PAPER ID-311484

Roll No:

B. TECH
(SEM I) THEORY EXAMINATION 2020-21
BASIC ELECTRONICS

Time: 3 Hours   *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2 x 7 = 14**

a.	Why Silicon(Si) is preferred over Germanium(Ge)?
b.	List the advantages of MOSFET over BJT.
c.	Draw the V-I characteristics for ideal and practical diode.
d.	List characteristics of Ideal Op Amp.
e.	A lissajous pattern on a CRO is stationary and has 4 horizontals and 2 vertical tangencies. The horizontal frequency is 100 Hz, find vertical frequency.
f.	What is need of Modulation?
g.	State the advantages of digital instruments over analog instruments.

SECTION B

2. **Attempt any *three* of the following:**   **7 x 3 = 21**

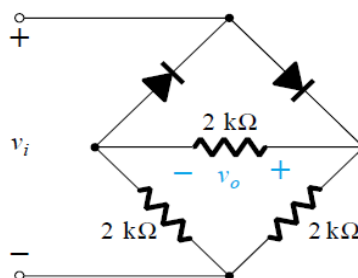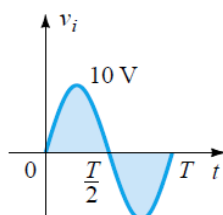| a.	Draw and explain the block diagram of Ramp type digital voltmeter. Also draw related voltage to time conversion waveforms.
b.	Describe various analog modulation techniques in communication.
c.	Draw and explain the differential amplifier. An operational amplifier has a differential gain of 103 and 100, input voltages are 120μV and 80μV, and determine output voltage.
d.	Draw and explain the construction and working of N-channel Enhancement type MOSFET.
e.	Determine the output waveform for the network of Fig. and calculate the output dc level and the required PIV of each diode. Fig.

SECTION C

3. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	Explain the working and V-I characteristic of p-n junction diode. Write difference between avalanche and zener breakdown.

(b)	Explain the following with clear diagram: -
	    i) Full wave voltage doublers
	    ii) Bridge rectifier.

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4. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	Explain how Op-Amp can be used as i) Integrator ii) Inverting Summer
(b)	Calculate the output voltage of the circuit in Fig for R_f =68 KΩ

5. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	Draw the common emitter circuit and sketch the input and output characteristics. Also explain active region, cutoff region and saturation region by indicating them on the characteristic curve.
(b)	Determine the quiescent levels of I_{CQ} and V_{CEQ} for the network of Fig

6. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	Explain working principle and VI characteristics of Tunnel Diode.
(b)	Draw the block diagram of communication system. Calculate the percentage power saving when one side band and carrier is suppressed in an AM signal with modulation index equal to 1.

7. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	How measurement of voltage, current phase and frequency done using CRO?
(b)	Describe the operation of CRT with neat block diagram. How unknown frequency is measured using CRO?