DRONACHARYA GROUP OF INSTITUTIONS, GREATER NOIDA

COURSE:B.Tech.

FIRST YEAR ODD-SEMESTER (2015-16)

Subject : Electronics Engineering **Subject Code: NEC-201** **Branch: ECE/CSE/IT/EEE**

Q1. Attempt all questions

a) What do you mean by voltage regulation?

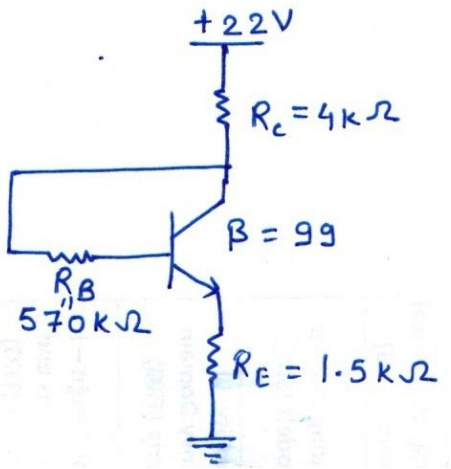
b) Write the applications of Varactor diode.

c) How does a BJT behaves?

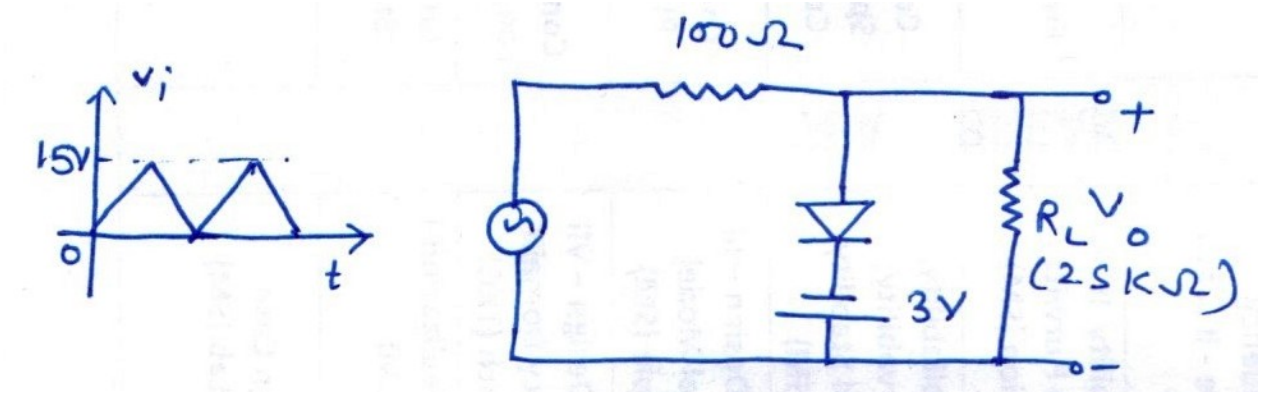
d) Write any four ideal characteristics of Op-Amp?

e) Draw the transfer characteristics of D-MOSFET.

Q2.Draw the load line and determine the mode of the circuit.



Q3 Draw the output waveform V_o of clipper circuit.

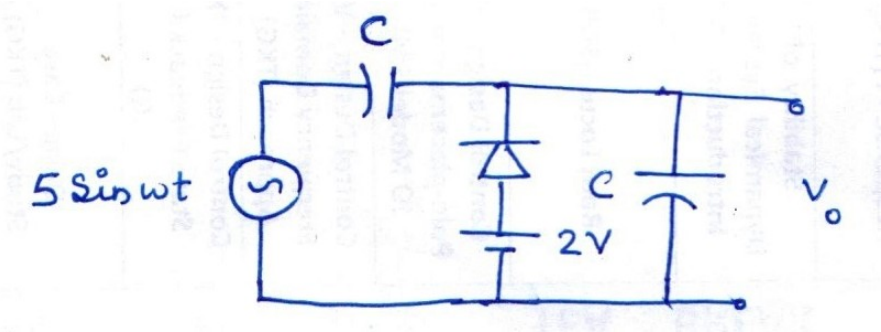


Q4. Draw and explain the working of Bridge rectifier with input output characteristics.

