

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.

1

(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 $R_A = 10\text{ K}\Omega$ $R_B = 6\text{ K}\Omega$ and $C = 0.01\text{ }\mu\text{F}$. Calculate charging time, discharging time and duty cycle.

3

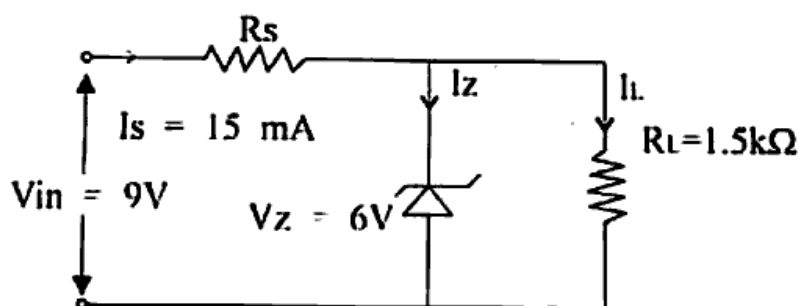
2. (A) Answer any two of the following :

(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.

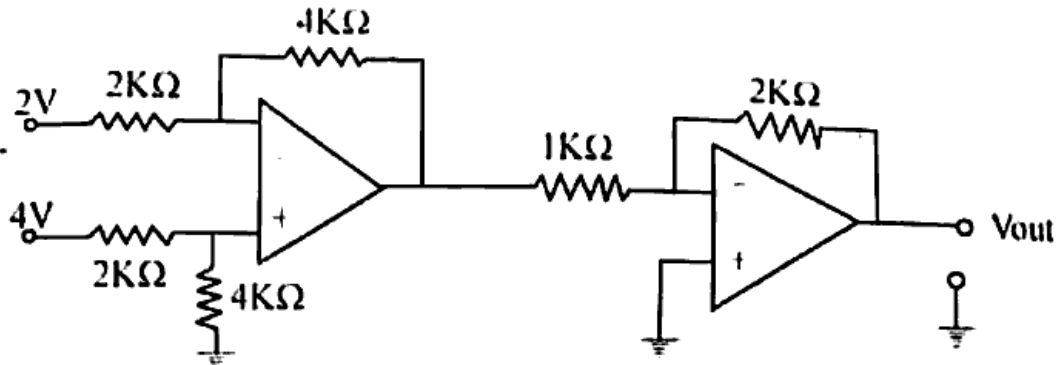
3

(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 merits 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. <https://www.maharashtrastudy.com> 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 merits 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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