Sub Code: NEC101

Paper Id: 130104 Roll No: | | | | | | | | | | | | | |

B TECH

(SEM –I) THEORY EXAMINATION 2019-20

Electronics Engineering

Time: 3 Hours *Total Marks: 100*

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

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a.	**Define dynamic resistance of a p-n junction diode in forward biased condition.**
b.	**What you mean by Doping. Describe its need.**
c.	**Derive the relationship between α & β.**
d.	**Why the Q-point varies in transistors.**
e.	**Differentiate between N-type and P-type semiconductor.**
f.	**The unmodulated R.M.S current of an AM wave is 8.93A and it increase to 11.25A with modulation. Determine the modulation index.**
g.	**A Lissajous pattern on an oscilloscope is stationary and has 4 horizontal and 3 vertical tangencies. The horizontal frequency is 50 Hz, find vertical frequency.**
h.	**Explain the principle of operation of LED.**
i.	**Explain the form factor of full wave rectifier.**
j.	**Explain the effect of temperature on reverse saturation current.**

SECTION B

2. Attempt any THREE of the following: 10 x 3 = 30

a.	**Explain the operation of full wave bridge rectifier with the help of a circuit diagram. Also sketch the input and output waveforms. Define its PIV. Also derive its ripple factor and rectification efficiency**
b.	**With the help of block diagram explain the working of digital voltmeter.**
c.	**Explain half wave rectifier and also drive its avg. and rms. current value**
d.	**Describe the working of Voltage Quadrupler multiplier circuit.**
e.	**Calculate Q point for a Voltage Divider Biased CE amplifier having R_1=10KΩ,R_2=5KΩ, R_C=1KΩ ,R_E=500Ω,V_{CC}=10v, β=100.**

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a)	**Draw & explain the V-I characteristic of a P-N junction diode. Also describe the effect of Temperature on the V-I characteristic of a P-N junction diode?**
(b)	**Explain the construction, working principle of LCD, mention the difference between light scattering and field effect types of LCDs, and also explain the advantages of LCDs**

4. Attempt any *one* part of the following: 10 x 1 = 10

(a)	**Explain the construction and working of E – MOSFET.**
(b)	**Explain the construction and working principle of NPN transistor.**

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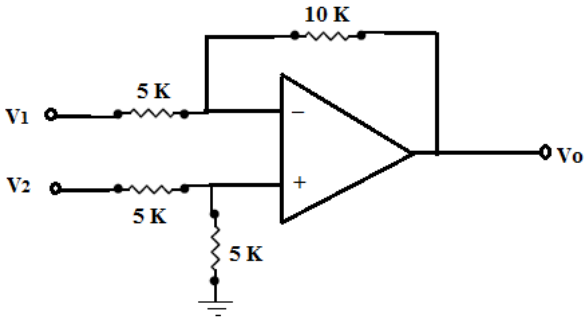
5. Attempt any *one* part of the following: 10 x 1 = 10

(a)	Find the output voltage of the Op-Amp circuit shown in figure 4, where V_1=10 volt, V_2= 5 volt. 
(b)	Draw and Explain the working of:-(1) Integrator using OP-AMP, (2)Summing amplifier using OP-AMP

6. Attempt any *one* part of the following: 10 x 1 = 10

(a)	Draw and explain the block diagram of Digital Multimeter.
(b)	Explain CRO with the help of diagram. How can we measure phase and frequency using CRO?

7. Attempt any *one* part of the following: 10 x 1 = 10

(a)	Compare Amplitude Modulation (AM), Frequency Modulation (FM) and Phase Modulation (PM).
(b)	A sinusoidal carrier of 1MHz and amplitude 100V is amplitude modulated by a sinusoidal modulating signal of frequency 5 KHz providing 50% modulation. Calculate the frequency and amplitude of USB and LSB.