Printed Pages: 02 **Sub Code: NEC101**

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B. TECH.
(SEM I) THEORY EXAMINATION 2018-19
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 a hole in a semiconductor
b) Write the limitations of digital techniques
c) Why emitter is always forward biased?
d) What do you mean by potential barrier for a PN junction?
e) Explain the properties of an ideal op-amp.
f) Explain the features of transistors
g) Write application of DSO
h) define common mode rejection ratio
i) What is modulation and demodulation?
j) What are the basic constituents of a communication systems?

SECTION B

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

a) Explain the difference between analog and digital communication
b) Explain the full wave rectifier with circuit diagram
c) Draw a fixed bias circuit? Obtain the current in the circuit
d) Explain the construction and working of depletion type MOSFET
e) Draw a adder circuit using an op-amp? Explain its applications

SECTION C

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

a) Explain the construction and working of digital voltmeter
b) How we can measurement the voltage and current using CRO

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

a) Explain the construction and working of cathode ray tube
b) Define amplitude modulation? Draw waveform of amplitude modulation

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

a) Explain the construction and working of LED
b) Discuss the current flow mechanism in a P-N junction under forward biased condition.

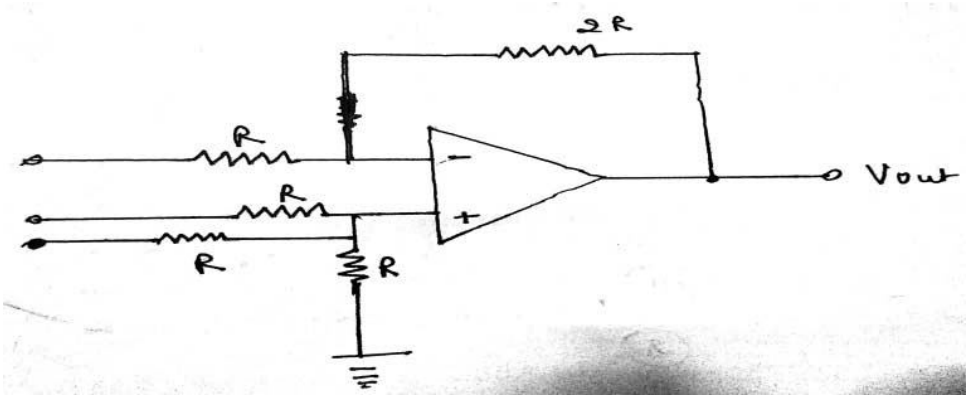
6. Attempt any *one* part of the following: 10 x 1 = 10

a) What is the need of biasing a transistor? Explain the types of transistor

b) Draw the block diagram of a communication system and explain the function of each block.

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

a) Figure Shows a non-inverting op-amp summer with $V_1 = -2V$ and $V_2 = -V$. Determine the output voltage V_{out}



b) Design an inverting op-amp circuit with a voltage gain of $A_F = V_o/V_1 = -20$ and an input resistance that is largest value possible but under constraint that the largest resistance value is limited to $1M\Omega$.