

- Instructions :** (1) Attempt **all** questions.  
(2) Make suitable assumption whenever necessary.

1. Answer the following multiple choice questions :

**15**

- (1) \_\_\_\_\_ gates are called Universal gates.  
(a) AND & OR (b) NAND & NOR  
(c) NOR & NOT (d) Ex-OR & Ex-NOR
- (2) Map also known as \_\_\_\_\_  
(a) K-Map (b) Karnaugh map  
(c) Key map (d) Both (a) and (b)
- (3) \_\_\_\_\_ is a logical circuit that converts  $n$  binary input data into  $2_n$  output lines.  
(a) Decoder (b) Encoder  
(c) Registers (d) Multiplexer
- (4) The decoded instruction is stored in \_\_\_\_\_.  
(a) IR (b) PC  
(c) Register (d) MDR
- (5) \_\_\_\_\_ circuit is also called Data Selector.  
(a) Multiplexer (b) De-Multiplexer  
(c) ALU Unit (d) Decoder
- (6) A flip-flop can store \_\_\_\_\_ of information.  
(a) 1 bit (b) 1 byte  
(c) Both (a) & (b) (d) None of these
- (7) \_\_\_\_\_ is used to store data in register.  
(a) D flip flop (b) JK flip flop  
(c) RS flip flop (d) Both (b) & (c)
- (8) PC program counter is also called \_\_\_\_\_.  
(a) Instruction Pointer (b) Memory Pointer  
(c) Data Counter (d) None of these
- (9) SP always refers \_\_\_\_\_.  
(a) Top of the stack (b) Bottom of the stack  
(c) Both (a) & (b) (d) First index of the stack
- (10) Prefix notation also called \_\_\_\_\_.  
(a) Infix (b) Suffix notation  
(c) Reverse Polish notation (d) Both (b) & (c)

- (11) CPU does not perform the operation \_\_\_\_\_.  
 (a) Data Transfer (b) Logic Operation  
 (c) Arithmetic Operation (d) All of these
- (12) Which is not a stack operation ?  
 (a) PUSH (b) POP  
 (c) PEEP (d) PULL
- (13) DMA stands for \_\_\_\_\_.  
 (a) Direct Memory Access (b) Direct Module Access  
 (c) Direct Message Access (d) Direct Multi Access
- (14) Multiplication of  $111 * 101$  is \_\_\_\_\_.  
 (a) 110011 (b) 100011  
 (c) 111100 (d) 000101
- (15) Division of 100011 by 101 is \_\_\_\_\_.  
 (a) 100 (b) 111  
 (c) 101 (d) 1010

2. Attempt any **five** of the following : **15**
- (1) Difference between Half-Adder & Full-Adder.
  - (2) What is Map simplification ?
  - (3) Explain Microprocessor chips.
  - (4) Explain Bidirectional shift register with example.
  - (5) Write a note on structure of 2D memory.
  - (6) Prove De Morgan's theorem.
3. Attempt any **three** of the following : **15**
- (1) What is Boolean algebra ?
  - (2) Explain Virtual Memory in detail.
  - (3) Explain IO Bus in detail.
  - (4) Differentiate : Synchronous and Asynchronous counter.
4. Attempt any **two** of the following : **15**
- (1) Explain 4-to-1 Multiplexer with circuit and logic diagram.
  - (2) Explain Comparator in detail.
  - (3) Explain Cache Memory in detail.
5. Attempt any **one** of the following : **10**
- (1) Explain D & JK flip flop with diagram & Characteristics table.
  - (2) Explain 8-to-3 line encoder with table & circuit.