

DAY - 19

SEAT NUMBER

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2019

III

16

1100

V - 433

(E)

**ELECTRONICS
PAPER - I (C-2)**

Time : 3 Hours

4 Pages

Max. Marks : 50

- Instructions :**
- (1) All questions are compulsory.
 - (2) Figures to the right indicates full marks.
 - (3) Draw neat diagram wherever necessary.
 - (4) Use of log table is allowed.

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

(a) To change the number of cycle of wave form displayed on the screen of CRO _____ knob is used. 1

(i) TIME / DIV

(ii) VOLT / DIV

(iii) ↔ POSITION

(iv) ↑↓ POSITION

(b) In SMPS power dissipation of series pass transistor is lowered by operating it as _____. 1

(i) An Amplifier

(ii) An Oscillator

(iii) A Rectifier

(iv) A Switch

(c) In an Op-Amp inverting integrator _____ is connected in the feedback. 1

(i) Resistor

(ii) Diode

(iii) Capacitor

(iv) Inductor

(d) In _____ the information does not affect by electromagnetic field. 1

(i) Fiber Optic Cable

(ii) Coaxial Cable

(iii) Twisted Pair Cable

(iv) Copper Wire Data Cable

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

(a) Draw neat labelled diagram of CRT. Explain the function of aquadag coating. 3

(b) State any six characteristics of an Ideal Operational Amplifier. 3

(c) What do you mean by Analog Communication and Digital Communication ? Give one example of each. 3

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

(a) Write comparison between Capacitor Filter and Inductor Filter. (Any three points) 3

(b) What is Active Transducer and Passive Transducer ? Write one example of each. 3

(c) What is Bandwidth ? Explain its importance in the Communication. 3

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

(a) Draw the block diagram of CRO and explain the function of each block in brief. 4

(b) Draw a circuit diagram of Non Inverting amplifier using Op-Amp and derive the equation for its output voltage. Explain how its gain can be changed. 4

3. (A) Answer **any two** of the following :
- (a) Define Slew Rate of operational amplifier. The Op-Amp takes $0.3\mu\text{s}$ to change the output voltage from 0V to 9V , find its Slew Rate. 3
 - (b) List any three types of Network Topology. Explain any one of them. 3
 - (c) Draw pin diagram of IC 741 and state the function of each pin. 3
- (B) Answer **any one** of the following :
- (a) Draw the block diagram of Digital Multi Meter and explain the function of each block. 4
 - (b) Draw the circuit transistorised series voltage regulator. Explain in brief the function of transistors used in it. 4
4. (A) Answer **any two** of the following :
- (a) What are Lissajous Figures ? How it can be used to measure phase difference ? Explain in brief. 3
 - (b) Write any three advantages of Fiber Optic Cables. 3
 - (c) In an Op-Amp Inverting adder circuit three input voltages 0.3V , 0.6V , 0.9V are applied through resistors of $3\text{K}\Omega$, $1.5\text{K}\Omega$, $4.5\text{K}\Omega$ respectively. If feedback resistor is of $10\text{K}\Omega$ then calculate its output voltage. 3
- (B) Answer **any one** of the following :
- (a) Write comparison between CT – Fullwave Rectifier and Bridge Rectifier. (Any four points) 4
 - (b) Draw zero reference comparator circuit by using Op-Amp and explain its working. State its use. 4
5. (A) Answer **any two** of the following :
- (a) Explain any three characteristics of DC Regulated Power Supply. 3
 - (b) Draw a circuit diagram of Integrator using Op-Amp and derive the equation for its output voltage. 3
 - (c) A Carrier Wave of frequency 1000KHz is amplitude modulated by 10KHz audio signal. Find the frequencies of USB, LSB and Bandwidth. 3

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

- (a) Explain with a suitable diagram working LVDT. Give its use. 4
- (b) Draw an open loop frequency response curve of the Op-Amp and explain the following terms : 4
 - (i) Unity Gain Frequency
 - (ii) Unity Gain Bandwidth
 - (iii) Gain Bandwidth Product

OR

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

- (a) What is Thermistor ? Explain in brief NTC and PTC thermistor. 3
- (b) Write comparison between Serial Data Transmission and Parallel Data Transmission. (Any three points) 3
- (c) Draw a circuit diagram of voltage regulator using IC 317. With the help of its output equation, explain how the output voltage can be varied. 3

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

- (a) With the help of neat diagram, explain the working of SMPS. 4
- (b) An Astable Multivibrator circuit using IC 555 has $R_A = 86 \text{ K}\Omega$, $R_B = 56 \text{ K}\Omega$ and $C = 0.1 \mu\text{F}$. Calculate Frequency and percentage duty cycle of a output waveform. 4

EXAM SOLUTION

Complete solution for your exam needs

DAY - 21

SEAT NUMBER

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2019	III	19	1100	V - 467	(E)
ELECTRONICS PAPER - II (C-2)					
Time : 3 Hours		4 Pages		Max. Marks : 50	

