

Examination 2022

Subject: Physics

Paper: MPH-E303

Paper Name: Digital electronics & Microprocessor

Time : 3 Hrs

Max. Marks:

70

Question paper is divided into two sections A & B. Attempt all sections. Answer the questions as per instructions given.

### SECTION – A

**Note: Attempt any five questions. Each question carries six marks.**

Q1. Simplify the following switching function using Karnaugh map method and realize expression using gates  $F(A,B,C,D) = \Sigma (0,3,5,7,8,9,10,12,15)$

Q2. Explain working of AND, NOR and EX-OR gates with truth tables.

Q3. Explain RAM and ROM.

Q4. Explain up and down counter.

Q5. How to write and execute a simple programme.

Q6. Sketch the flow chart and also differentiate between while and do-while loop

Q7. What is A/D converter? And also explain Voltage to frequency A/D converter.

Q8. Describe R-2R D/A conversion technique

Q9. What are multiplexer? Draw and explain 2:1 Multiplexer

Q10. Explain the working of weighted register D/A converter

### SECTION-B

**Note: Attempt any four questions. Each question carries ten marks.**

Q1. Using Boolean laws, simplify the following expressions and realize it by using logic gates.

i)  $Y = AB + A(B+C)$

ii)  $Y = (A+B)(A+\overline{B})(\overline{A} + C)$

Q2. Explain the working of BCD to Decimal decoder.

Q3. Explain master slave JK flip-flop with necessary diagrams and truth table.

Q4. Explain the architecture of 8085 microprocessor.

Q5. Draw the circuit of TTL NAND gate with totem-pole output and explain the operation.

Q6. What is controlled shift register? Explain with example the functioning of a Controlled shift register.

Q7. (i) What do you understand by accuracy and resolution of an A/D converter?

(ii) Draw the block diagram of a digital voltmeter and explain the working of the system.

Q8. What is a seven segment visible display? Show the following two lines in the conversion table from BCD to seven segment indicator: 0011 and 1001.