and their significance in steering Geometry. [7M]

UNIT-IV

7. a) Briefly discuss the functional requirements of braking fluids. [7M]
b) Explain Compensated voltage control with the help of a diagram. [7M]
(OR)
8. a) Draw and explain in detail with a simple sketch, working of master cylinder in braking system. [7M]
b) Draw and explain with relevant circuit diagram, working of a windscreen wiper In a automobile. [7M]

UNIT-V

9. a) Briefly explain how engine specifications logically guide a customer while purchasing a new vehicle [10M]
b) Why engine service is required? [4M]
(OR)
10. Discuss briefly inspection and repair procedures for engine crank shafts in automobiles [14M]



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UNIT-I

1. Explain with neat sketches the various types of chassis & discuss their advantages and disadvantages. [14M]

(OR)

2. a) Explain how a four wheel drive mechanism offers better power transmission in a automobile [7M]
b) With the help of a neat sketch explain Splash Lubrication system? [7M]

UNIT-II

3. a) Explain about centrifugal clutch with neat diagram? [7M]
b) Explain about sliding mesh and synchro mesh gear boxes with neat diagrams? [7M]

(OR)

4. a) What are the features of a good quality clutch? Explain the working of multi plate clutch with a neat sketch. [10M]
b) Why is double clutching technique used? [4M]

UNIT-III

5. Explain the working of principle in rigid axle suspension system with neat diagram. [14M]

(OR)

6. Discuss the working of a diagonal braking system with a layout. Also explain the working of master cylinder in a hydraulic brake. [14M]

UNIT-IV

7. a) Explain the operation of Hydraulic braking system with neat sketch. [7M]
b) What is meant by tandem cylinder? How is better than a master cylinder? [7M]

(OR)

8. a) Explain with a simple sketch, working of Bendix mechanism in an automobile. [7M]
b) What is the difference between ABS and Normal braking system? [7M]

UNIT-V

9. a) How effective are seat belts and explain why is it safer to wear seat belts. [7M]
b) What are suspension sensors and explain how these improve comfort levels in a automobile? [7M]

(OR)

10. a) Explain how air bags work and why it is essential in an automobile. [7M]
b) Discuss in detail the service details for the engine piston-connecting rod assembly [7M]



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UNIT-I

1. a) Draw the layout of four-wheel drive and list its advantages and disadvantages. [7M]
b) Explain the working principle of turbocharger with neat sketch. [7M]
(OR)
2. a) What is engine lubrication? Explain the splash lubrication system with neat sketch. [7M]
b) Explain the oil filters and oil pumps. [7M]

UNIT-II

3. a) Explain the working principle of cone clutch with neat sketch. [7M]
b) Write short note on wheels and tyres. [7M]
(OR)
4. a) With the help of a neat sketch, explain the construction and operation of a sliding mesh gear box. [7M]
b) What are the functions and requirement of propeller shaft? Explain in detail. [7M]

UNIT-III

5. a) Explain the Ackerman principle of steering with neat sketch. [7M]
b) Explain the working of shock absorber with neat sketch. [7M]
(OR)
6. a) With reference to the steering system explain the purpose of Camber, Caster and Toe in with neat sketch. [7M]
b) What are the objectives of suspension system? [7M]

UNIT-IV

7. a) Discuss the function & working of a Master cylinder assembly in brake system with a sketch. [7M]
b) Write short note on solenoid switch and engine temperature indicator. [7M]
(OR)
8. a) Explain the working of pneumatic brakes with neat sketch. [7M]
b) Write short note on horn and wiper. [7M]

UNIT-V

9. a) Discuss in detail the specifications of automobile engine. [7M]
b) Explain the electronic dash board instruments. [7M]
(OR)
10. a) Discuss in detail about the safety system. [7M]
b) Write short note on fuel flow sensor and oxygen sensor. [7M]



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UNIT-I

1. a) What are the main components of an automobile? Describe all of them briefly. [7M]
b) Explain the working principle of super charger with neat sketch. [7M]
(OR)
2. a) Draw the layouts of automobile chassis and explain its significance. [7M]
b) Describe the pressure lubrication system with neat sketch. [7M]

UNIT-II

3. a) What is need for clutch and gear box in an automobile? Explain the principle of magnetic clutch. [7M]
b) Discuss in detail about the different types of wheels and tyres with respect to construction, advantages and disadvantages. [7M]
(OR)
4. a) With the help of a neat sketch, explain the construction and operation of a sliding mesh gear box. [7M]
b) Explain Torque tube drive with neat sketch. [7M]

UNIT-III

5. a) Sketch and explain various steering geometries. [7M]
b) Sketch and explain the working of torsion bar. [7M]
(OR)
6. a) Explain the steering linkage with suitable sketch. [7M]
b) Describe the working of front independent suspension system with neat sketch. [7M]

UNIT-IV

7. a) What are the essential differences between mechanical brakes and hydraulic brakes? [7M]
b) Write short note on lighting system and oil pressure gauge. [7M]
(OR)
8. a) Explain the working of bendix drive. [7M]
b) Discuss the working of vacuum brakes with neat sketch. [7M]

UNIT-V

9. a) What are the sensors and actuators used in automobiles? Explain the purpose of each. [7M]
b) Write short note on air bags. [7M]
(OR)
10. a) Describe in detail about the automobile engine service. [7M]
b) What is CPU? Explain the computer memory used in automobiles. [7M]

