KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Fifth Semester

AUTOMOBILE ENGINEERING

AUE109**:** Automotive Electrical and Electronics

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. How are batteries rated?
   a) AHr b) WHr/kg
   c) WHr d) volts
2. Pick the odd one out from the applications of Li-ion battery
   a) Laptop b) EV
   c) Mobile phones d) UPS
3. The purpose of the regulator in the charging system
   a) engine speed b) fuel consumption
   c) generator input d) generator output
4. The motor which is not used as starter motor is
   a) Series b) Permanent magnet motor
   c) Induction motor d) Compound motor
5. A spark is created as the coil primary winding is:
   a) switched on b) switched off
   c) charged d) stabilized
6. Cruising conditions require the ignition timing to be:
   a) retarded b) reversed
   c) allocated d) advanced
7. Advantage of fuel injection in DTS-Fi is
   a) Increased power output for same CC b) High fuel delivery and optimization of spark timing
   c) reduced communication of fuel system malfunctioning d) Higher emission

8. Which gives highest possible fuel efficiency?

a) DTS-Si b) DTS-Fi

c) DTS-i d) DTS-i triple spark engine

9. Which system is the best preferred earthing system?

a) Earth return system b) Positive earth system

c) Insulated earth system d) Negative earth system

10. Technician A says the choice of cable size depends on the voltage it will have to carry. Technician B says as a rule of thumb, one strand of 0.3 mm diameter wire will carry 0.5A safely. Who is right?

a) A only b) B only

c) Both A and B d) Neither A nor B

PART B (10 x 2 = 20 Marks)

11. What is reserve capacity of a battery?
12. Why ordinary water is not used in an electrolyte?
13. Give the purpose of ballast resistor.
14. State four advantages of a pre-engaged starter.
15. List the factors that affect the life of a spark plug.
16. List out some of the problems encountered in the contact points of ignition system.
17. Write the merits of distributor less ignition system.
18. List the different electronic ignition systems and which one is the most preferred one especially for two wheelers? Why?
19. Give the significance of color codes in an automobile.
20. How do you reduce head light dazzling?

PART C (5 x 14 = 70 Marks)

21. a) (i) Mention the various battery charging methods adopted and elaborately explain them with relevant diagrams. (7)

(ii) How to choose a battery for a particular application? Give the performance parameter which influences the selection of a battery for specific application. (7)

(OR)

b) (i) With neat sketch and relevant equations explain the working of sealed lead acid batteries. (7)

(ii) Briefly explain the various tests done on batteries? (7)

22. a) (i) Explain the working of cutout relays and regulators. (7)

(ii) List the types of starter drive mechanisms. Explain any two types of starter drive mechanisms. (7)

(OR)

b) (i) Explain the construction and working of an alternator. (10)

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(ii) What may be the reasons for the failure of a generator which fails to produce the voltage? (4)

23. a) (i) Explain the components and working of a magneto ignition system in detail. Also compare it with the battery coil ignition system. (7)

(ii) How does a spark plug work? Explain the different types of spark plug available. (7)

(OR)

b) Elaborately explain the different ignition advance mechanisms and also explain how and when the timing is advanced or retarded?

24. a) (i) With neat sketch explain the working of Capacitor Discharge Ignition system. (7)

(ii) Make a clearly labeled sketch to show the operation of different pulse generators and explain them elaborately. (7)

(OR)

b) Explain the various types of digital ignition systems and the control strategies of electronic ignition system.

25. a) (i) With neat sketch explain the different lamps used in automobiles. (7)

(ii) Explain the construction and working of wiper motor. (7)

(OR)

b) (i) Write notes on : (a) Electronic fuel pump (b) Electrical horn (c) oil pressure gauge (7)

(ii) Explain the construction of head lamps. Explain the beam adjustments and settings. (7)

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