

II B .Tech. I Semester Regular Examinations, November -2005

AUTOMOBILE ENGINEERING-I

(Automobile Engineering)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Describe briefly the development of the automobile industry in India.
(b) Explain general types power plants. [8+8]
2. (a) Distinguish between four stroke S.I. Engine and four stroke C.I. engine.
(b) Explain with a neat sketch the working principle of wankel rotary engine. [6+10]
3. (a) Explain various design considerations for Piston rings. What factors would you consider for selecting rings of an engine?
(b) What are the functions of engine inlet and exhaust manifolds. [10+6]
4. Describe the functions, materials used and the construction of a connecting rod and a piston pin. Explain also various methods of connecting these two, stating their merits and demerits. [16]
5. (a) With the help of simplified diagram, explain the construction and working of fuel gauge.
(b) Explain the merits and demerits of a down-draught types of carburettor over other types. [8+8]
6. (a) What is the function of a hand primer? Where is it located?
(b) Describe the construction and working of an in-line fuel injection pump. Explain clearly how fuel supply is controlled with such an injection pump. [6+10]
7. (a) Discuss different types of lubricants. Explain the terms blending and compounding.
(b) Explain how would you service the lubricating system of an automotive engine. [8+8]
8. Write short note on the following: [4+4+4+4]
 - (a) S U carburettor
 - (b) Oil pumps
 - (c) Distributor type fuel pump
 - (d) V-Engine.

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1. (a) Explain in what respects C.I. engines are superior to S.I. engines.
(b) For the same power which engine will you prefer single cylinder engine or multi cylinder engine? Why? [8+8]
2. (a) Describe with neat sketches the working of two stroke petrol engine.
(b) Draw actual port timing diagram for 2-S Petrol engine and explain its significance. [6+10]
3. Describe the construction and working of sleeve and the rotary types of valves. Discuss briefly the relative merits of the sleeve, the rotary and the Poppet valves. [16]
4. (a) State the relative merits and demerits of the detachable and the integral types of cylinder heads.
(b) Explain with the help of simple sketches the working of the compression and the oil control rings. [6+10]
5. (a) Discuss the effect of altitude on the performance of a Carburettor. What methods are used for compensation in carburettors used for aeroplanes?
(b) What do you understand by accelerating of an engine? Explain the working of an accelerating device used in carburettor. [8+8]
6. (a) What are the specific requirements of fuel injection system used in compression ignition engines?
(b) Enumerate the various types of governors used in diesel engines and explain with a sketch, the working principle of any one them. [10+6]
7. (a) Why is a relief valve used in the lubrication system.
(b) Explain the working of the full pressure lubrication system with the help of a neat sketch. [6+10]
8. Write short note on the following: [4+4+4+4]
 - (a) Importance of low viscosity oil
 - (b) Fuel injection pump
 - (c) Wankel Engine
 - (d) Mufflers.

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1. (a) What are the physical differences between S.I. and C.I. Engines.
(b) Explain the reasons for using multi cylinder diesel engine for commercial vehicles. [8+8]
2. (a) Enumerate the relative merits and demerits of 2-S engines over 4-S engines.
(b) What are the various methods of Scavenging? Explain any one of them. [8+8]
3. (a) Why is mono block construction for cylinder blocks preferred over the individual cylinder design.
(b) Discuss in detail various types of Piston failure. Give suggestions to avoid the same. [6+10]
4. Enumerate the main parts of an automobile engine and explain the function of each component. [16]
5. (a) Explain the working of a S.U. carburettor with neat sketch and its limitations.
(b) Explain briefly the triple venturi system in carburetors. [10+6]
6. (a) How is the maximum amount of fuel intake controlled in a distributor type injection pump.
(b) What is the necessity of a cold starting device in a diesel engine? Discuss in detail various types of cold starting devices for automotive use. [6+10]
7. (a) What are the causes of high oil consumption with respect to lubrication system.
(b) Explain the construction of an oil strainer with the help of neat sketch. [6+10]
8. Write short note on the following: [4+4+4+4]
 - (a) Variable compression engine
 - (b) Multi point injection system
 - (c) Multiple unit pump
 - (d) Wet sump lubrication.

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1. (a) Explain the working of four stroke C.I. engine.
(b) On what basis are automobile engines classified? [8+8]
2. (a) Give details about classification of engines based on valve arrangement.
(b) Draw the actual valve timing diagram for 4-S C.I. engine and explain its significance. [6+10]
3. (a) State the material requirements for an exhaust valve.
(b) Discuss the various types of drives for operating engine cam shaft. [6+10]
4. State the functions which a piston in an automobile engine cylinder is required to perform. Discuss various methods used to avoid piston slap. [16]
5. (a) Describe the working of zenith carburettor with neat diagram and its merits compared to S.U. carburettor.
(b) Explain the various methods used with single jet carburettor for compensation. [8+8]
6. (a) What is turbulence and how is it introduced in diesel engines.
(b) Describe with neat sketches the working of a fuel pump used in high speed diesel engines. [6+10]
7. (a) What is the necessity of lubrication in an engine.
(b) Enlist the different types of additives used and explain their functions. [8+8]
8. Write short note on the following: [4+4+4+4]
 - (a) Sterling engine
 - (b) Manufacturing process of connecting rod and crank shaft
 - (c) Dry sump lubrication
 - (d) Inlet manifolds.
