BACHELOR OF VOCATION

Automotive Mechatronics

Subject: Digital and Power Electronics

Subject Code: ABEC-201

Semester: Third

January 2021

Theory (External): 35 Marks

Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 3 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

A. What do you mean by Demultiplexer?

B. Write principle of Digital Logic Circuit.

C. What do you mean by Digital Integrated Circuits?

D. Difference between SCR and TRIAC.

E. Explain rules of Demorgan's Theorem.

F. What do you mean by switching Device?

G. Explain working principle of MOSFET.

H. What do you mean by Snubber circuit?

I. State and explain Decoders.

J. Explain Current source inverter.

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Explain Number system and codes with conversion of each number system in details.

2. Minimize the following expressions using K-MAP and realize it using NOR gate only.
   - $f(A, B, C, D) = \sum m(0,1,3,4,5,7,10,13,14,15)$.

3. Explain different types of flip flop.

4. Explain Universal Properties of NAND and NOR Logic with examples.

5. Explain Multiplexer in brief and Design 8:1 Multiplexer with 4:1 Multiplexer

6. Sketch the I-V characteristics of IGBT& Diode.

7. What is cycloconverter? Describe Single phase to single phase circuit step up Cyclo converter.

8. Describe Single phase and three phase voltage source inverters and their applications.

*****END OF PAPER*****