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	Utech
Name :	
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Invigilator's Signature :	

CS/B.Tech (AUE)/SEM-6/AUE-601/2010 2010

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)

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Choose the correct alternatives for the following:

 $10 \times 1 = 10$

- i) In case of horn, the number of vibrations per second determines the
 - a) frequency of the sound
 - b) pitch of the sound
 - c) loud warning signal
 - d) all of these.
- ii) Example of first category switch in a car is
 - a) Cut-out
- b) Ignition

c) Radio

d) both (b) & (c).

6023 [Turn over

CS/B.Tech (AUE)/SEM-6/AUE-601/2010

Operation of Electronic Ignition System depends iii) Capacitive discharge principle a) b) Movement of flywheel c) Current flow in input coil none of these. d) For the hand lamp aiming, the car on a level floor will take the position from the screen about 10 m a) b) 12·2 m 7.6 m c) d) 6.7 m. Which one is applicable for wiper system? v) Transformer b) a) Servo motor D.C. motor. Stepper motor d) c) vi) The main part of headlight is a) Principal axis b) Focal length Pole d) Reflector. c) vii) Odometer records a) speed of a car quantities of fluid b) total distance the car has travelled c)

d)

none of these.

2



viii) In case of d.c. motor unidirectional torque is produced by

- a) Armature
- b) Field magnet
- c) Slip-ring
- d) Commutator.
- ix) In a d.c. motor, motor speed can be varied
 - a) by varying supply voltage
 - b) by varying armature current
 - c) by varying field current
 - d) both (a) & (b).
- x) Engine overheating can be due to
 - a) late ignition timing
- b) low battery
- c) early ignition timing
- d) high voltage setting.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

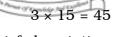
- 2. What is open-loop system ? Derive the transfer function of closed loop system. 1+4
- 3. With a torque-speed characteristic explain the operation of *d.c.* series motor.
- 4. Write a short note about head lamp aiming.
- 5. Cut-out relay is working only for charging period but not for discharging period. Explain.
- 6. Explain power flow diagram of a d.c. motor.

CS/B.Tech (AUE)/SEM-6/AUE-601/2010

GROUP - C

(Long Answer Type Questions)

Answer any three of the following.



- 7. a) With proper circuit diagram give the brief description about Horn.
 - b) Write a short note on Lighting Relay. 9 + 6
- 8. a) What is eletronic ignition system? With proper circuit diagram describe the working principle of Electronic Ignition System (EIS).
 - b) What is relay? Why is it useful for automobile engineering?
- 9. a) Describe Wiper System of a car.
 - b) Draw the circuit layout for total lighting system of a vehicle. 5 + 10
- 10. a) We are using 3-point starter at the starting period of d.c. motor. Why? Explain.
 - b) What is critical resistance of a d.c. generator?
 - c) What is residual magnetism?
 - d) Draw and explain the characteristics of shunt wound generator. 3 + 2 + 2 + 8
- 11. Write short notes on any *three* of the following : 3×5
 - a) Speed Sensor
 - b) Stepper Motor
 - c) Commutation
 - d) Split Ring
 - e) Speedometer.

6023 4