

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024  
(First Semester)

Branch – COMPUTER TECHNOLOGY

DIGITAL ELECTRONICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 The parity of the binary number 100110011 is \_\_\_\_  
(i) Odd (ii) even  
(iii) 8 (iv) 4
- 2 How does a logic gate function?  
(i) Using the flow of electric current  
(ii) Spontaneously  
(iii) None  
(iv) By using energy from a chemical reaction
- 3 The expression for Absorption law is given by \_\_\_\_\_  
(i)  $A + B = B + A$  (ii)  $A + AB = B$   
(iii)  $AB + AA' = A$  (iv)  $A + AB = A$
- 4 The number of full and half adders are required to add 16-bit number is \_\_\_\_\_  
(i) 8 half adders, 8 full adders (ii) 1 half adders, 15 full adders  
(iii) 16 half adders, 0 full adders (iv) 4 half adders, 12 full adders
- 5 Schmitt triggers used as \_\_\_\_\_  
(i) square wave generator (ii) comparator  
(iii) multiplexer (iv) square wave generator and comparator

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a. Convert the binary 11111110010 into a hexadecimal number.  
OR  
b. How to do decimal to binary conversion and convert 112 into binary?
- 7 a. State about the positive and negative logic.  
OR  
b. Outline about the XOR gate and its truth table.
- 8 a. Point out the important Boolean theorems.  
OR  
b. Examine the Maxterm and explain it with an example.
- 9 a. What is combinational logic circuit and state its its purpose?  
OR  
b. Define multiplexer and trace out the diagram of Multiplexer.
- 10 a. What is flip- flop and highlight the Master Slave Flip-flop?  
OR  
b. Discuss about the T Flip-flop.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a. Analyze the Error Detection Code and Error Correction Code.  
OR  
b. Identify the result of B divided by C, and the two binary numbers are  
B = 01101020110102 and C = 0101201012.
- 12 a. Categorize the types of Adders in detail.  
OR  
b. Elucidate the any three basic logic gates with diagrams and truth tables.
- 13 a. Examine the universal gates in detail with diagrams.  
OR  
b. Highlight about i) DeMorgan's theorem ii) Don't Care condition with examples.
- 14 a. How the Encoder and Decoder works?  
OR  
b. Discuss about the BCD adder in detail?
- 15 a. Compare the flip flops RS Flip-flop and JK Flip-flop.  
OR  
b. What are the types of counters. Explain any two counters with neat diagram.

Z-Z-Z

END