Printed Pages : 3

EAG-303

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 991303

Roll No. | | | | | | | | | | |

B. Tech.

(SEM. III) (ODD SEM.) THEORY EXAMINATION, 2014-15

BASIC ELECTRONICS AND INSTRUMENTATION

Time : 3 Hours] [Total Marks : 100

Note : Attempt question from all sections as per instruction.

SECTION - A

1. Attempt all part of the questions. **10×2=20**

All parts carry equal marks.

(a) What is the effect of temperature on conductivity of a semiconductor?

(b) What are the different stages of an op-amp?

(c) What is the need for biasing a transistor?

(d) What are universal gates ? Why are they called so?

(e) Does a hole in a semiconductor contribute to a flow of current? If yes, how and if no, how?

(f) Define the zener and avalanche breakdown in p-n junction.

(h) State the advantage of a digital instrument over an analog instrument.

(i) Explain, why BJT is called bipolar device and FET is called a unipolar device?

(j) What is meant by depletion layer in p-n junction?

SECTION - B

2. Attempt any three questions. **10×3=30**

All Questions carry equal marks

(a) Draw and explain V-I characteristics of P-N junction diode.

(b) Draw the circuit diagram of transistor in CE configuration and sketch in output characteristics.

(c) What are the advantages of the FET over a BJT ? Define pinch off voltage and drain voltage and drain Resistance FET.

(d) Write the characteristics of an ideal op-amp. How it is used as an integrator and summer?

(e) Explain the potential divider biasing circuit.

SECTION - C

3. (a) Explain the construction and characteristics of JFET. **10×1=10**

OR

(b) Explain the basic construction, operation and characteristics of MOSFET.

4. (a) Explain the working of positive clipper and negative clamper circuit. **10×1=10**

OR

(b) Explain the working of Hall wave and full wave rectifier. What are the advantage of full wave rectifier?

5. (a) Explain how frequency and phase can be measure using a CRO. And also describe the application of CRO. **10×1=10**

OR

(b) Draw and explain input/output characteristics of CB configuration of BJT.

6. (a) What do you understand by dont care condition ? Is it an advantage or disadvantage to include then in a map. Explain with reasons. **10×1=10**

OR

(b) Simplify the function using k-map

$F(A,B,C,B) = \sum m(3,4,5,7,9,13,14,15) + \sum d(0,1,8,10)$.

Implement the output using gates.

7. (a) Draw the block diagram of digital multimeter. Explain the operation of each block. **10×1=10**

OR

(b) Draw the circuit of op-amp as a subtractor and find out the expression of output.