AM/CS/CYS/DS 113 (R-22)

Total No. of Questions : 10] [Total No.of Pages : 02

I/IV B. Tech. DEGREE EXAMINATIONS, AUGUST - 2023

First Semester

AM / CS / CYS / DS

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

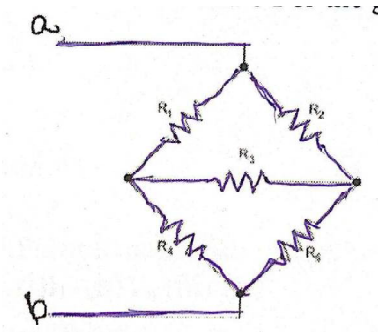
Time : **Three Hours** Maximum : **70** Marks

Answer All Questions

Answer ONE question from each Unit. 5x14=70 M

UNIT - I

1. a) Find the equivalent resistance between a and b for the given circuit. Assume all the resistors are $\frac{1}{2}$ kΩ.



b) What was the law discovered for V is proportional to the current I ? Explain in detail.

(OR)

2. a) Describe what is the series resonant circuit ? For the series RL circuit L = 100 mH and R = 100Ω. Find the voltage across R and L. Also determine the phase angle.

b) Discuss about RMS value ? Derive it. Find the RMS voltage for V(t) = 10 sin (500t).

UNIT - II

3. a) Explain construction and principle of operation of DC generator.

b) Draw and discuss about performance characteristics of DC motor.

(OR)

4. a) Discuss about torque Vs armature current and speed Vs armature current characteristics of DC motor.

b) Derive and discuss the DC generator EMF equation ?

P.T.O.

UNIT - III

5. What are the classifications of transformers ? Explain step up and step down in detail.

(OR)

6. a) Explain the operation of n-channel JFET operation and draw the drain characteristics ?

   b) What is the purpose of full wave rectifier ? Explain its operation.

UNIT - IV

7. a) Draw and discuss the CB configuration with its characteristics ?

   b) Explain how transistor works as an amplifier ? Derive its voltage gain.

(OR)

8. a) Explain the working operation of Enhancement mode of n-channel MOSFET ?

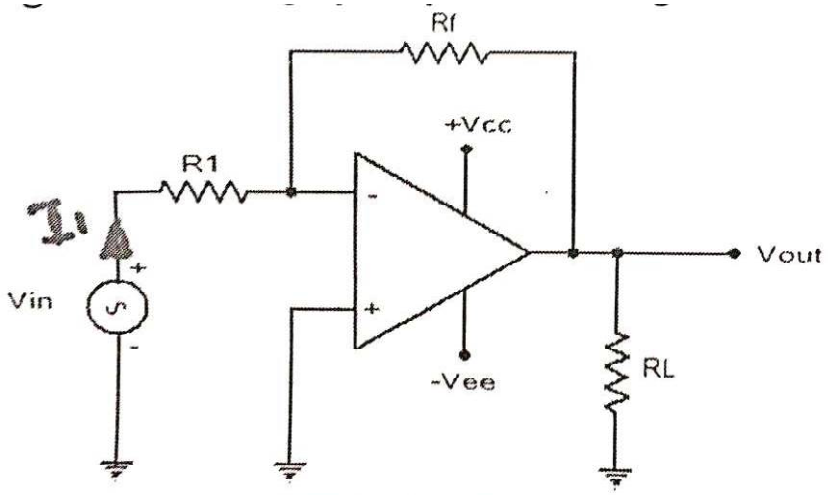
   b) What is biasing ? Explain significance of it in common source JFET amplifier.

UNIT - V

9. Explain cascade amplifier with its frequency response characteristics ? Derive the gain.

(OR)

10. For a given inverting op-amp shown in fig.



opamp inverting amplifier

Vi = 5V, R1 = 10K ohms whose Rf = 100K ohms, load resistance R_L = 25K ohms is connected at output terminal then calculate (i) I_1 (ii) V_o (iii) I_L.