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10AU64

Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Automotive Electrical and Electronic Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1
 - a. Explain the construction and working of a Lead – acid battery. (08 Marks)
 - b. Describe various tests that can be conducted on a Battery. (08 Marks)
 - c. Write a note on Nickle – Cadmium cell. (04 Marks)
- 2
 - a. Describe with a neat sketch, the principle of a DC generator. (08 Marks)
 - b. What is Armature reaction? Explain in brief. (06 Marks)
 - c. Explain voltage regulator, with a neat diagram. (06 Marks)
- 3
 - a. Describe various torque terms related to cranking motor. (06 Marks)
 - b. Explain with a neat sketch, a standard Bendix drive. (08 Marks)
 - c. List the causes and remedies for the following :
 - i) Armature fails to rotate.
 - ii) The engine cranks slowly but does not start.
 - iii) Solenoid plunger chatters. (06 Marks)
- 4
 - a. With a neat sketch, explain Battery – coil Ignition system of a 4 – cylinder SI engine. (08 Marks)
 - b. What are the requirements of a good spark plug? Sketch and explain the construction details of a spark plug. (08 Marks)
 - c. Write a note on : Electronic spark timing and control. (04 Marks)

PART – B

- 5
 - a. Differentiate between earth return and insulated return systems. (04 Marks)
 - b. What is Head light dazzle? List the reasons and remedies. (06 Marks)
 - c. Explain the working of : i) Wind screen wiper ii) Temperature gauge. (10 Marks)
- 6
 - a. With a neat diagram, explain and typical air conditioning circuit in detail. (08 Marks)
 - b. What are the functional requirements of a heating and ventilating system? Explain plenum chamber effect of ventilation. (08 Marks)
 - c. Write a note on seat heaters. (04 Marks)
- 7
 - a. Explain Combined Ignition and fuel management system, with a block diagram. (10 Marks)
 - b. With a block diagram, describe the complete vehicle management system. (10 Marks)
- 8
 - a. What is ABS? Mention its requirements. (06 Marks)
 - b. With a neat diagram, explain the sensors used in an Active Suspension System. (08 Marks)
 - c. Write short notes on : i) Central locking ii) Seat belt tensioner. (06 Marks)

Important Note: 1. You can supplement your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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Sixth Semester B.E. Degree Examination, June/July 2016
Auto Electrical and Electronics System

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Briefly discuss about the selection and positioning of battery used in automotive vehicle. (06 Marks)
 b. Explain the factors affecting the charging battery. (04 Marks)
 c. With sketch, explain the working principle of lead acid battery with equation of chemical reaction. (10 Marks)
- 2 a. List out the requirements of charging system. (05 Marks)
 b. Why road trucks get more life out of their generator brushes as compared to a car. (05 Marks)
 c. Explain with full circuit, working principle of alternator. (10 Marks)
- 3 a. List out the factors influencing the ability to reach the minimum speed of starter motor in automotive vehicle. (05 Marks)
 b. With neat sketch, explain the Bendix drive (inertia drive) construction and working principle. (10 Marks)
 c. Mention the advantages of electronic control starter. (05 Marks)
- 4 a. Explain with neat sketch, electronic ignition system used in a car and list out the advantages of same. (10 Marks)
 b. What is MBT timing? Why ignition advance angle cannot be more than 30 – 40° degrees. (10 Marks)

PART – B

- 5 a. With necessary sketches, explain the head light aiming and leveling. (07 Marks)
 b. Explain the following with circuit :
 i) Engine cooling fan (low and high speeds)
 ii) Wind screen wiper with rain module. (10 Marks)
 c. Briefly discuss about dynamic bending of head light. (03 Marks)
- 6 a. List out any five functional requirements of heating and ventilation system. (05 Marks)
 b. With the suitable sketch, explain the construction and working principle of air conditioning system used in vehicle. (10 Marks)
 c. Describe briefly about the screen heater with time relay, with neat circuit diagram. (05 Marks)
- 7 a. List out the emission control techniques used for the reduction of oxides of nitrogen. (04 Marks)
 b. Explain the complete vehicle control system with block diagram. (10 Marks)
 c. With suitable sketch, explain the hydrogen fuel cell used in automotive vehicle. (06 Marks)
- 8 a. With suitable diagram, explain the working principle 3-channel ABS, used in passenger car. (10 Marks)
 b. List out the various methods of traction control and compare them with suitable graph of wheel slip with time. (05 Marks)
 c. Explain the infrared central locking system used in car with circuit. (05 Marks)



