

Code No: 07A62402

R07**Set No. 2**

III B.Tech II Semester Examinations, APRIL 2011
AUTOMOTIVE ELECTRICAL AND AUTOTRONICS
Automobile Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. What are the different types of batteries? Briefly describe the construction of a lead-acid battery. [2+14]
2. (a) Explain port injection and throttle body injection systems.
 (b) Explain with a layout "electronically controlled unit injectors". [8+8]
3. (a) What is the purpose of an ignition system in a petrol engine?
 (b) What are the requirements of an ignition system for an IC Engine?
 (c) Enumerate the basic ignition systems and describe any one of them. [2+6+8]
4. (a) Write the applications of 1's complement and 2's complement in digital computers.
 (b) Convert the following numbers to given bases:
 i. $(56)_8$ to base 6
 ii. $(172)_9$ to base 3. [8+8]
5. Discuss the construction and working of a combined vibrating voltage and current regulator. How is the temperature compensation achieved in such a regulator? [16]
6. (a) Discuss the merits and demerits of 12 volt battery system.
 (b) Draw and explain wiring diagram for automatic wiring system. [8+8]
7. Explain the operation of bimetal-thermostat (thermal) type temperature gauge with a neat diagram. [16]
8. The content of a 4 - bit register is initially 1101. The register is shifted six times to the right with the serial input being 1011101. What is the content of the register after each shift? [16]

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R07**Set No. 4**

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Answer any FIVE Questions
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1. (a) Enumerate various components of a electronic injection system and mention their functions.
(b) Write a short note on throttle body injection system. [10+6]
2. (a) Explain the design of high voltage automotive cables.
(b) Draw the wiring diagram for automotive wiring systems. [8+8]
3. (a) Describe the hexadecimal system. Explain how hexadecimal numbers can be converted into decimal numbers and vice-versa.
(b) Convert the following decimal numbers into equivalent hexadecimal numbers:
 - i. 12229
 - ii. 10009
 - iii. 7994
 - iv. 9885 [8+8]
4. Discuss about various auxiliary lighting systems in automobile system. [16]
5. Describe how a shift register may be employed to receive data with the most-significant bit first and later transmit data with least-significant bit last. [16]
6. (a) Discuss the working of a zinc-air battery and its advantages over the conventional types.
(b) "Battery is the heart of electrical system in an automobile". Explain.
(c) What are the major components of the automotive electrical system? [8+4+4]
7. Explain briefly spark advance mechanism. [16]
8. What is the necessity of generator out put control? Discuss various methods of achieving the same. [16]

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R07**Set No. 1**

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Automobile Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Explain with a neat diagram the operation of a electronic speedometer. [16]
2. (a) Mention various types of gasoline injection systems.
(b) Write a comprehensive note on "D-MPFI and L-MPFI" system. [10+6]
3. (a) What are the differences between alternator and d.c generator for automotive use.
(b) Write a note on the following :
 - i. Generator maintenance
 - ii. Function of charging system in an automobile. [8+8]
4. (a) Show with the help of a sketch the construction of a storage battery .Explain the chemical action in it.
(b) How a battery is rated? What is 20-hour rating? Explain. [10+6]
5. Explain the working of a ripple counter. What are its disadvantages? [16]
6. (a) List various electronic ignition systems in use. Describe any one of them clearly stating its advantages over the conventional ignition system.
(b) Differentiate between hot spark plug and cold spark plug. [12+4]
7. Perform the following arithmetic operations with decimal numbers using signed -10s complement representation for negative numbers.
 - (a) $(-638) + (+785)$
 - (b) $(-638) - (+185)$ [16]
8. What is the difference between the earth return and insulated return? Explain the purpose of providing earth return and insulated return systems. [16]

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R07**Set No. 3**

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AUTOMOTIVE ELECTRICAL AND AUTOTRONICS
Automobile Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) What is half subtractor? Write down its truth table. How does it produce the borrow output.
 (b) What is XOR gate? Discuss it with its truth table. [8+8]
2. (a) Describe the hexadecimal system. Explain how hexadecimal numbers can be converted into octal numbers and vice-versa.
 (b) Convert the following hexadecimal numbers into equivalent decimal numbers:
 i. CE
 ii. EEE
 iii. ECE
 iv. AE [8+8]
3. (a) With the help of neat sketches, describe the external out put control of generator.
 (b) If the dynamo fails to charge, what items should be examined?
 (c) What is the purpose of the voltage regulator? [8+6+4]
4. (a) What is the main difference between the battery and electronic systems?
 (b) Explain briefly with a neat sketch the vacuum spark advance mechanism.
 (c) What is meant by heat range of spark plug? [6+8+2]
5. (a) List the various components of a starter motor unit and explain their functions briefly.
 (b) For what purpose is the solenoid used in a starting circuit? Explain.
 (c) What is the function of a starter motor? [8+4+4]
6. (a) Explain the operation of wind screen wiper signaling device.
 (b) With a neat diagram explain the principle of operation of oil pressure gauge. [8+8]
7. Discuss in detail about the maintenance and servicing in auto electrical systems. [16]
8. What are the different troubles experienced in an automotive battery? Discuss their causes, effect on the battery and suggest suitable remedies for them. [16]
