



**B.E DEGREE EXAMINATIONS: MAY 2015**

(Regulation 2009)

Fifth Semester

**AUTOMOBILE ENGINEERING**

AUE109: Automotive Electrical & Electronics

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The level of electrolyte in automobile battery should be
  - a) 15mm below the top of plates
  - b) 5-10mm below the top of plates
  - c) Exactly at the level
  - d) 10-15mm above top of plates
2. When the plates of battery cell are made larger in size, we get increased
  - a) Current
  - b) Voltage
  - c) Current and Voltage
  - d) Rating
3. The purpose of a generator in an automobile is to
  - a) Supply electric power
  - b) Convert mechanical energy into electrical energy
  - c) Act as a reservoir of electrical energy
  - d) Continuously recharge the battery
4. The cut-out is provided in the automobile charging circuit to
  - a) Connect the battery and generator when battery voltage is higher than the generator voltage
  - b) Disconnect the battery and the generator when the battery voltage is lower than the generator voltage
  - c) Connect the battery and the generator when the battery voltage is lower than the generator voltage
  - d) Disconnect the battery and the generator when the battery voltage is higher than the generator voltage
5. For a spark plug M14×1.25, the last figure 1.25 stands for
  - a) Tip width in mm
  - b) Gap between electrodes in mm
  - c) Size of plug thread
  - d) Pitch of plug thread
6. Ignition timing of a multi- cylinder petrol engine can be adjusted by
  - a) Rotating the crank
  - b) Adjusting the spark plug gap

- c) Adjusting ignition coil position                      d) Rotating the distributor
7. A 4 cylinder 4 stroke engine running at 3000 rpm requires
- a) 3000 sparks/m    b) 600 sparks/m
- c) 12000 sparks/m    d) 6000 sparks/m
8. The secondary voltage of a battery coil ignition system is
- a) 12v    b) 24v
- c) 20000v    d) 1000v
9. Which of the following lamps in a car will have the least voltage?
- a) Head light bulbs    b) Stop light bulb
- c) Parking light bulbs                                        d) Ignition warning light
10. CTS means
- a) Coolant Temperature Sensor                            b) Cycle Temperature Sensor
- c) Coolant Thermostat Sensor                            d) Chain Tension Sensor

**PART B (10 x 2 = 20 Marks)**

11. Mention the advantages of lead-acid battery.
12. Define battery plate sulphation.
13. What is meant by third brush regulation?
14. Why series type starter motors are preferred?
15. Differentiate hot and cold spark plugs.
16. Enlist the advantages of magneto ignition system.
17. What do you mean by non-contact type ignition system?
18. Explain about digital ignition system.
19. State the functions of speedometer and odometer.
20. Distinguish between earth return and insulated systems.

**PART C (5 x 14 = 70 Marks)**

21. a) i) Explain the constructional details of lead acid battery. (7)
- ii) Discuss the working of a lead acid battery during charging and discharging process with chemical equations. (7)
- (OR)**
- b) Explain the salient features of the following batteries:
- i) Nickel – Cadmium batteries, and (7)
- ii) Sodium Sulphur batteries. (7)

22. a) i) Explain the requirements of starter motor. (7)  
ii) Describe the starter drive mechanism with neat sketch. (7)

**(OR)**

- b) Discuss the constructional and working aspects of single phase and three phase alternators.

23. a) Draw the wiring diagram for the battery coil ignition system of a six cylinder SI engine and explain the working of it.

**(OR)**

- b) With the aid of sketches explain the working of centrifugal and vacuum advance mechanisms.

24. a) Explain the capacitive discharge ignition and distributor-less ignition systems with neat wiring diagrams.

**(OR)**

- b) Discuss fully electronic ignition system and its control strategy.

25. a) i) Explain in detail about the head light dazzling and its preventive measures. (8)  
ii) Sketch and describe the working of electronic fuel feed pump. (6)

**(OR)**

- b) i) Discuss in detail about the positive and negative earth systems with their merits and limitations. (6)  
ii) Explain the working of oil pressure and fuel level indicators. (8)

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