

Printed Pages : 7

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EC-101

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

Paper ID : 131111

Roll No.

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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 . (2×10=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.

1800

(1)

P.T.O.

- (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) Determine V_o and draw the output waveform of the given network of Figure 1.

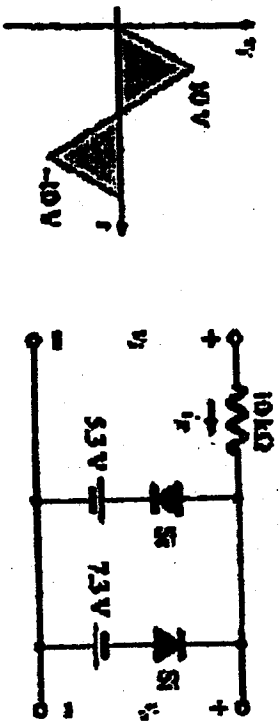


Figure 1

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(2)

EC-101

- (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.

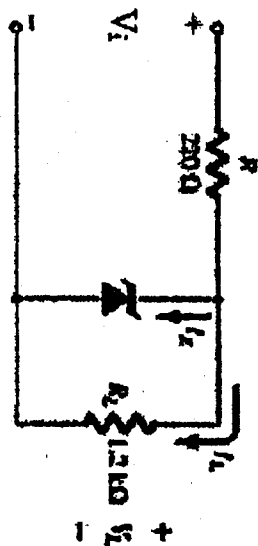


Figure 2

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

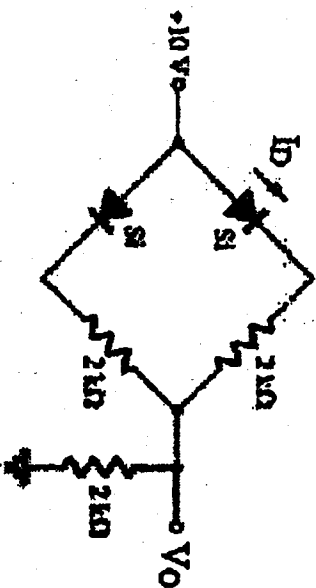


Figure 3

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(3)

P.T.O.

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

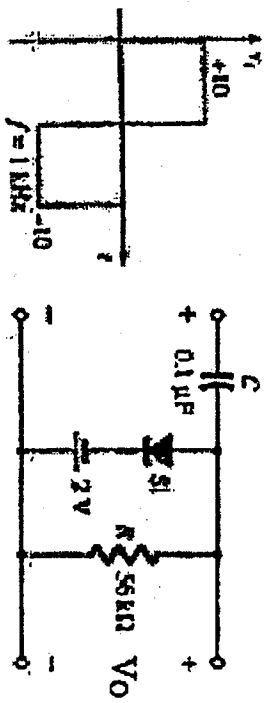


Figure 4

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

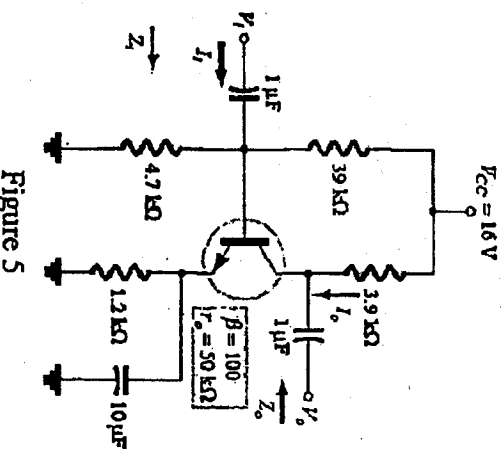


Figure 5

5. Explain the following with the help of necessary 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 $V_{i1} = 100V$ and $V_{i2} = 120V$. The amplifier has a differential gain of $A_d = 4000$ and the value of CMRR is:

- (a) 150
- (b) 10^3

(ii) Find V_o for the circuit shown in Figure 6

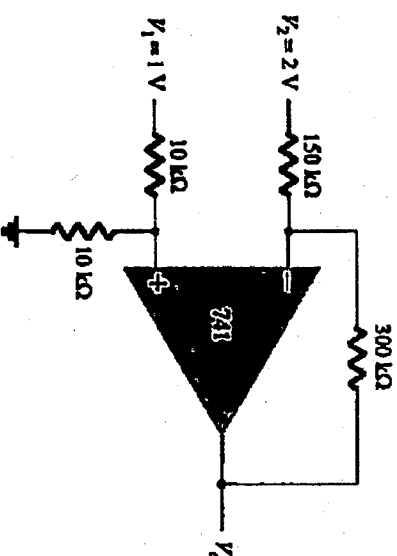


Figure 6

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 Enhancement type MOSFET.
(ii) Draw and explain the input and output characteristics.

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(6)

EC-101

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

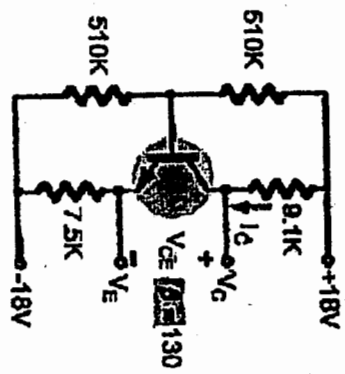


Figure 7

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

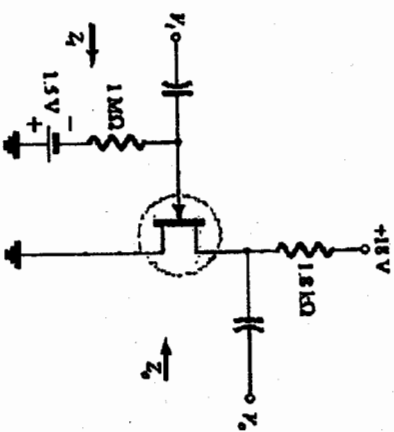


Figure 8

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(7)

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