Reg. No. : .....

6620 **Q.P. Code : [17 SC 01 / 17 CA 01 / 17 IT 01 / 17 CTG 01/ 17 SS 01 / 17 MM 01]**

(For the candidates admitted from 2017 - 2019)

B.Sc. / B.C.A. DEGREE EXAMINATION, APRIL 2021.

First Semester

Part III — Computer Science / Computer Aplications / Information Technology / Computer Technology / Software System / Multimedia and Web Technology

DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE

Time : Three hours Maximum : 75 marks

Answer ALL questions.

SECTION A — (10 × 1 = 10 marks)

Choose the Correct answer:

1. An ——————— gate has two or more input signals but only output signal.

   (a) NAND (b) AND

   (c) OR (d) NOR

2. A full-adder is a combinational circuit that forms the arithmetic sum of ——————input bits.

(a) Three (b) Six

(c) Two (d) Four

3. A ——————— map is a visual display of the fundamental products needed for a sum-of-products solution.

(a) Associative (b) Direct

(c) Karnaugh (d) None of the above

4. A flip-flop is a binary cell capable of storing ——— bit of information.

(a) One (b) Two

(c) Four (d) Eight

5. A ——————command is used to test various status conditions in the interface and the peripheral.

(a) Control (b) Status

(c) I/O (d) Data output

6. Data transfer between an interface and an I / O device is commonly controlled by a set of ——— lines.

(a) Data valid (b) Data accepted

(c) Relay (d) Handshaking

7. A ———————— is a system that establishes a priority over the various sources to determine which condition is to be serviced first when two or more requests arrive simultaneously.

(a) Priority Interrupt

(b) Polling

(c) Program Status Word

(d) Vector Address

8. When the IOP terminates the execution of its program, it sends an ———————— request to the CPU.

(a) Information (b) Active

(c) Interval (d) Interrupt

9. Devices that provide backup storage are called ———————— memory.

(a) Main (b) Auxiliary

(c) Cache (d) Virtual

10. The part of the computer system that supervises the flow of information between auxiliary memory and main memory is called the ———————— system.

(a) Data management

(b) Information management

(c) Memory management

(d) I/O management

SECTION B — (5 × 5 = 25 marks)

11. (a) Convert the following binary numbers to decimal: 101110; 110110100

Or

(b) Write a note on Half Adder with suitable diagram.

12. (a) What is Karnaugh map? How do you simplify K map?

Or

(b) Narrate about JK flip-flop.

13. (a) Write short notes on Input-Output Interface.

Or

(b) Explain briefly about Strobe Control with appropriate sketch.

14. (a) Summarize about Priority Interrupt.

Or

(b) Make a note on Direct Memory Access (DMA)

15. (a) Briefly discuss about the importance of Main Memory.

Or

(b) What do you mean by cache memory? Explain.

SECTION C — (5 × 8 = 40 marks)

16. (a) Convert the hexadecimal number F3A7C2 to binary and octal.

Or

(b) Discuss about NAND and XOR gates with its truth table.

17. (a) Explain in detail about Product-of-Sums simplification with suitable example.

Or

(b) Elaborate about Multiplexers with neat diagram.

18. (a) Explain about I/O bus and Interface modules with suitable illustration.

Or

(b) With suitable diagram, discuss the concept of Handshaking.

19. (a) Describe about Daisy-chain priority interrupt with a neat sketch.

Or

(b) Explain in detail about CPU-IOP communication with suitable illustration.

20. (a) Give a detailed note on Memory Hierarchy.

Or

(b) Compare and contrast, Associative Mapping with Direct Mapping.

———————