Q5.

i) **Explain the construction and working of N-channel JFET. Also draw the drain and transfer characteristics.**

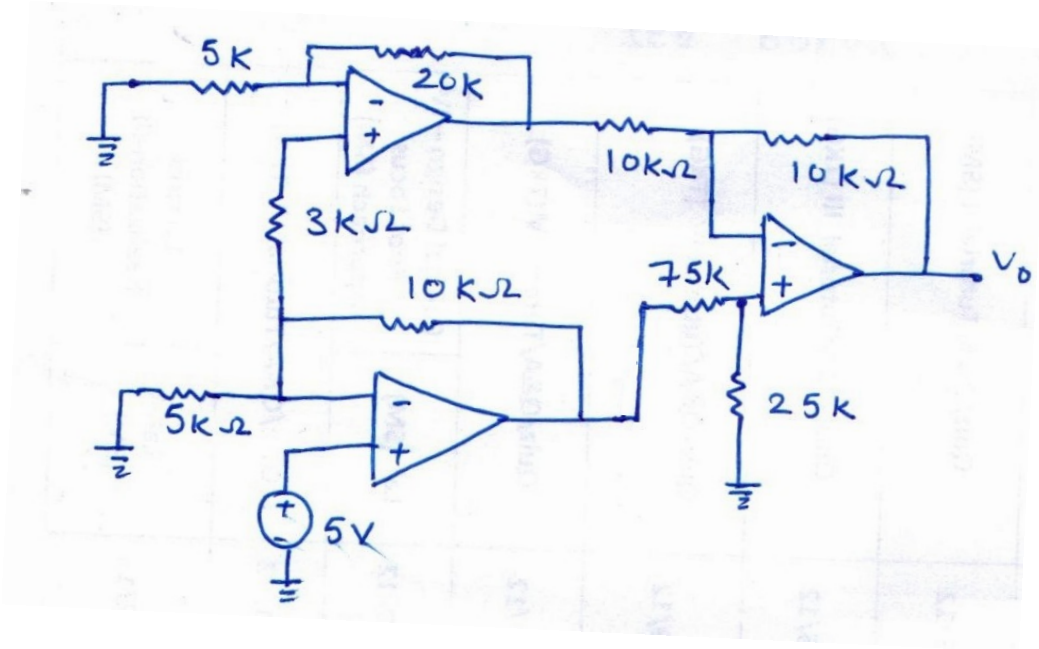
ii) **Draw the output voltage V_o for clamper circuit.**



iii) **Derive the expression of voltage gain of Emitter follower.**

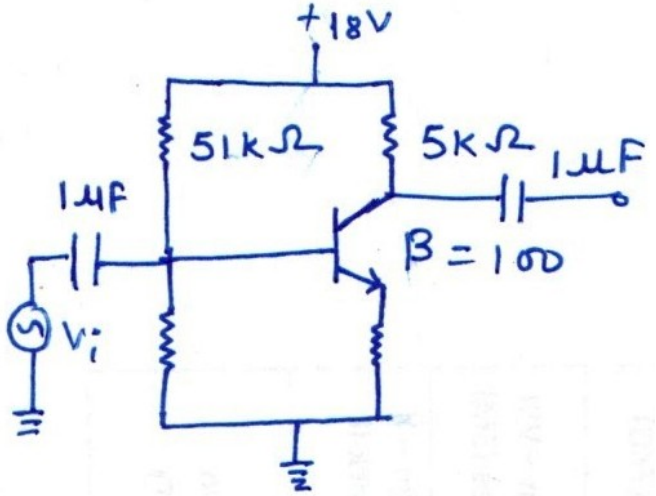
Q6. Attempt any two parts:-

i) **Find the output waveform of op-amp circuit.**



ii) **Explain the structure, working and characteristics of Tunnel diode .**

iii) **Draw the load line and find the mode of the given circuit by accurate/exact analysis.**



Q7.

i) **Explain the working principle of CRT with daigram.**
ii) **Drive the expression of voltage gain of common source amplifier.**
iii) **Derive the expression for differentiator and integrator.**

) For the p type semiconductor, dopants from III group element are typically employed. Can we use dopants from II group? Give reason?

b) Differentiate between silicon and germanium material?

c) What is relation between junction temperature and barrier potential of PN junction diode?

d) What is the effect of temperature on conductivity of semiconductor?

e) Find the PIV of Full Wave Rectifier with centre tapped transformer using its circuit diagram?

