

DAY - 13

SEAT NUMBER

0 1 3 7 8 5

2016	III	11	1100	V - 33	(E)
<b>ELECTRONICS PAPER - I (C-2)</b>					
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 table is allowed.

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

(a) The Uplink Frequency for a Satellite Transponder is always \_\_\_\_\_ Downlink Frequency.

- (i) Smaller than  
(ii) Equal to  
(iii) Greater than  
(iv) Smaller than or Equal to

(b) The OP-AMP used as differentiator gives an output \_\_\_\_\_ 1

(i)  $V_o = -RC \frac{d_{vin}}{dt}$

(ii)  $V_o = \frac{-1}{RC} \frac{d_{vin}}{dt}$

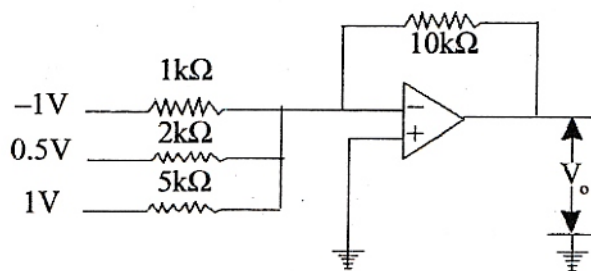
(iii)  $V_o = RC \frac{d_{vin}}{dt}$

(iv)  $V_o = \frac{1}{RC} \frac{d_{vin}}{dt}$

- (c) The Filter Capacitor used with rectifier is usually \_\_\_\_\_ type. 1
- (i) Mica
  - (ii) Ceramic
  - (iii) Paper
  - (iv) Electrolytic
- (d) The Piezo-electric Transducer cannot measure \_\_\_\_\_. 1
- (i) Static Phenomenon
  - (ii) Dynamic Phenomenon
  - (iii) Vibrations
  - (iv) Acceleration

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

- (a) Discuss any three front panel controls of the CRO. 3
- (b) Draw and explain Opto-Coupler. 3
- (c) Calculate the Output Voltage of the circuit shown in figure : 3



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

- (a) Define Simplex and Duplex Type of Electronic Communication and write an example of each. 3
- (b) Draw the block diagram of Regulated Power Supply and explain with Waveform at each stage. 3
- (c) Explain the following terms with respect of OP-AMP : 3
- (i) Slew Rate
  - (ii) CMRR
  - (iii) Input bias Current

- (B) Attempt **any one** of the following :
- (a) In an AM modulated wave the instantaneous value of modulating signal is given by  $V_m = 120 \sin 100\pi t$  Volt and that of carrier signal  $V_c = 240 \sin 10^6 \pi t$  Volt. Find : 4
- (i) Sideband Amplitude
- (ii) Sideband Frequencies
- (iii) Channel Bandwidth
- (iv) Frequency Spectrum
- (b) State advantages of Fiber-Optic Cables over Conventional Cable S. (Any eight points) 4
3. (A) Attempt **any two** of the following :
- (a) Draw and explain working of PPM using IC 555. 3
- (b) Explain the use of OP-AMP as subtractor. 3
- (c) Give two examples of each : 3
- (i) Pressure Transducer
- (ii) Temperature Transducer
- (iii) Displacement Transducer
- (B) Attempt **any one** of the following :
- (a) Draw and explain the internal functional diagram of Three Terminal IC Regulator. 4
- (b) Draw and explain the internal block diagram of IC 555. 4
4. (A) Answer **any two** of the following :
- (a) Explain the Electrostatic Focussing System in CRT with the help of suitable diagram. 3
- (b) State any four Applications of Satellite and explain any one of them. 3
- (c) Mention the drawbacks of RC Coupled and Direct Coupled Amplifier. 3
- (B) Attempt **any one** of the following :
- (a) Draw and explain block diagram of DMM. 4
- (b) Explain use of OP-AMP as Comparator. 4
5. (A) Attempt **any two** of the following :
- (a) In a Zener Regulator, Zener Diode is rated as 10V, 1 watt. The unregulated voltage supplied is 50V. The load resistance varies from  $1k\Omega$  to  $5k\Omega$  and a series resistor of  $400\Omega$  is connected. Find minimum and maximum Zener Current. Also find the change in Zener Current. 3
- (b) Explain the concept of RADAR System. 3
- (c) Explain any one type of GAS Sensor. 3

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

- (a) Draw block diagram of OP-AMP and explain each block. 4
- (b) Explain the use of CRO in Frequency and Phase Measurement by Lissajous Figures. 4

**OR**

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

- (a) Draw the circuit of Full-Wave Rectifier with Inductor Filter and explain the action of Inductor Filter with Waveforms. 3
- (b) Calculate the value of Capacitor in a monostable multivibrator using IC555 from the following data :  
R = 100 k $\Omega$                       T = 22 seconds 3
- (c) Discuss the need of modulation in Communication. 3

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

- (a) Explain use of OP-AMP as Buffer and Sign Changer. 4
- (b) Explain the current limiting technique in series transistorised regulator. 4