CS/B.Tech(AUE-OLD)/SEM-6/AUE-601/2013

2013

AUTOMOTIVE ELECTRICAL SYSTEM & ELECTRONICS

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10X1 = 10

i) Important part of the Head Light Reflector is

a) Principal axis

b) Pole

c) Focal point

d) Focal length.

ii) Working principle of Electronic Ignition System based on

a) triggering of SCR

b) movement of Fly Wheel

c) discharging of Capacitor

d) charging Capacitor.

iii) Engine overheating can be due to

a) Late ignition timing

b) Early ignition timing

c) Low battery

d) Hgih voltage setting.

iv) The Horn has

a) vibrating contact point

b) an electromagnet

c) a vibrating diaphragm

d) all of these.

v) The commutator segments in d.c. generator are separated from each other by

a) Paper

b) Mica

c) Varnish

d) none of these.

vi) For the headlight aiming the car on a level floor will take position from the screen about

a) 10 m

b) 12.2 m

c) 7.6 m

d) 6.7 m.

vii) In case of Horn the number of vibration per second determines the

a) frequency of the sound

b) pitch of the sound

c) loud warning signal

d) all of these.

viii) In a d.c. motor unidirectional torque is produced with the help of

a) brusher

b) commutator

c) end plates

d) both (a) & (b).

ix) In d.c. generator armature reaction is produced actually by

a) its field current

b) armature conductor

c) field pole winding

d) load current in armature.

x) The oxygen sensor used in automobiles is

a) voltage generating sensor

b) resistive sensor

c) digital sensor

d) either (a) or (b).

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3X5 = 15

2. Enumerate the various troubles of the ignition system you will face during running a vehicle.

3. Write notes on electric horn and headlight dazle of an automobile.

4. Derive the power flow diagram in case of d.c. motor.

5. How many types of sweitches are used in a vehicle ? Describe them.

6. What are the open-loop and closed-loop systems ? Derive the transfer function open loop and closed-loop systems.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3X15 = 45

7. a) A 220 V d.c. series motor is running at a speed of 800 r.p.m. and draws 100 A. Calculate at what speed the motor will run when developing half the torque.

Total resistance of the armature and field is 0.1 ohm.

Assume that the magnetic circuit is unsaturated.

b) What is commutator ? 12 + 3

8. Write short notes on any *three* of the following : 3 5

a) Speedometer-Odometer

b) Wiper system

c) Cut-out relay

d) Lighting relay

e) Altitude sensor.

9. a) What is relay ? Why is it useful ?

b) Explain faults of ignition system.

c) With schematic diagram, describe the working principle of Electronic Ignition System. 2 + 3 + 10

10. a) Explain the armature reaction in case of d.c. generator.

b) Show and discuss the characteristic of d.c. shunt motor. 9 + 6

11. a) Give the brief description of Three Point Starter. Why is it useful in the starting period of d.c. motor ?

b) What is slip ring ? Why is it useful ? 11 + 4

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