PART B

NOTE: Attempt any two questions **(2X5=10 Marks)**

Q2. Explain the formation of depletion region in PN junction diode?

Q3. What is rectifier? Explain the construction and working of half wave rectifier. Also draw its input and output waveform?

Q4 A germanium diode carries a current of 1mA at room temperature when a forward bias of 0.15V is applied. Find the reverse saturation current at room temperature?

PART C

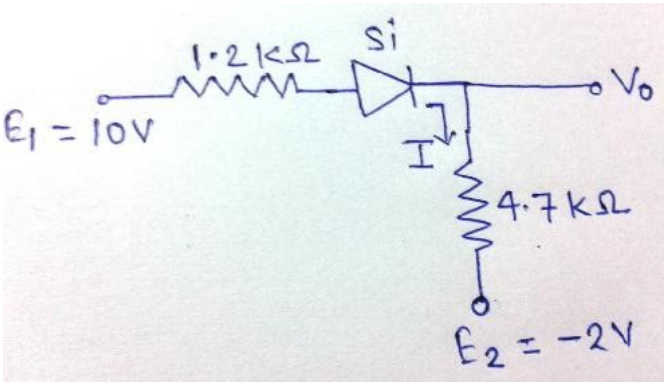
NOTE: Attempt all Questions **(6X5 = 30 Marks)**

Q5. Attempt any two parts:-

a) Show that the ripple factor of full wave rectifier is 48%?

b) If the surface leakage current is 2nA for reverse voltage of 25V. What is the surface leakage current for a reverse voltage of 35V?

c) Determine the currents I, V_2 , V_1 and V_0 for the given network **:**

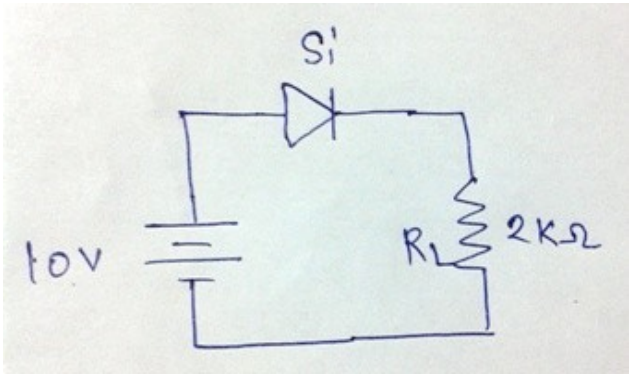


Q6. Attempt any two parts:-

a) Draw the circuit diagram of shunt capacitor filter and explain its operation?

b) Draw and explain the ideal and practical V-I characteristics of PN junction diode?

c) For the given circuit determine load voltage and load current:

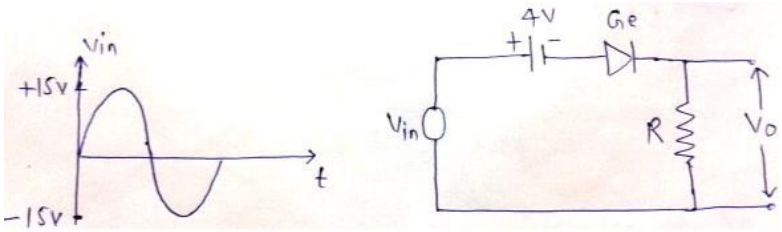


Q7.

a) What do you mean by biasing? Explain the operation of PN Junction diode under forward and reverse bias condition?

b) A silicon diode has a saturation current of 5nA at 25^0 C. What is the saturation current at 100^0 C?

c) Explain the working of given circuit and also draw its output waveform?


Vin
+15v
-15v
t
4V
Ge
Vin
R
Vo