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**200934**

**BACHELOR OF VOCATION**  
**Automotive Mechatronics**  
**Subject: Digital and Power Electronics**  
**Subject Code: ABEC-201**  
**Semester: Third**  
**September 2020**  
**Theory (External): 35 Marks**  
**Time: 03 hours**

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**INSTRUCTIONS TO THE STUDENTS**

1. Read the questions carefully and write the answers in the answer sheets.
2. Wherever necessary, the diagram drawn should be neat and properly labelled.
3. This questions paper comprises of 6 questions out of which student need to attempt any 3 questions.
4. All questions carry equal marks.
5. The time allotted will be 3 hours for examinations including time of downloading of question paper to emailing of answer books to the concerned Dean/IC.

## ESSAY TYPE QUESTIONS

1. a) Give the types of protection circuit for overvoltage.  
b) Explain the operation of AC circuit breaker with circuit diagram.
2. Discuss the applications of EX-OR gate.
3. Describe the basic principal of single phase to single phase step down cyclo converter for both continuous and discontinuous conduction.
4. Determine the minimum-cost SOP and POS expressions for the function  $f(x_1, x_2, x_3, x_4) = \sum m(4, 6, 8, 10, 11, 12, 15) + D(3, 5, 7, 9)$ .
5. Implement XOR gate and XNOR gate using 2:1 MUX.
6. Describe the principal of operation of 3 Phase inverter operating in 120° conduction mode with suitable diagram.

**\*\*\*\*\*End of Paper\*\*\*\*\***