

DAY - 16

SEAT NUMBER

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2022 III 23

1030

V - 133

(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 indicate full marks.
  - (3) Draw neat labelled diagrams wherever necessary.
  - (4) Use of logtable is allowed.

1. (A) Select correct alternatives from the following sub-questions and rewrite the complete sentences :

(a) The ripple factor of half-wave rectifier is \_\_\_\_\_.

1

(i) 1.12

(ii) 1.21

(iii) 0.48

(iv) 0.50

(b) In LVDT transducer, the two secondary windings are connected \_\_\_\_\_.

1

(i) Only in series

(ii) Only in parallel

(iii) Series opposite

(iv) Series and parallel

(c) If any one node fails, the entire network fails in \_\_\_\_\_ topology.

(i) Star

(ii) Ring

(iii) Bus

(iv) Tree

(d) In Monostable Multivibrator using IC 555, the output of IC switches from high to low, if threshold voltage is \_\_\_\_\_.

1

(i) Greater than  $\frac{1}{3} V_{cc}$

(ii) Less than  $\frac{2}{3} V_{cc}$

(iii) Greater than  $\frac{2}{3} V_{cc}$

(iv) Less than  $\frac{1}{3} V_{cc}$

(B) Answer any two of the following :

(a) Write the advantages of bridge rectifier over full wave rectifier using centre tapped transformer.

3

(b) Explain Op-Amp as an inverting amplifier using circuit diagram. Derive an expression to get output voltage.

3

(c) In Astable multivibrator using IC 555, if  $R_A = 10 K\Omega$   $R_B = 6K\Omega$  and  $C = 0.01 \mu F$ . Calculate charging time, discharging time and duty cycle.

3

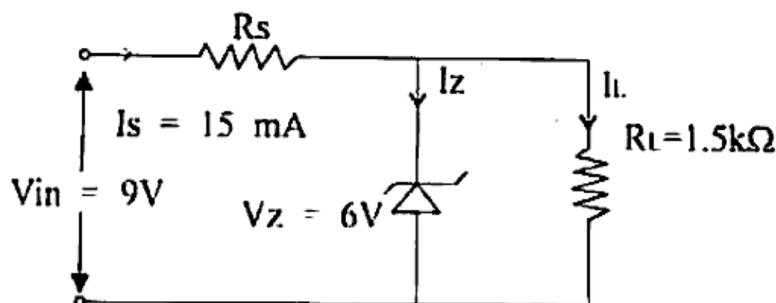
2. (A) Answer any two of the following :

(a) What are the advantages of DMM over analog multimeter ?

3

(b) Find  $I_z$ ,  $I_L$  and  $R_s$  in given Zener Regulator Circuit :

3



(c) Draw pin configuration of IC 741, write any four specifications of IC 741.

3

(B) Attempt any one of the following :

(a) Explain Op-Amp as subtractor using circuit diagram. Derive an expression of its output voltage.

4

(b) Define Modulation. Explain the necessity of Modulation in Communication.

4

3. (A) Attempt any two of the following :

(a) With the help of diagram, explain electrostatic focussing in CRT.

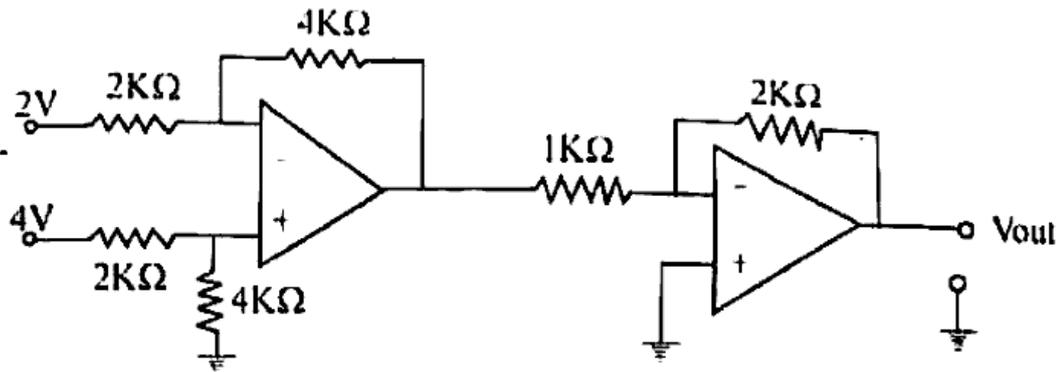
3

(b) Explain RC Filter with diagram. Write its disadvantages.

3

(c) Find out  $v_{out}$  for the diagram given below :

3



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

(a) Explain the working of LVDT as a Transducer. Draw neat diagram. 4

(b) What are the merites and demerits of FM Over AM ? 4

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

(a) Explain Time Base Generator with circuit diagram. 3

(b) Explain any three characteristics of Power Supply. 3

(c) Explain Op-Amp as zero reference comparator for inverting and non inverting applications. 3

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

(a) Draw block diagram of Op-Amp. Explain function of each block. 4

(b) Explain the use of Satellite as a Relay Station. Write merites and demerits of Geosynchronous Satellite. 4

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

(a) Draw labelled diagram of Cathode Ray Tube and explain function of each electrode. 3

(b) Explain 3-terminal fixed voltage regulator. Write its applications. 3

(c) Explain LAN, MAN and WAN in networking. 3

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

(a) Define Active Transducer. Write a note on Piezoelectric Transducer. 4

(b) Explain the use of Op-Amp as a : 4

(i) Voltage Follower

(ii) Sign Changer with circuit diagrams

OR

5. (A) Answer any two of the following :
- (a) Explain the use of CRO for the measurement of AC and DC voltages. 3
  - (b) Write any six ideal characteristics of Op-Amp. 3
  - (c) Draw the internal block diagram of IC 555. Explain its working. 3
- (B) Attempt any one of the following :
- (a) Explain the following terms of frequency modulation : 4
    - (i) Frequency Deviation
    - (ii) Centre Frequency
    - (iii) Modulation Index
    - (iv) Guard Bands
  - (b) Draw circuit diagram of a transistorised series voltage regulator. Explain its working. 4
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