

Paper Code: 1305

1505

B.Sc. (Computer Science) (Part 1)

Examination, 2018

Paper No. 2.2

DIGITAL LOGIC AND COMPUTER DESIGN

Time: Three Hours] [Maximum Marks: 33

Note: Attempt five questions in all. Select one question from each Section.

Section-A

1. (a) Write down the laws of “Boolean Algebra”.4

(b) Draw k-map for the following expression:

$$A(X, Y, Z) = \sum(0, 1, 5, 6)$$

3

2. (a) State the laws of DeMorgan's. 4

(b) What are the Universal Logic Gates. Explain their importance.3

Section-B

3. (a) Design a half-adder.4

(b) How to implement a 4 x 1 Multiplexer ? Discuss.3

4. (a) Convert the following as specified :

(i) $(1111)_2 = ()_{10}$

(ii) $(512)_{10} = ()_2$

(iii) $(11100011)_2 = ()_8$

(iv) $(6AF)_{16} = ()_{10}$

(b) Write in brief about the following :

(i) Decoder

(ii) Binary Parallel Adder 3

Section-C

5. (a) Differentiate combinational logic circuits and sequential logic circuits.3

(b) Explain the different types of flip-flops.4 <http://www.mjpruonline.com>

6. (a) What are “Triggers”? 3

(b) How to design a counter ? Explain in detail.4

Section-D

7. (a) How encoder is different from decoder ?4

(b) Explain the following terms :

(i) Registers

(ii) Ripple counters 3

8. (a) Define the “over flow-condition” in arithmetic operations.3

(b) Give notation to represent any floating point number. What is ALU ?

Explain its role.4

Section-E

9. (a) How inter register transfer operation performed ?2½

(b) What do you mean by the term “Clocked Sequential Circuits” ? 2½

10. Write short notes on any two of the following :

(i) Subtractor

(ii) Don't care conditions

(iii) Latch

(iv) Timing sequences $\frac{1}{2}$ each

.....End.....