

DAY - 14

SEAT NUMBER

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2015

III

14

1100

V - 667

(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 and labelled diagrams wherever necessary.
(4) Use of logarithmic tables is allowed.

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

(a) Hex Equivalent of Binary Number 0.11 is _____.

1

(i) 0.3

(ii) 0.6

(iii) 0.C

(iv) 0.D

(b) $A \oplus A$ is equal to _____.

1

(i) 0

(ii) 1

(iii) A

(iv) \bar{A}

(c) _____ is also called as Data Selector.

1

(i) Demultiplexer

(ii) Multiplexer

(iii) Encoder

(iv) Decoder

- (d) Digitizer is _____ Device. 1
- (i) Output
- (ii) Memory
- (iii) Serial Entry Input
- ✓(iv) Direct Entry Input
- (B) Attempt **any two** of the following :
- ✓(a) Add and Subtract $(26)_{10}$ and $(32)_{10}$ after converting them into binary numbers. 3
- (b) Implement the following logical equation by using Multiplexer : 3
- $$Y = \overline{A}BC + A\overline{B}C + \overline{A}B\overline{C} + ABC$$
- (c) With the help of neat diagram, explain working of J-K Flip-flop. 3
2. (A) Attempt **any two** of the following :
- (a) Explain working of EX-OR Gate as 4-bit Parity Checker. 3
- (b) Draw circuit diagram and explain working of Open Collector TTL NAND Gate. Give its advantages. 3
- ✓(c) Explain working of R-2R Ladder type DAC and find its output expression. 3
- (B) Attempt **any one** of the following :
- ✓(a) What is Encoder ? Explain working of Decimal to BCD Encoder by using 4-OR Gates. 4
- (b) Explain working of 4-bit Binary Ripple Counter with diagram, waveforms and truth table. 4
3. (A) Attempt **any two** of the following :
- (a) What do you mean by Code ? Write a note on BCD Code. 3
- ✓(b) Write a Boolean Equation, Truth Table and Symbol of a Basic Gate. 3
- ✓(c) Explain working of 1:4 Demultiplexer with the help of logic diagram. 3
- (B) Attempt **any one** of the following :
- ✓(a) Explain the following terms : 4
- (i) Clock
- (ii) Edge Triggering
- (iii) Toggle
- (iv) Racing

- (b) For a 4-bit Resistive Divider ($0 = 0V$ and $1 = +10V$), find : 4
- (i) Full Scale Output Voltage
 - (ii) The Output Voltage change due to LSB
 - (iii) Analog Output Voltage for Digital Input of 1010
4. (A) Attempt **any two** of the following :
- (a) What do you mean by CMOS Logic ? Explain operation of CMOS Inverter. 3
 - (b) With neat logic diagram explain working of Clocked D-Flip-flop. 3
 - (c) Explain working of Counter Type ADC. 3
- (B) Attempt **any one** of the following :
- (a) What is Full Adder ? Explain working of Full Adder by using Full Adder. 4
 - (b) What is Decoder ? Explain operation of BCD to 7-segment Decoder/Driver. 4
5. (A) Attempt **any two** of the following :
- (a) Convert the following : 3
 - (i) $(2A5\cdot0A)_{16} = (---)_2$
 - (ii) $(1101110)_2 = (---)_{10}$
 - (iii) $(78\cdot78)_{10} = (---)_{16}$
 - (b) What is Register ? Explain operation of Shift Right Register with timing diagram. 3
 - (c) What is Flash ADC ? Draw diagram of 3-bit Flash ADC and explain its operation. 3
- (B) Attempt **any one** of the following :
- (a) State and prove DeMorgan's Theorem with logic diagram. 4
 - (b) Explain different types of Semiconductor Memories. 4
- OR**
5. (A) Attempt **any two** of the following :
- (a) Explain the following characteristics of Digital IC's : 3
 - (i) Power Dissipation
 - (ii) Voltage Parameter
 - (iii) Operating Temperature

- (b) State any six specifications of PC. 3
- (c) Explain working of Ring Counter with timing diagram and truth table. 3
- (B) Attempt **any one** of the following :
- (a) Describe 1's Compliment Method of Substraction with two suitable examples. 4
- (b) What is Multiplexer ? Explain working of 4:1 Multiplexer. 4