

G-47-20

Roll No.....

Annual Examination, 2020

B.Sc Part II

INFORMATION TECHNOLOGY

Paper I

(Digital Circuits and Computer Hardware)

Time : 3 Hours]

[MAXIMUM MARKS : 50

Note : Section 'A' is Objective type and is compulsory. It should be written on the **first page** of Answer-book. Section 'B' is Short answer type and Section 'C' is Long answer type.

Section 'A'

(Multiple Choice Questions)

Choose the correct answer : **1×10=10**

1. Convert $(315)_{10}$ into its Hexadecimal equivalent :
(a) 1311 (b) 13B (c) 311 (d) 31B.
2. There are cells in a 3-variable k-map :
(a) 12 (b) 16 (c) 18 (d) 8.
3. A D flip-flop can be constructed from an
(a) S-R flip-flop (b) J-K flip-flop
(c) T flip-flop (d) S-K flip-flop.

P.T.O.

4. Decoder is type of circuit.
(a) Sequential circuit (b) Logical circuit
(c) Combinational circuit
(d) None of the above.
5. A latch is an example of a
(a) Monostable multivibrator
(b) Astable multivibrator
(c) Bistable multivibrator
(d) None of the above.
6. Which logic gate is basic gate of TTL logic family ?
(a) NAND (b) NOR (c) NOT (d) OR.
7. Cycle stealing is associated with :
(a) Data transfer among register (b) DMA
(c) Pipe lining (d) Microprogramming.
8. The interrupt-request line is a part of the :
(a) Data line (b) Address line
(c) Control line (d) None of the above.
9. is full form of CD-ROM.
(a) Core disk read only memory

- (b) Compact disk read only memory
 - (c) Circular disk read only memory
 - (d) None of the above.
10. In mapping, the data can be mapped anywhere in the cache memory.
- (a) Associative (b) Indirect
 - (c) Direct (d) Set Associative.

Section 'B'

(Short Answer Type Questions) 5×3=15

Note : All the **five** questions are compulsory.

1. Explain Fix point and Floating point representation.

Or

Find the complement of the following function :

$$F = x' \cdot y + x \cdot (y' + z).$$

2. Explain BCD adder.

Or

Draw and explain T flip-flop.

3. Define Astable and Bistable multivibrator circuit.

Or

Write short note on RTL, DTL and TTL.

4. Describe instruction formats.

Or

Explain interrupt and their types.

5. Write the difference between primary memory and secondary memory.

Or

Explain Associative Memory.

Section 'C'

(Long Answer Type Questions) 5×5=25

Note : All the **five** questions are compulsory.

1. Explain Universal Gates with suitable examples.

Or

Perform the following operations :

(a) $(2AC.BE)_{16} = (?)_{10}$

(b) $(101110)_2 = (?)_8$ (c) $(745)_8 = (?)_2$.

2. Describe encoder with example.

Or

Explain Binary counter and its types.

3. Explain Edge triggered Flip-Flop.

Or

Write short notes on the following :

- (a) CMOS (b) Schmitt trigger.

4. Explain data transfer techniques in detail.

Or

Explain DMA controller.

5. Describe the concept of virtual memory using paging.

Or

What is memory ? Explain memory hierarchy.

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