Printed Pages : 7 | 1258 | EC-101

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

Paper ID : 131111 Roll No. | | | | | | | | | | |

B.TECH.

(SEM. I) THEORY EXAMINATION, 2015-16

ELECTRONICS ENGINEERING

[Time:3 hours] **[Total Marks:100]**

Note: All sections are ***compulsory.***

SECTION-A

1. Attempt **all** parts . All parts carry equal marks. Write answer of all part in short . (2x10–20)

   (a) What is the purpose of Delay block in CRO?

   (b) Define slew rate of an OPAMP.

   (c) Why Si is preferred over Ge for manufacturing of electronic devices.

   (d) In JFET I_{DSS}=6mA, V_p=-3V biased at V_{GS}=-2V. Determine the value of g_m?

   (e) Define Op-Amp and Draw its block diagram.

(f) Explain Common Collector configuration in case of NPN transistor.

(g) Explain ohmic region of the JFET.

(h) What do you understand by 'cut-in' voltage of a diode?

(i) Differentiate between deterministic and random signals.

(j) Define need of unity gain amplifier using an OpAmp.

SECTION-B

Attempt any **five** questions from this section.**(10x5=50)**

2. (i) Determin V_0, and draw the output waveform of the given network of Figure 1.

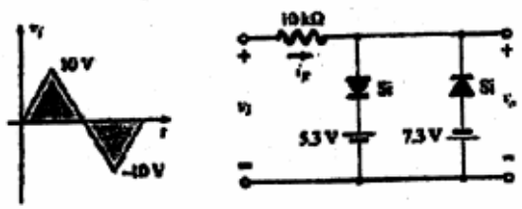

Figure 1

(ii) For the network of Figure 2, determine the range of V_i that will maintain V_L at 20 V without exceeding the maximum current rating of 60 mA.

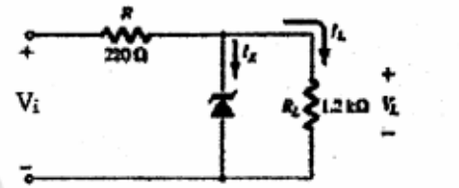

Figure 2

3. (i) Determine V_o and I_D for the network of Figure 3.

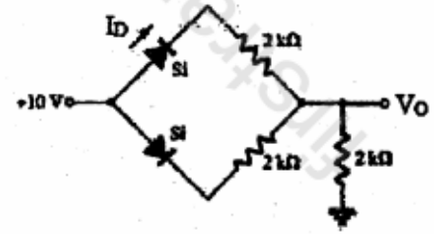

Figure 3

(ii) Sketch V_0 for the network of Figure 4 for the input shown.

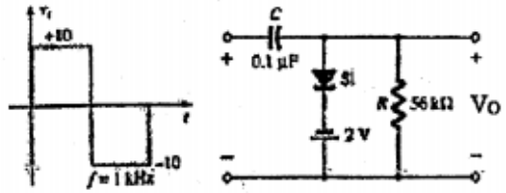

Figure 4

4. For the voltage divider configuration of Figure 5 determine r_e, A_v, Z_{in} and Z_0.

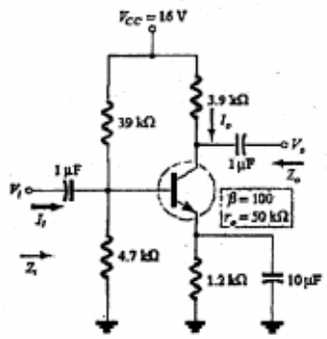

Figure 5

5. Explain the following with the help of necessay diagrams using an Op-Amp.
   (i) Adder
   (ii) Integrator

6. (i) Enumerate with the help of a block diagram, of various elements involved in Digital Multimeter to measure the various range of Voltage and Current.
   (ii) Explain Differential amplifier in two mode of operation.

7. (i) Determine the output voltage of an op-amp for input voltages of Vi_1=100V and Vi_2=120V. The amplifier has a differential gain of A_d=4000 and the value of CMRR is:
   (a) 150 (b) 10^3
   (ii) Find V_0 for the circuit shown in Figure 6

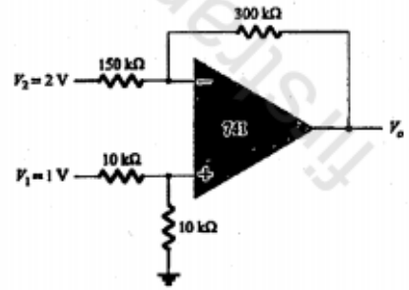

Figure 6

8. With the help of a neat block diagram, explain the working of a CRO and describe the method of measurement of phase and frequency using CRO.

9. Explain with the help of a neat diagram working and characteristic curve of Ramp type digital voltmeter.

SECTION-C

Attempt **any two** questions from this section. (15x2=30)

10. (i) Explain the working and characteristic of Tunnel diode with the help of a neat diagram.

    (ii) Describe with the help of circuit diagram, working of a voltage multiplier.

11. (i) Explain construction working and characteristics of P-channel Enhacement type MOSFET.

    (ii) Draw and explain the input and output characteristics.

12. (i) For the common collector configuration in Figure 7, determine I_B, I_C, V_L, V_{CE}.

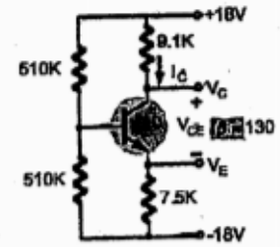

Figure 7

(ii) Determine Z_i, Z_o and Av for the circuit of Figure 8. if I_{DSS}=12mA, V_p=-6V, and Yo=40 microSiemen.

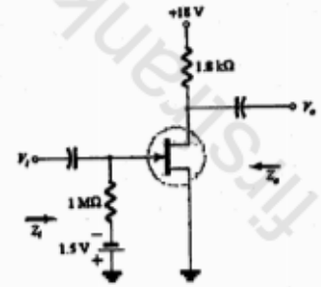

Figure 8