LTS

Digital Electronic

E-5

2K5-CS-2

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Time : 3 Hrs.

M.M. 100

Note :

1. *Part 'A' may be attempted in first 5 pages of Answer Sheet.*
   भाग 'क' के सभी उत्तर, उत्तर-पुस्तिका के प्रथम पांच पृष्ठों में ही करने हैं।
2. *Part 'B' in rest of the Sheets of Answer Sheet.*
   भाग 'ख' के उत्तर, उत्तर-पुस्तिका के अगले शेष पृष्ठों में लिखिये।
3. *Answers may be given in English or Hindi.*
   प्रश्नों के उत्तर अंग्रेजी अथवा हिन्दी में दीजिये।

Part 'A'

1. Attempt any ten questions: 10x2= 20

(i) Convert $(111)_2$ into decimal number.

(ii) Write base of binary number.

(iii) Convert $(56B)_{16}$ into octal number.

(iv) What do you mean by alpha numeric code?

(v) Define negative logic.

(vi) RTL stand for .....

(vii) Define reflected code.

(viii) DCL stand for .....

(ix) Write name of basic gates.

(x) What do you mean by edge triggered flip flop?

(xi) Write disadvantages of combinational logic circuits.

(xii) Write advantages of K-map technique.

(xiii) Define register.

(xiv) Write types of A/D convertors.

2. Attempt any 5 of the following questions: 5 x 4 = 20

(i) Design OR gate with help of NAND gates.

(ii) Simplify $\bar{A}.B.\bar{C} + BC + AC$

(iii) Discuss error detection code with its applications.

(iv) Explain K-map technique for minimization of a logic operation.

(v) Perform addition of two unsigned numbers with example.

(vi) Convert $(DAB)_{16}$ into octal and binary numbers.

(vii) Design a half subtractor and write its truth table.

(viii) Write various applications of A/D converters.

PART-B

Attempt any 3 of the following questions: 3 x 20 = 60

3. (a) Explain the working of SR flip-flop also write its truth table.

   (b) Design a full adder circuit and explain its working.

4. (a) Simplify the following expression using K-map :

   $f(A, B, C, D) = \sum(0, 1, 3, 5, 9, 11, 13, 15)$

   (b) Design a 3 bit synchronous counter and explain its working.

5. (a) Explain the working of TTL logic family with help of neat circuit diagram.

   (b) Design 1 x 8 demultiplexer and explain its functioning.

6. (a) Explain the working of CMOS logic family with help of neat circuit diagram.

   (b) Design a 8 bit down counter.

7. (a) Explain the working of a parallel in parallel out shift register.

   (b) Explain working of any one type of D/A converter with neat diagram.