Code No: RR321405 **Set No. 1**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
AUTOMOBILE ENGINEERING
(Mechatronics)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With neat sketches describe different types of car bodies. [5+5=10]
   (b) Explain the loads on chassis frame. [6]
2. (a) Give the basic components of fuel system in a petrol engine and describe the functions of each. [4+4]
   (b) Explain the working of a A. C. mechanical fuel pump. [4+4]
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 working of Centrifugal advance mechanism with the help of neat sketch. [5+5]
   (b) Explain the function of lead-acid storage Battery. [6]
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) Explain the working of cone clutch used in an automobile with a neat sketch. [4+4]
   (b) How a single plate clutch is better compared to cone clutch. [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. (a) Sketch and explain the construction and working principle of the Recirculating Ball type steering gear. [5+5]
   (b) What requirements are expected in a good steering system. [6]

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Code No: RR321405 **Set No. 2**

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November/December 2005
AUTOMOBILE ENGINEERING
(Mechatronics)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) On a hilly track, performance of a rear wheel driven vehicle is superior compared to front wheel drive vehicle. Explain the reason. [7]
   (b) Describe different types of chassis frames. [4+5]
2. (a) What are the functions of a carburetor? [4]
   (b) Show the mixture strength requirement for different speeds on a graph. [4]
   (c) Explain the working principle of a simple carburetor. [4+4]
3. (a) Explain the working of Evaporating Cooling System. [4+4]
   (b) Name the components of water cooling system and explain in detail. [4+4]
4. (a) What are the important requirements of high voltage ignition source for the spark ignition process. [8]
   (b) Sketch and explain the working of capacitor in the ignition system. [4+4]
5. Explain the constructional differences and working of DC generator and an alternator. Discuss the relative merits of them in automobile applications. [8+8=16]
6. (a) Describe the constructional features of a clutch disc. [4+4]
   (b) Explain the working of a centrifugal clutch. [4+4]
7. (a) What is a differential lock? Describe its operation with the neat sketch.[4+4]
   (b) Describe the working of a three Quarter floating type rear axle. [8]
8. Describe the Ackermann and Davis Steering Mechanisms. What are their relative merits? [8+8]

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Code No: RR321405 **Set No. 3**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
AUTOMOBILE ENGINEERING
(Mechatronics)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the important basic components of an IC engine? Explain them briefly. - [6+10]

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) Sketch and explain the working of water pump. [4+4]
   (b) Describe Troubles of cooling systems. and their remedies. [4+4]

4. (a) What are the advantages of Battery ignition system one magneto coil ignition system. [8]
   (b) Explain the difference between hot plug & cold plug. [8]

5. (a) Explain the construction and working of an automotive ac generator. Why ac-generators are popular comparing dc-generator? [4+4+2]
   (b) Explain briefly the problems that may be encountered with the operation of an alternator. [4]

6. (a) Differentiate between cone clutch and single pate clutch. [8]
   (b) What are the general troubles with clutches and give their remedies. [8]

7. (a) Sketch the sectional view of the tyre and explain its various parts. [4+4]
   (b) Discuss the constructional details of a cross ply tyre. [4]
   (c) What are the functions of tyres? [4]

8. (a) Explain clearly how the King-Pin inclination produces directional stability? [4]
   (b) Explain why do the front wheels have to toe-out in turns? [4+4]
   (c) Explain what is meant by center point steering. [4]

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Code No: RR321405 **Set No. 4**

III B.Tech II Semester Supplementary Examinations,
November/December 2005
AUTOMOBILE ENGINEERING
(Mechatronics)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is cam? How does it operate an engine valve? [2+2]
   (b) Sketch an engine valve and name its different parts. [4+4]
   (c) What is tappet clearance? Why is it necessary? [2+2]
2. (a) What is the importance of injection timing? How is it changed in diesel engines? [4+4]
   (b) Explain the constructional features of pintle nozzle and pintaux nozzle. [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. (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 principle of a generator? Give its constructional details [4+4]
   (b) Explain the working of a cutout relay as used in the charging circuit [8]
6. (a) Explain the construction and working of synchromesh type gear engagement with a sketch and list out its advantages. [4+4+4]
   (b) Describe the working of a gear selector mechanism. [4]
7. (a) Explain the working of a Hoatch kiss diagram. [4+4]
   (b) Explain the working differential in an automobile. [4+4]
8. (a) Explain Clearly the procedure of bleeding of hydraulic brakes. [4+4]
   (b) Explain the function of master cylinder. [4+4]

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