PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2017
(Third Semester)

Branch - **ELECTRONICS**

DIGITAL PRINCIPLES & APPLICATIONS

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 Define Excess - 3 code.
2 What is the binary number for decimal (19) to?
3 Give the truth table for 2 inputs AND gate.
4 What is SOP?
5 Add (111 1)T and (1010)2-
6 Define Decoder.
7 What are the types of Shift Register?
8 Draw the state diagram of mod 3.
9 State one main advantages of successive approximation method.
10 Define Accuracy.

SECTION - B (25 Marks)

Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

1 i a Convert (107.6875)to its equivalent binary number.

OR

b Explain the procedure for excess - 3 addition with an example.

! 2 a Using Boolean algebra show that

ABC + ABC + ABC + ABC = AB f BC + CA

OR

b Show that NAND is a universal gate.

13 a Explain half subtractor with its circuit and truth table.

OR

b Use 2's complement method to perform M - N with M = 1000100 and **N =1010100.**

14 a What is racing in JK flip flop?

OR

b Describe the working of ring counter.

15 a With a block diagram, explain the principle of A/D converter.

OR

b Explain the working of dual slope ADC with suitable block diagram.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 Find X :
(i) **(72905)io** = Xi6 (n) $(1011110100011000111)_2 = X_8$ (iii) $(3674)_8 = X_2$ (iv) $(10111)_2 = Xj_0$ (v) (2 C 9)i6 = XJO (vi) $\mathbf{(0.372)_{10}} = X_2$

17 Simplify the following Boolean function, using five variable maps :
F(A,B,C,D) = 2)(0,2,5, 9, 11, 14)

18 Explain 4 bit binary adder / subtractor and draw necessary diagram.

19 Explain the working of J-K master-slave flip flop.

20 Discuss with necessary block diagram, the working of successive approximation