SASTRA
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THANJAVUR KUMBAKONAM CHENNAI

School of Electrical & Electronics Engineering
First CIA Test – March 2023
Course Code: EIE 110
Course Name: Principles of Electronics
Duration: 90 minutes Max Marks: 50

PART- A

10 x 2 = 20 Marks

Answer all the questions

1. Find the Current flowing through the diode shown in Fig.1.Assume the diode is ideal.

Fig.1

2. A half wave rectifier uses a transformer of turns ratio 4:1. If the primary voltage is 240V rms, find (i) DC output voltage, (ii) PIV
3. Differentiate avalanche breakdown and zener breakdown
4. Sketch the output voltage(Vo) waveform across the R_L as shown in Fig.2. Assume the voltage drop across the diode is 0.7 V.

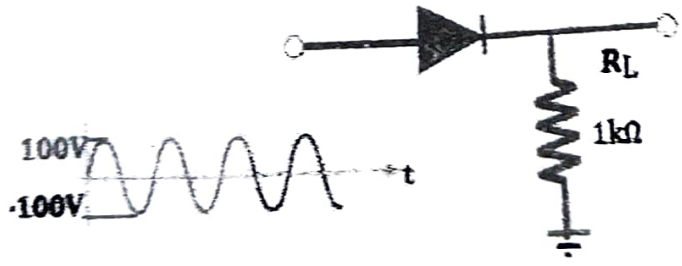

Fig.2

5. Choose the states of three ideal diodes shown in the following circuit.

(a)D1 ON,D2 ON and D3 ON

(b) D1 ON,D2 OFF and D3 ON

(c) D1 ON,D2 ON and D3 OFF

(d) D1 OFF,D2 ON and D3 ON

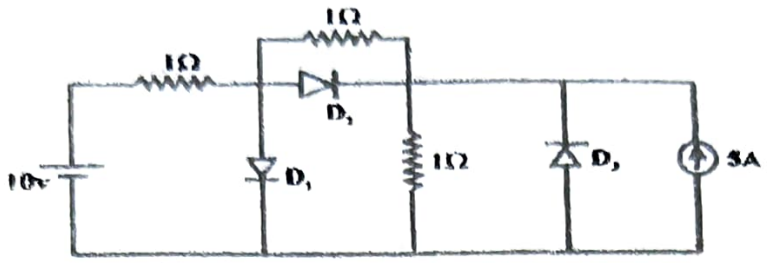

Fig.3

6. Assume that the diode in fig.4 has Von = 0.7V, The magnitude of the current I_2 (in mA) is equal to _____

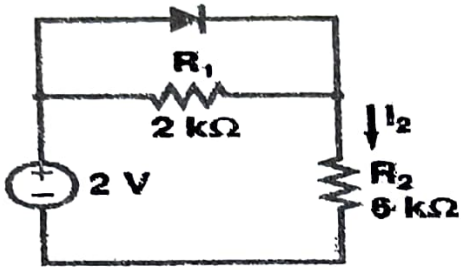

Fig.4

7. Write the significance of calculating PIV in the midpoint full wave rectifier design.
8. A full wave rectifier uses two diodes, and the internal resistance of each diode may be assumed constant at 20Ω. The transformer rms secondary voltage from the center tap to each end secondary is 50V, and the load resistance is 980Ω. Find the mean load current.
9. How does a zener diode act as a voltage regulator?
10. Compare drift current and diffusion current

PART- B

3 x 10 = 30 Marks

Answer all the questions

11. A full wave center tapped rectifier circuit is connected to a 230 V,1Φ, 50 Hz AC supply through a 5:1 transformer.A resistive load of 100Ωis connected to the rectifier circuit. Determine (i) dc output voltage (ii) peak inverse voltage (iii) ripple factor and (iv) Rectification efficiency
12. The four diodes used in a bridge rectifier circuit have forward resistance which may be considered constant at 1Ω and infinite reverse resistance. The alternating supply voltage is 240V rms and load resistance is 480Ω. Determine (i) mean load current (ii) power decipation in each diode
13. Explain the operation of a zenor diode and compare it with PN junction diode.

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THANJAVUR KUMBAKONAM CHENNAI

School of Electrical & Electronics Engineering

Second CIA Test – May 2023

Course Code: EIE 110

Course Name: Principles of Electronics

Duration: 90 minutes Max Marks: 50

PART- A 10 x 2 = 20 Marks

Answer all the questions

1. Design a fixed bias circuit using a silicon transistor having β value of 100, V_{CC} = 10 V and DC bias condition are to be V_{CE} = 5 V and I_C = 5mA. Calculate R_B, R_C and I_B.

2. For a transistor β=45 and voltage drop across 1kΩ which is connected in the collector circuit is 1V. Find the base current for common emitter configuration.

3. Enumerate the significance of emitter feedback in the design of voltage amplifiers.

4. What is meant by faithful amplification

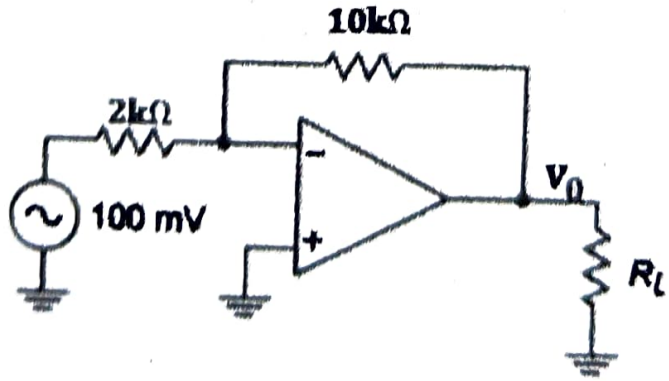
5. Compare CS, CD and CG configurations.

