

**IV B.Tech I Semester Regular Examinations, November 2006**  
**AUTOMOBILE ENGINEERING**

( Common to Mechanical Engineering and Production Engineering)

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) Give classification of Internal Combustion engines. [6]  
(b) How does a two-stroke engine differ from a four-stroke engine? [10]
2. (a) Explain the working of an idling system in a carburetor. [8]  
(b) What is an economizer used in float type carburetor. Explain the functioning of any one type. [4+4]
3. (a) Explain the working of pressure search radiation cap. [4+4]  
(b) What are the general troubles with water cooling system. [4+4]
4. Write notes on the :
  - (a) Troubles of ignition system [8]
  - (b) Explain the working vacuum advanced mechanism. [8]
5. (a) Explain briefly the lighting system provided in a car and functions of each unit [4+4]  
(b) Explain clearly the operation of the turn signal light unit [4+4]
6. (a) Differentiate between cone clutch and single plate clutch. [8]  
(b) What are the general troubles with clutches and give their remedies. [8]
7. (a) Sketch and explain the construction and working of torsion bar. [4+4]  
(b) Describe the various types of leaf springs. [4+4=8]
8. (a) Arrange the following in correct sequence the path of force transmission from the steering wheel to the front wheels in a steering system: Steering knuckle, arm drag link, steering wheel, pitman arm, steering gear, tie rod, steering column, steering arm, front wheels and stub axle. [8]  
(b) Explain the various steering troubles and suggest their remedies. [4+4]

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1. Sketch a chassis of any four wheeler and mark various parts on it. Explain the functions of various components of automobile. [8+8]
2. (a) What are the types of air filters used in petrol engines? Describe them. [4+4]  
(b) What is meant by air fuel ratio? Give the requirements of air fuel ratio in an automobile engine for different conditions. [4+4]
3. (a) Explain the reason for cooling an IC engine. [4]  
(b) What are the various characteristics of an efficient cooling system. [4]  
(c) Draw a sketch of cooling water system and name the various parts. [4]
4. (a) Explain with a neat sketch of capacitance discharge ignition system. [4+4]  
(b) Discuss the effect of spark advance on pressure-crank angle diagram. [8]
5. (a) What is the importance of temperature indicator [8]  
(b) Explain the working of a temperature indicator used in automobile engines. [8]
6. (a) List out the functions to be performed by the transmission system of an automobile. [8]  
(b) Explain the arrangements by which engine power is transmitted to the wheels. [8]
7. (a) Describe the working of a propeller shaft based in rear wheel driven passenger cars. [8]  
(b) Explain the working of a planetary and sun wheel assembly in a differential. [4+4]
8. Describe the Ackermann and Davis Steering Mechanisms. What are their relative merits? [8+8]

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3. (a) Explain the purpose of a radiator. [4]  
(b) Describe the types of radiator cores. [8]  
(c) Explain the details of servicing of radiator. [4]
4. (a) Briefly discuss the various factors which will affect the ignition timing. [8]  
(b) Briefly discuss the main factors before deciding the optimum firing order of an engine. [8]
5. (a) What is the importance of indication of lubricant oil pressure? [8]  
(b) Explain the working of oil pressure indicator. [8]
6. (a) With the help of a neat sketch, explain the construction and operation of a constant mesh gearbox. [4+4]  
(b) What do you mean by double-declutching? Explain how and why it is done? [4+4]
7. (a) Sketch and explain the construction and working of torsion bar. [4+4]  
(b) Describe the various types of leaf springs. [4+4=8]
8. (a) State the principle and derive equation for correct steering of a vehicle [4+4]  
(b) Sketch and explain Ackermann steering mechanism. [4+4]

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1. (a) What is blow by? What are the results of blow by? [3+3]  
(b) What is crankcase ventilation? Explain positive crankcase ventilation system with a neat sketch. [3+3+4]
2. (a) What is to be done for timing the injection pump in diesel engine? [4]  
(b) What are the causes for no supply of fuel in a jerk type injection pump. [6]  
(c) Describe the testing of d fuel injection system. [6]
3. (a) Sketch and explain the working of water pump. [4+4]  
(b) Describe Troubles of cooling systems and their remedies. [4+4]
4. (a) Explain the following:  
    i. Firing order [4]  
    ii. ignition advance [4]  
(b) What are the requirements of a good sparkplug. [8]
5. (a) What is meant by recharging battery? When and how the battery is recharged. [4+4]  
(b) Explain the Bendix drive starting mechanism with neat sketch. [4+4]
6. (a) List out the functions to be performed by the transmission system of an automobile. [8]  
(b) Explain the arrangements by which engine power is transmitted to the wheels. [8]
7. (a) Explain the working of a Hoatch kiss diagram. [4+4]  
(b) Explain the working differential in an automobile. [4+4]
8. Describe the Ackermann and Davis Steering Mechanisms. What are their relative merits? [8+8]

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