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

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

- (a) The BCD equivalent of two digit highest decimal number is _____ 1
- (i) 1000 0000
 - (ii) 1001 1001
 - (iii) 1001 1000
 - (iv) 1111 1111
- (b) Bubbled NAND gate is equivalent to _____ gate. 1
- Complete solution for your exam needs
- (i) AND
 - (ii) NOR
 - (iii) OR
 - (iv) NOT
- (c) A Demultiplexer accepts _____ input. 1
- (i) One
 - (ii) Two
 - (iii) Three
 - (iv) Many

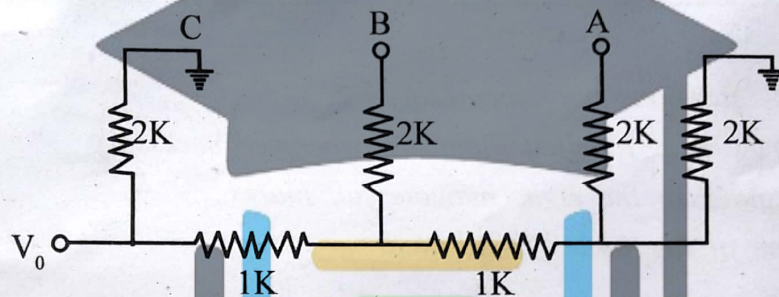
(d) When power is switched off, information stored in _____ is lost. 1

- (i) ROM
- (ii) Hard Disk
- (iii) RAM
- (iv) EPROM

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

(a) Compare Primary Memory with Secondary Memory. (Any three points) 3

(b) Calculate the output voltage in the following ladder network. 3



If $A = B = -7V$

(c) Explain J-K Master - Slave Flip-flop with logic diagram and truth table. 3

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

(a) Prove $\overline{A \oplus B} = A \cdot B + \overline{A} \cdot \overline{B}$ using Boolean Laws. 3

(b) Convert the following :

(i) $(112 \cdot 60)_{10} = (\dots)_{2}$

(ii) $(A37 \cdot 80)_{16} = (\dots)_{10}$

(c) Explain the working of serial-in, parallel-out type of shift register with neat diagram and waveform. 3

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

(a) What do you mean by Encoder ? Explain the working of decimal to BCD Encoder by using OR Gate. 4

(b) Explain the concept of Tri-state logic also explain working of TSL INVERTER with circuit diagram and truth table. 4

3. (A) Answer **any two** of the following :
- ✓(a) Explain the working of Ring Counter using D-Flip-flop with logic diagram and waveform. 3
 - (b) Explain the need of A/D and D/A conversion. Give examples. 3
 - (c) Name the various Input and Output devices used in Computer (Three each). 3
- (B) Answer **any one** of the following :
- ✓(a) Why NOR gate is called as Universal Building Block ? Explain with logic diagram. 4
 - (b) In the following binary number $(1001011001100011)_2$
Write :
 - (i) Decimal weight of LSB
 - (ii) Decimal weight of MSB
 - (iii) Number of Nibbles
 - (iv) Number of Bytes 4
4. (A) Answer **any two** of the following :
- ✓(a) What are types of Unipolar and Bipolar logic families ? 3
 - ✓(b) Draw logic diagram of 3-bit asynchronous down counter and explain its working with truth table. 3
 - (c) Explain the working of Simultaneous ADC with the help of circuit diagram and truth table. 3
- (B) Answer **any one** of the following :
- (a) Implement the following multioutput combinational logic using 4 to 16 line decoder. 4

$F_1 = \sum m(1, 5, 7, 9)$
 $F_2 = \sum m(2, 4, 6, 8)$
 $F_3 = \sum m(1, 4, 11)$
 $F_4 = \sum m(3, 7, 14)$
 - ✓(b) Explain 4-bit binary Adder/Subtractor Circuit with suitable diagram. 4
5. (A) Answer **any two** of the following :
- ✓(a) What is Multiplexer ? What are the advantages of using Multiplexer ? 3
 - ✓(b) Compare Synchronous Counter with Asynchronous Counter. (Atleast 3 points) 3
 - (c) Encode the following numbers into BCD Equivalent Code.
 - (i) $(327.489)_{10}$
 - (ii) $(A3E)_{16}$ 3

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

- ✓(a) What is Modulus of Counter ? Give any four applications of counters. For Mod-88, how many Flip-flops are required. 4
- (b) Explain BCD to decimal decoder using suitable diagram and truth table. 4

OR

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

- (a) Simplify boolean equation given below and draw logic diagram of simplified equation.

$$Y = \bar{A} \bar{B} C + \bar{A} B \bar{C} + A \bar{B} \bar{C} + ABC$$

- (b) What are the output voltages caused by each bit in 3-bit R-2R ladder if input levels are, logic 0 = 0V and logic 1 = 15V ? 3
- (c) Explain the working of TTL NOR gate with circuit diagram and truth table. 3

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

- (a) Realize the logic function of the truth table given below using multiplexer : 4

Inputs			Output
A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

- (b) Explain Hexadabble Method to convert decimal number into hexadecimal number, convert the following :

(i) $(1025.40)_{10} = (\dots\dots)_{16}$

(ii) $(4097)_{10} = (\dots\dots)_{16}$