

G 1162

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2012**

**Eighth Semester**

Branch : Mechanical Engineering

**AUTOMOBILE ENGINEERING (M)**

(Regular/Supplementary)

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. Make a sectioned sketch of a petrol engine piston and name its various parts.
2. Discuss in detail the water cooling system for automotive engines.
3. Explain briefly the four wheel type transmission.
4. What is an over drive? What are its advantages?
5. What do you understand by the terms toe-in and toe-out?
6. Differentiate clearly between functions of spring and a shock absorber.
7. Sketch the layout of an air brake system.
8. Discuss the various safety measures employed in automobiles.
9. Explain in detail the procedure for the preparation of heat balance sheet for an engine.
10. Draw a simple circuit for automobile starting system.

(10 × 4 = 40 marks)

**Part B**

*Each question carries 12 marks.*

11. (a) What are the objects of lubricating an engine? Explain different methods of engine lubrication.  
(b) Describe with the help of sketches, various shapes of combustion chambers for petrol engines.

*Or*

12. (a) Discuss various valve timing technologies.  
(b) Describe the functions, materials used and the construction of a connecting rod and a piston pin.

**Turn over**

13. (a) Explain the construction and working of centrifugal clutch.  
(b) What are the desirable features of planetary gears for transmitting power?

*Or*

14. (a) Discuss in detail the construction and operation of a differential.  
(b) Distinguish between semi-floating and fully-floating rear axles.
15. (a) With sketches, explain the details of live rear axles.  
(b) Sketch a steering linkage for a vehicle with independent suspension.

*Or*

16. Explain briefly air suspension system.
17. (a) Explain the functions of drum and brake lining in the brake mechanism.  
(b) What are the types of tyre skeletons (car cassettes)? Explain them with sketches.

*Or*

18. (a) Sketch the layout of a car air-conditioning system.  
(b) What is meant by self locking tendency of brakes? What factors help this to occur?
19. (a) Explain clearly various methods to improve engine performance.  
(b) Describe in detail various steps involved in complete trouble shooting and fault rectification in an automotive petrol engine.

*Or*

20. (a) Discuss the advantages of electronic ignition system compared to the conventional electrical ignition systems.  
(b) Explain the term "ignition timing" and describe in detail the procedure for adjusting the same in an automobile engine.

(5 × 12 = 60 marks)