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PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2018
(Fifth Semester)

Branch - **PHYSICS**

PRINCIPLES OF DIGITAL ELECTRONICS

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks!
Answer ALL questions
ALL questions carry **EQUAL** marks (10x2 = 20)

1 State Demorgan's theorems.

2 Give the symbol and truth table for AND gate.

3 Deduce 2-input multiplexer.

4 Write the difference between a demultiflexer and a decoder.

5 Subtract $(14)_{10}$ from $(17)_{10}$ using 1 's compliment and 2's complement method.

6 Draw the circuit diagram for RS Flip flop and give its truth table.

7 What is a ring counter? Draw the logic diagram of a ring counter.

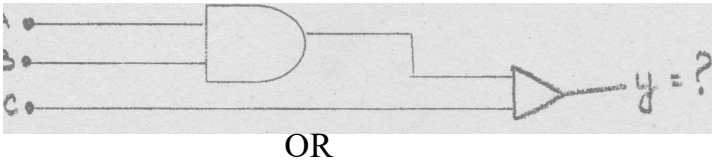
8 Differentiate asynchronous and synchronous counters.

9 What are PROM and EPROM?

10 Write a note on binary ladder.

SECTION - B f25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5x5 = 25)

11 a Obtain the logic expression for the given logic circuit and form the truth table.



OR

b Simplify using Karnaugh map
Y = F(A, B, C, D) = I (0, 1,2, 4,5, 10, 11, 14, 15).

12 a What is a ASCII code? What is the ASCII code string for the word "HELLO"?

OR

b $(29A.8)_{I_6}$ = **(x)io** = $(y)_2$ = (z)8 Findx, y & z.

13 a What are flip-flops? Explain the working of RS flip-flop with diagram.

OR

b Explain the working of adder and substractor circuits.

14 a Explain the function of a synchronous counter with logic circuit diagram.

OR

b Describe Mod-5 counter with necessary diagram.

Cont...

15 a Discuss with necessary block diagram, the working of a counter type A/D converter.

OR

b Explain briefly the evolution of ROM's and RAM's.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 1 0 = 30)

16 i) Obtain SOP expression using K-map F(A, B, C, D) = Z(0, 3, 4, 7, 8) + I_d (10, 11, 12, 13, 14, 15).

ii) Obtain POS expression using K-map
F(A, B, C, D) = 7t (0, 1 , 2 , 3, 4, 10, 11).

17 What are multiplexers? Explain 1 to 16 decoder with diagram.

18 Explain in detail the working of a master slave JK flip flops with diagram.

Describe the serial in-serial out and serial in parallel out and parallel in serial out shift registers.

20 Explain with circuit diagram, the working of a resister ladder D/A converter. Give the necessary theory.

Z-Z-Z END