

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

Branch - **COMPUTER SCIENCE WITH DATA ANALYTICS**

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 Convert hexadecimal 16 to decimal.

(i) 10	(ii) 16
(iii) 20	(iv) 22
- 2 Convert binary number 01011 to decimal.

0) 10	(ii) 11
(iii) 12	(iv) 13
- 3 What does the term QUAD indicate

(i) 2	(ii) 4
(iii) 6	(iv) 8
- 4 TTL operates

(i) 3V	(ii) 5V
(iii) 9V	(iv) 12V
- 5 In Boolean algebra, the bar sign(-)indicates

(i) AND	(ii) OR
(iii) NOT	(iv) NOR
- 6 The universal gate is

(i) AND	(ii) OR
(iii) NOT	(iv) NOR
- 7 The output of half adder is

(i) sum	(ii) sum and carry
(iii) carry	(iv) clock
- 8 Which device has one input many outputs

(i) multiplexer	(ii) demultiplexer
(iii) counter	(iv) flipflop
- 9 How is a J-K flip flop made to toggle

(i) J=0,K=0	(ii) J=1,K=0 .
(iii) J=0,K=1	(iv) J=1,K=1
- 10 Ripple counters are also called as ----- counters

(i) SSI	(ii) Asynchronous
(iii) Synchronous	(iv) VLSI

Cont...

SECTION - B (25 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 5 = 25)

- 11 a Convert the following decimal into binary
(i) 9 (ii) 53 (iii) 98 (iv) 145 (v) 231
OR
b Convert the following binary to decimal
(i) 1000 (ii) 1110 (iii) 1010 (iv) 0110 0110 (v) 1101 1110
- 12 a Sketch the symbol and truth table of AND,OR, NOT gates.
OR
b Explain the Positive and Negative Logic.
- 13 a State and prove Demorgan's Theorem.
OR
b Describe the working Universal gates.
- 14 a Narrate the working of Decoder
OR
b Explain the operations of full subtractor.
- 15 a Describe the working of RS flip-flop.
OR
b Outline the operation of D flip-flop.

SECTION -C (40 Marks)

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

- 16 a Convert (i) $2019_{10} \rightarrow ()_2$ (ii) $426_g \rightarrow ()_{10}$
(iii) $111111_2 \rightarrow ()_{16}$ (iv) $555_{10} \rightarrow ()_{16}$
OR
b Elucidate the Error Detecting and Correcting Codes.
- 17 a Discuss about the Integrated Circuits.
OR
b Outline the working of an Exclusive NOR gate and give its applications.
- 18 a Simplify using K - map $Y = E (1,2,3,6,7,8,9,10,12,13,14)$.
OR
b Solve using K - map $Y = f (0,1,2,3,5,7,9,11,12,13,14,15)$.
- 19 a Enumerate the operation of Multiplexer.
OR
b Discuss the working of Full Adder
- 20 a Discuss the working of Ring Counter.
OR
b Outline the functional operation of JK Flip-flop.