

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)BSc DEGREE EXAMINATION MAY 2019  
(First Semester)

Branch – COMPUTER TECHNOLOGY

DIGITAL ELECTRONICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- 1 \_\_\_\_\_ code is a Error correcting code.  
(i) ASCII (ii) Exess-3  
(iii) Gray (iv) Parity
- 2  $(1010101010)_2 \rightarrow ( )_{16}$  is  
(i) AAA (ii) AA  
(iii) 2AA (iv) IAA
- 3  $A(AB+A)$  is \_\_\_\_\_.  
(i) AB (ii) A  
(iii) BA (iv) B
- 4 \_\_\_\_\_ is a universal gate.  
(i) NOR (ii) NAND  
(iii) both (i) & (ii) (iv) AND
- 5  $A \cdot \bar{A} =$  \_\_\_\_\_.  
(i) 1 (ii) A  
(iii) 0 (iv)  $\bar{A}$
- 6  $BA + \bar{A} \bar{B}$  can be represented in POS tam like  
(i)  $(\bar{B} + \bar{A})(A + B)$  (ii)  $(\bar{A} + B)(\bar{B} + A)$   
(iii)  $\bar{A} \bar{B} + AB$  (iv)  $1+AB$
- 7 Many inputs to 1 output is \_\_\_\_\_.  
(i)  $Dm \cup x$  (ii)  $M \cup X$   
(iii) Encoder (iv) Decoder
- 8 2 bit addition can be carried out using \_\_\_\_\_.  
(i) Full adder (ii) Half adder  
(iii) Encoder (iv) Decoder
- 9 Flip-Flop which is used to store a data bit is \_\_\_\_\_ Flip-flop.  
(i) T (ii) D  
(iii) JK (iv) RS
- 10 A circuit which is used to count the clock pulses is called as  
(i) counter (ii) shift register  
(iii) timer (iv) register

Cont...

**SECTION - B (35 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks. (5 x 7 = 35)

- 11 a Explain about Binary to Decimal and Decimal to Binary Conversion with example.  
OR  
b Discuss about Error Detecting and Error Correcting codes with example.
- 12 a Explain the function of NOT Gate with the Truth Table.  
OR  
b Describe about the Exclusive - OR Gate with Truth Table.
- 13 a Simplify the Boolean function  $F(A,B,C,D)=\Sigma(0,1,2,4,5,6,8,9,12,13,14)$ .  
OR  
b Discuss about Product of Sum simplifications with example.
- 14 a Explain about The Full - Adder.  
OR  
b Describe about the Floating Point Representation of Numbers with example.
- 15 a Explain the working principles of JK Flip - Flop.  
OR  
b Explain about the Shift Register.

**SECTION - C (40 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a Analyze in detail about binary Subtraction with 1's, 2's, 9's and 10's complements.  
OR  
b Elucidate on Binary number system. Convert the following to the given base.  
(2)  
(i)  $(7652)_8 \rightarrow ( )_{10}, ( )_2$  (2)  
(ii)  $(FAFA)_{16} \rightarrow ( )_2$  (2)  
(iii)  $(1010110110110)_2 \rightarrow ( )_8$  (2)
- 17 a Differentiate between Positive Logic and Negative Logic.  
OR  
b (i) NAND and NOR as Universal Gates – Justify. (4)  
(ii) List out the logic gates and explain with truth table and circuit diagram. (4)
- 18 a Discuss in detail about Laws and Theorem of Boolean Algebra.  
OR  
b Simplify the following: (4 x 2 = 8)  
(i)  $F=xy+xyz+x^1yz+xy^1z+xy^1z^1+xy+xyz$   
(ii)  $F=x^1y^1+xy+xy^1+x^1y$   
(iii)  $F=x+yz+yz^1+y+xy$   
(iv)  $F=x+yz+zy+x+y$
- 19 a Describe in detail about The functions of Decoder with a neat diagram.  
OR  
b Design a  $M \circ X$  and  $DM \circ X$ . (1 x 8 & 8 x 1)
- 20 a Discuss about Master Slave Flip - Flop.  
OR  
b Illustrate the waving of ripple counters with a circuit diagram and function table.