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10AU64

Sixth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Auto Electrical and Electronic System

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1
 - a. With a neat sketch, explain the construction and working of a lead acid battery. (08 Marks)
 - b. Explain how specific gravity of electrolyte is a direct indication of the state of charge of the battery. (04 Marks)
 - c. Write down a trouble shooting chart of Automotive lead acid batteries with Defects, Causes and Remedies. (08 Marks)
- 2
 - a. Explain with circuit diagram, series, shunt and compound wound generators. (09 Marks)
 - b. With a circuit diagram, explain the need for third brush regulation in generators. (06 Marks)
 - c. What are the advantages of Alternators over DC generators? (05 Marks)
- 3
 - a. What are the requirements of a cranking system for starting an engine? (04 Marks)
 - b. Explain the terms :
 - i) Engine breakaway Torque ii) Engine resisting Torque iii) Motor loaded Torque
 - iv) Motor driving Torque. (06 Marks)
 - c. Show with a neat sketch, the difference in the operational principle of Inertia type and pre engaged type cranking motor. (10 Marks)
- 4
 - a. Explain with a neat sketch conventional battery Ignition system. (08 Marks)
 - b. With a block diagram, explain Distribution Ignition System. (06 Marks)
 - c. What are the advantages of programmed Ignition system over conventional Ignition system? (06 Marks)

PART - B

- 5
 - a. Explain Balancing coil type fuel gauge, with the help of a wiring diagram. (07 Marks)
 - b. Write a short note on Fuses and Circuit breakers. (04 Marks)
 - c. What are the advantages of Electric fuel pump? Draw a neat sketch of an Electric fuel pump naming all its components. (09 Marks)
- 6
 - a. What are the functional requirements of a typical heating and ventilation system? (05 Marks)
 - b. Explain with a neat sketch, how heating and ventilation is accomplished in a car. (08 Marks)
 - c. What are the requirements of seat heaters? Discuss an view of the passenger comfort. (07 Marks)
- 7
 - a. Explain various Engine design parameters for exhaust emission control. (10 Marks)
 - b. What is Artificial Intelligence? Explain with relevance to Automotive Engineering taking Adaptive Ignition system as an example. (10 Marks)
- 8
 - a. What are the benefits of ABS? Explain the function of each component with a neat sketch of ABS. (08 Marks)
 - b. Draw a block diagram of an Active Suspension System. (05 Marks)
 - c. With a block diagram, explain the working of Traction Control System. (07 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
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Sixth Semester B.E. Degree Examination, June/July 2015
Auto Electrical and Electronic Systems

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1
 - a. Explain with neat sketch construction and working of lead acid battery. (08 Marks)
 - b. What do you mean by battery rating? Explain different battery ratings. (08 Marks)
 - c. Write causes and remedies of following battery faults:
 i) Sulphation ii) Loss of electrolyte. (04 Marks)
- 2
 - a. With a neat sketch, explain working of D.C. generator. (10 Marks)
 - b. Write advantages of alternator over D.C. generator. (05 Marks)
 - c. What is the need of cutout relay in charging system? Explain its construction and working. (05 Marks)
- 3
 - a. Explain suitability of series motor for engine cranking. (05 Marks)
 - b. What are the requirements of starting system? (05 Marks)
 - c. List out different types of starting motor drives. Explain any one of them with neat sketch. (10 Marks)
- 4
 - a. Sketch and explain battery ignition system for a multicylinder engine. (10 Marks)
 - b. What are the advantages of electronic ignition system over conventional ignition system? (04 Marks)
 - c. With block diagram, explain "Distributor less" ignition system. (06 Marks)

PART – B

- 5
 - a. Explain earth return and insulated return wiring system. (04 Marks)
 - b. Explain construction and working of
 i) Electrical fuel pump ii) Temperature gauge. (10 Marks)
 - c. Explain working of wind screen wiper with neat sketch. (06 Marks)
- 6
 - a. Explain functional requirements of heating and ventilation system used in automobile. (05 Marks)
 - b. With neat sketch, explain basic air-conditioning or refrigeration cycle. (10 Marks)
 - c. Write a short note on seat heaters. (05 Marks)
- 7
 - a. Explain effect of various engine design parameters on engine emissions. (10 Marks)
 - b. Explain complete vehicle control with block diagram. (10 Marks)
- 8
 - Write short notes on:
 - a. Antilock brakes
 - b. Central locking
 - c. Active suspension
 - d. Air bags.

Wherever required draw neat sketches. (20 Marks)

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