2013

Time: 3 hours

Full Marks: 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer five questions in which Q. No. 1 is compulsory.

- Choose the correct alternative for the following :
 - (a) The 2's complement of a binary number can be obtained by :
 - (A) Finding its 1's complement and adding 1 to it
 - (B) Substracting the given N bit binary number from 2^N
 - (C) Copying down, starting from the LSB are bits upto and including the first 1 and then complementing the remaining bits.

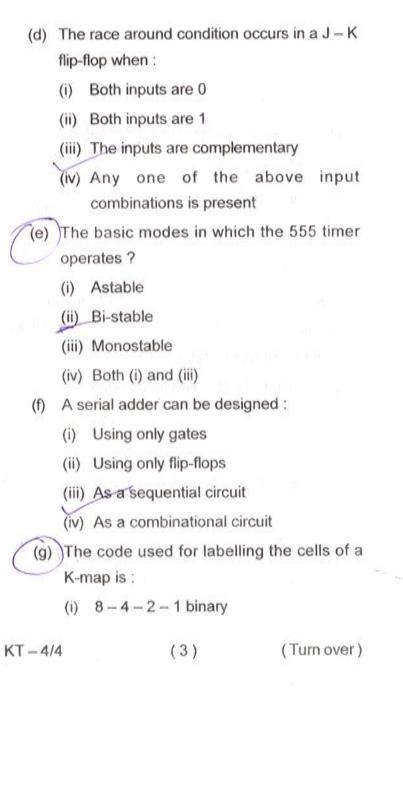
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(Turn over)

Wh	nich of the following is true?	
3	Only A	
(ii)	A, B and C	

- (iii) Both A and B
- (iv) None of these
- (b) In a digital computer, binary substraction is performed:
 - (i) In the same way as we perform substraction in decimal system
 - (ii) Using 2's complement method
 - (iii) Using 9's complement method
 - (iv) Using 10's complement method
- (c) In which of the following is not a type of ROM?
 - (i) Digital Programmable Read Only Memories (DPROMs)
 - (ii) Mask Programmed PROMs (MROMs)
 - (iii) Eresable Programmable ROMs (EPROMs)
 - (iv) Electrically Eresable Programmable ROMs (EEPROMs)

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- (ii) Hexadecimal
- (iii) Gray
- (iv) Octal
- (h) Name the CMOS version of 555 :
 - (i) 1555
 - (ii) 3555
 - (iii) 5555
 - (iv) 7555
- Minimize the following boolean function using
 K-map in SOP form and implement the logic
 circuit using universal gate:

- Describe the basic structure and working of P N
 junction and describe the V I characteristics of
 it.
- What are the advantages of integrating type A/D convertors over the non-integration type ? Also explain 3-bit parallel A/D convertor.

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(4)

Contd.

- Explain any one of the following with proper diagram and working principle:
 - (a) Schmitt Trigger
 - (b) Multivibrators and their types
- (a) Write down the characteristics, merits and demerits of ECL.
 - (b) How many eight TTL subfamilies are there?
 Name them and explain.
- What do you mean by race-around condition in flip-flop? Also write the applications of flip-flops.
- What are the advantages and disadvantages of using a PROM as a PLD ? Also compare the three combinational PLDs – PROM, PLA and PAL.
- 9. How is BCD addition and substraction performed? Add and multiply the following numbers without converting to decimal:

(367)₈ and (715)₈, (15F)₁₆ and (A7)₁₆. { (110110)₂ and (110101)₂

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(5)

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