

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc (SS) DEGREE EXAMINATION MAY 2024
(First Semester)

Branch – SOFTWARE SYSTEMS (five year integrated)

ANALOG & 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 Which of the following is not an Octal number?
(i) 125 (ii) 126
(iii) 127 (iv) 128
- 2 Which is universal gate?
(i) AND (ii) NOT
(iii) OR (iv) NOR
- 3 Which Boolean function represents the sum of a half adder circuit for the inputs A and B?
(i) A AND B (ii) A OR B
(iii) A XOR B (iv) A NAND B
- 4 Which flip flop is called delay flip-flop?
(i) RS (ii) JK
(iii) D (iv) T
- 5 Indicate the phase shift between input & output signal in an inverting amplifier.
(i) 90 degrees (ii) 180 degrees
(iii) 270 degrees (iv) 360 degrees

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a) Determine the 1's complement for the binary number 100011.
OR
b) Find the gray code for the binary number 11001.
- 7 a) Explain AND gate with its truth table.
OR
b) State Duality theorem.
- 8 a) Sketch a half adder circuit and explain.
OR
b) Illustrate a half subtractor circuit and explain.
- 9 a) Sketch the circuit diagram of RS flip-flop and explain.
OR
b) Explain the operation of ring counter.
- 10 a) State the characteristics of ideal op-amp.
OR
b) Explain CMRR of an Op-Amp.

Cont...

SECTION -C (30 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 x 6 = 30)

- 11 a) Solve the following (i) $(1001.11)_2 = (\quad)_{10}$ (ii) $(111.011)_2 = (\quad)_{10}$
OR
b) Convert the following Hexadecimal to decimal (i) F8.25 & (ii) EC.AB
- 12 a) Elucidate Demorgans theorem.
OR
b) Solve the equation $Y = \sum (0, 1, 2, 3, 6, 7, 8, 9, 10, 12)$ using k-map.
- 13 a) Analyze the function of 4-bit parallel binary adder circuit.
OR
b) Design a 4x1 multiplexer circuit and explain.
- 14 a) Design a SERIAL IN and SERIAL OUT shift register.
OR
b) Discuss the function of JK flip-flop.
- 15 a) Determine an equation for gain of an inverting amplifier.
OR
b) Design an adder circuit using Op-Amp and explain.

Z-Z-Z

END