DAY - 14 SEAT NUMBER | | | | | | |

2014	III	14	1100	V – 267	(E)

ELECTRONICS
PAPER - II (C-2)

Time : 3 Hours	4 Pages	Max. Marks : 50

Instructions : *(1) All questions are compulsory.*
(2) Figures to the right indicate full marks.
(3) Draw neat labelled diagrams wherever necessary.
(4) Use of logarithmic tables is allowed.

1. (A) Select correct alternatives and rewrite the following sentences :

(a) One of the inputs of AND Gate is labelled as ENABLE. This Control Input is _____. 1

(i) Active Low
(ii) Active High
(iii) Zero
(iv) None of these

(b) In a Combinational Logic Circuit, Strobe Signal is used for _____ purpose. 1

(i) Buffering
(ii) Impedance Matching
(iii) Cascading
(iv) Resetting

(c) A Ring Counter is _____ Type of Counter. 1

(i) Synchronous
(ii) Asynchronous
(iii) Up
(iv) Down

(d) If a full scale output voltage of a 4-bit resistive divider type DAC is 7 volt, its resolution is _____volts. 1

(i) 0.46

(ii) 4.6

(iii) 0.43

(iv) 2.14

(B) Answer **any two** of the following :

(a) Do the following conversion : 3

$(F2F.A)_{16} = (?)_2 = (?)_{10} = (?)_{BCD}$

(b) State rules of binary subtraction, hence subtract the following :

$(11101)_2 - (11011)_2$ 3

(c) Draw a logic diagram of clocked RS Flip-Flop using NAND Gates only and write its truth table. 3

2. (A) Answer **any two** of the following :

(a) When two inputs of EX-OR Gates are $A\overline{B}$ and $\overline{A}B$, then prove that its output remains equal to $A \oplus B$ (use of Boolean Algebra). 3

(b) Draw logic diagram for Boolean equation and write its truth table : 3

$Y = \overline{A \cdot B} + \overline{B}C + \overline{A}B + A\overline{B}C$

(c) Draw a logic diagram of 4-bit left-shift register and explain its working with timing diagram. 3

(B) Answer **any one** of the following :

(a) What is 2's Complement of a Binary Number. Explain Binary Subtraction using 2's Complement with suitable example. 4

(b) Write notes on : 4

(i) ASCII Code

(ii) BCD Code

3. (A) Answer **any two** of the following :

(a) Define :

(i) Power Dissipation

(ii) Propagation Delay Time

(iii) Figure of Merit

in case of Digital IC's. 3

(b) Draw a circuit diagram of two input standard TTL NAND Gate and explain its working. 3

(c) What is Multiplexer ? Explain its concept using block diagram. 3

(B) Answer **any one** of the following :

(a) What is a Full Adder ? Draw a logic diagram of a Full Adder. Explain its working with truth table. 4

(b) Draw a logic diagram and write output equation in Boolean form using logic gates for the following condition :

A red LED should glow when any two of the three operations are taking place and green LED should glow when all of three operations are carried out. 4

4. (A) Answer **any two** of the following :

(a) Draw a logic diagram of Decimal to BCD Encoder and explain its working with truth table 3

(b) Draw a logic diagram of 1:8 Demultiplexer using two 1:4 Demultiplexers. 3

(c) With the help of logic diagram and truth table explain Operation of clocked JK Flip-Flop. 3

(B) Answer **any one** of the following :

(a) Draw a block diagram of Computer and explain operation of each block. 4

(b) What is Primary Memory ? Explain :

(i) ROM

(ii) RAM

(iii) PROM 4

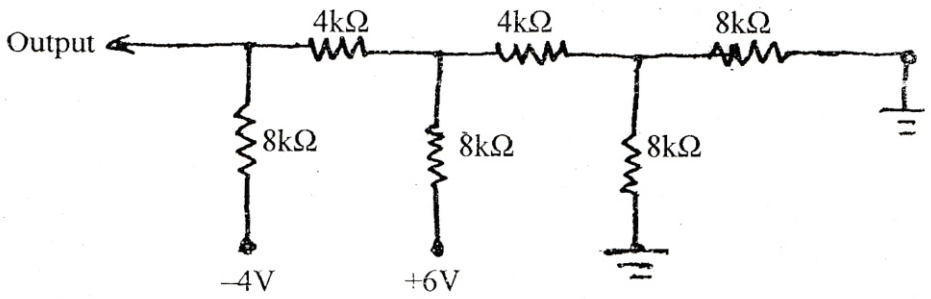
5. (A) Answer **any two** of the following :

(a) Implement the following using 8:1 Multiplexer :

A	**B**	**C**	**Y**
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

3

(b) Calculate Analog Output Voltage for the following DAC Network : 3



(c) What is T Flip-Flop ? Explain how it is used as divider by two counters with timing diagrams. 3

(B) Answer **any one** of the following :

(a) Draw a circuit diagram of Two Input CMOS NOR Gate and explain its working with truth table. 4

(b) Draw a block diagram of Two Bit Simultaneous Type ADC and explain its working. State its disadvantages. 4

OR

5. (A) Answer **any two** of the following :

(a) Draw and explain working of 3-bit Resistive Divider DAC. Write equation for its output. 3

(b) Write difference between Synchronous and Asynchronous Counters. (any three points) 3

(c) Draw a logic diagram of One of Ten Decoder. Write its truth table. 3

(B) Answer **any one** of the following :

(a) Draw a logic diagram of a 3-bit Synchronous Counter and explain its working with timing diagram. 4

(b) Implement the following equations using suitable decoder : 4

(i) $Y_1 = \overline{A}BCD + A\overline{B}C\overline{D} + \overline{A}BC\overline{D} + A\overline{B}\overline{C}D$

(ii) $Y_2 = A\overline{B}CD + AB\overline{C}\,\overline{D} + AB\overline{C}D + \overline{A}BC\overline{D}$