

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Fourth Semester)

Branch – MATHEMATICS WITH COMPUTER APPLICATION

LOGIC CIRCUITS AND PC HARDWARE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 × 1 = 10)

- 1 A _____ gate gives the output as 1 only if all the inputs signals are 1.
(i) AND (ii) OR
(iii) EXOR (iv) NOR
- 2 Demorgan's theorem states that _____.
(i) $(AB)' = A' + B'$ (ii) $(A + B)' = A' * B$
(iii) $A' + B' = A'B'$ (iv) $(AB)' = A' + B$
- 3 Perform binary subtraction : $101111 - 010101 = ?$
(i) 100100 (ii) 010101
(iii) 011010 (iv) 011001
- 4 In 1-to-4 Demultiplexer, how many select lines are required?
(i) 2 (ii) 3
(iii) 4 (iv) 5
- 5 When both inputs of a J-K flip-flop cycle, the output will _____.
(i) Be invalid (ii) Change
(iii) Not Change (iv) Toggle
- 6 How many flip-flops are required to construct a decade counter?
(i) 4 (ii) 8
(iii) 5 (iv) 10
- 7 BIOS stands for?
(i) Basic Information Out System (ii) Basic Input/Output System
(iii) Basic Information Operating System (iv) None of the above
- 8 Computer mouse is also known as _____.
(i) Clicking device (ii) Moving device
(iii) Picking device (iv) Pointing device
- 9 Modern laptops are often called?
(i) Notebook (ii) Tower computers
(iii) Palmtops (iv) Tablet PCs
- 10 What is the most common battery used by today's laptops?
(i) Double AA batteries (ii) Nickel mental hybrid
(iii) Nickel cadmium (iv) Lithium – ion

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 5 = 25)

- 11 a. State and prove that associative laws.
OR
- b. Draw the logic OR gate and explain with truth table.

Cont...

12 a Show the binary addition $0001\ 1000\ 1111\ 0110 + 0000\ 1111\ 0000\ 1000$.

OR

b Explain the operation of half adder with circuit diagram.

13 a Elucidate the RS flip-flops with neat diagram.

OR

b Explain the ring counter operation with neat diagram.

14 a Describe about the installing and uninstalling of CPU.

OR

b Summarise the features of SMPS.

15 a Outline the features of laptop.

OR

b Explain about the process of replacing memory.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 8 = 40)

16 a Organize the NOR gate functions with its truth table.

OR

b Explain the karnugh map with examples.

17 a Elucidate the Multiplexers with neat diagram.

OR

b Describe the operations of full subtractor with logic diagram.

18 a Describe the parallel in parallel out shift register with neat diagram.

OR

b Explain the operation of Asynchronous counter with neat diagram.

19 a Describe the working principle of hard disk drive.

OR

b Explain the maintaining and troubleshooting of mouse.

20 a Discuss about the troubleshooting and maintaining laptops.

OR

b Summarise the common problems of laptop and solutions to rectify them.

Z-Z-Z

END