Sub Code:MTAR012

Paper Id: 275104 Roll No: | | | | | | | | | | | | | |

M. TECH.
(SEM-I) THEORY EXAMINATION 2019-20
INTRODUCTION TO ELECTRONICS &ELECTRICAL ENGINEERING

Time: 3 Hours *Total Marks: 100*

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

SECTION A

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

a. What is the effect of negative feedback on gain in an amplifier?
b. Write the expression for voltage gain with negative & positive feedback.
c. What is barkhausen criterion?
d. Why we use two transistors in a wein bridge oscillator?
e. Write the expression for two resonant frequencies of a crystal oscillator.
f. What is transducer?
g. What is the purpose of resistance in the emitter circuit of a transistor amplifier?
h. Draw the schematic symbol for SCR & TRIAC.
i. Define quality factor of a coil.
j. What are the universal gates? Why they are called so?

SECTION B

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

(a) Describe wein bridge oscillator using OPAMP.
(b) Explain all the regions of operation of a BJT.
(c) Discuss common emitter amplifier.
(d) Draw & explain the V-I characteristics of a zener diode.
(e) Write short notes on: (i) Avalanche Breakdown (ii) Zener breakdown.

SECTION C

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

(a) Write short notes on SCR.
(b) Describe the basic construction of BJT.

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

(a) Write a technical note on inverters.
(b)State Demorgan's theorem and prove it.

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

(a) Draw the symbol & truth table of a 4 input gate if the gate is
(i) NAND gate. (ii) OR gate (iii) XOR gate
(b) Write a shortnotes on 'IGBT'

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

(a)What is CRO? Draw its block diagram & explain its working.
(b)Write short note on Transformer.

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

(a) Write a technical note on (i) Phase shift oscillator (ii) Crystal oscillator .
(b)What is the need of biasing in transistor? Discuss the emitter biased circuit with the help of neat diagram.

www.aktuonline.com