

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2125)

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B. Tech 5th Semester Examination
Automotive Electricals and Electronics (NS)

AU-312

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

- Note :** (i) Attempt any four questions from Section A, B, C and D by selecting at-least one question from each section. All questions carry equal marks i.e. 20 each.
- (ii) Section E is compulsory. All questions carry 2 marks each.

SECTION - A

1. Discuss various battery parameters in detail. Also give nominal battery parameters for any four types of automotive batteries. (20)
2. (a) Describe the effects of temperature on capacity, voltage and electrolytic specific gravity. (10)
- (b) Explain capacity of a battery, sulphation and desulphation of battery. (10)

SECTION - B

3. (a) List the various possible causes of ignition failure. (4)
- (b) What is meant by heat range of spark plug? Explain in detail. (8)

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- (c) Describe in detail about electronics ignition system used in modern vehicle. (8)
4. (a) Why the safety motor needs a drive mechanism? Explain. (10)
- (b) Why do low temperature stand to increase starting difficulties? (10)

SECTION - C

5. (a) Describe the operation of alternator and difficulties between alternator and DC generator. (10)
- (b) Describe principle construction and working of alternator generating system. (10)
6. (a) Enlist high and low voltage automotive cables with example. (5)
- (b) Explain insulated return system. (5)
- (c) Name the types of fuses in electrical system and explain the circuitry required for fusing system. (10)

SECTION - D

7. Explain the construction and working of wiper motor. Also explain how an electric horn works. (20)
8. (a) Obtain a binary code to represent all base-6 digits so that the 5's complement is obtained by replacing 1's by 0's and 0's by 1's in the bits of all code. (10)
- (b) Assign a binary code in some orderly manner to the 52 playing cards. Use the minimum number of bits. (10)

SECTION - E

9. (a) Name the tests conducted to ascertain the condition of battery.
- (b) What is the use of cut out?
- (c) How does a starter motor works?
- (d) What is the amperage needed for the starter?
- (e) Name the components of transistorized ignition system.
- (f) What is the use of condenser with ignition system?
- (g) What is the use of oil pressure gauge?
- (h) Implement X-NOR gate using NAND gate.
- (i) Write the principle of generation of direct current.
- (j) Define warm up cycle. (2×10=20)