Paper Code: 1305
1505
B.Sc. (Computer Science) (Part 1)
Examination, 2015
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) Explain Boolean variable, Boolean function and Boolean expressions?

(b) What are truth tables? Draw the truth table of OR and X-NOR gates.

2. (a) Explain what do you understand by don't care conditions:

(b) Draw k-map:

$$Y(A, B, C) = \sum(2, 3, 4, 6, 7)$$

Section-B

3. (a) What is the difference between half adder and full adder? Explain with example.

(b) What is the canonical form of logic expressions? Explain min terms and max terms.

4. (a) Define decoder and draw the logic design to 3 to 8 line decoder.

(b) Explain the following:

1. Multiplexer
2. Code conversions

Section-C

5. (a) What is flip-flop? What is the difference between a flip-flop and latch?

(b) What is Triggering of flip-flop? Discuss different type of triggering.

6. (a) What is Tri-state logic gate? Explain in brief.

(b) Explain the following:

1. Design procedures
2. Design counter

Section-D

7. (a) What is the function of a shift register? What are its various type?

(b) Draw a schematic diagram of an asynchronous (ripple) counter.

8. (a) Explain the terms "UP counter", "Down counter" and "UP/Down counter".

(b) What are the advantages of synchronous counters over serial counters?

9. (a) What are registers? Explain n-bit register.

(b) Explain logic and shift micro operations.

10. Explain any two of the following:

1. Butters/drives
2. Mod-5 counter
3. Floating and non-numeric data
4. Arithmetic shifts

.....End.....