6. Draw the CMOS device structure and write its applications

7. Draw the emitter follower circuit and comment about its current gain

8. Differentiate D-MOSFET and E-MOSFET

9. Find V_0 for the inverting amplifier shown in Fig.1

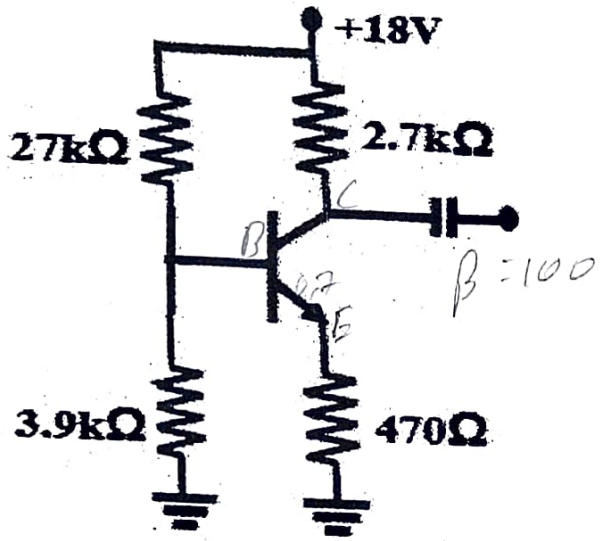


10. Implement the following equations using op-amps.
$V_o = -5V_1+2V_2-10V_3$.

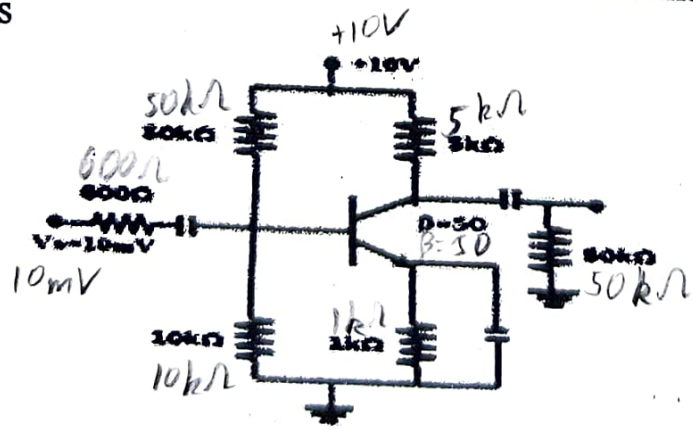
PART- B

Answer any three questions 3 x 10 = 30 Marks

11. Find VB,VE,VC and VCE for the circuit shown in Fig.1.β=100,VBE=0.7V



12. For the amplifier as shown in Fig.2, Draw the DC load line and mark the operating points



13. Explain the operation of JFET with its VI characteristics. Compare its operation with BJT.
14. Explain the operation of E-MOSFET with its VI characteristics

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THANJAVUR KUMBAKONAM CHENNAI

School of Electrical & Electronics Engineering

Third CIA Test – June 2023

Course Code: EIE 110

Course Name: Principles of Electronics

Duration: 90 minutes Max Marks: 50

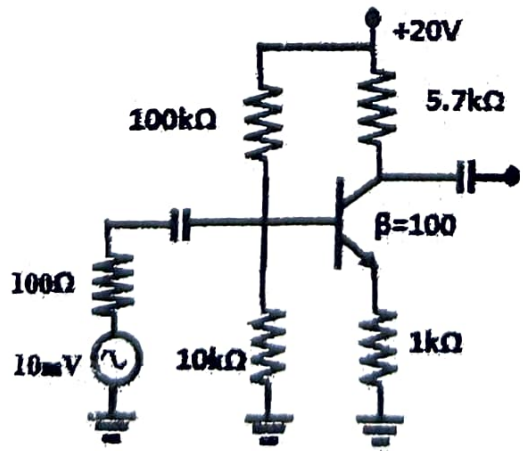
PART- A

	Answer all the questions	**5x 2 = 10 Marks**
1.	State the associative property of Boolean algebra.	
2.	Implement the equation F= XY+X'Y' using Logic gates.	
3.	How does a Zener diode act as a voltage regulator?	
4.	In a CE transistor circuit V_{CC} =10V and the quiescent Current is 2mA. Determine the operating point when the collector load is 5kΩ.	
5.	Implement the following equations using op-amps $Vo = -2V_1+V_2-2V_3$.	

PART- B

Answer any three questions **3 x 10 = 30 Marks**

6. Determine $I_C(Q)$ and V_{CE} (Q).Draw the DC load line and mark the operating points.



Fig, 1

7.	Explain the operation of E-MOSFET with its VI characteristics
8.	A full wave center tapped rectifier circuit is connected to a 230 V, 1Φ, 50 Hz AC supply through a 2:1 transformer. A resistive load of 100Ω is connected to the rectifier circuit. Determine (i) dc output voltage, (ii) peak inverse voltage, (iii) ripple factor, and (iv) Rectification efficiency
9.	Explain Half and full adder using logic gates.

PART-C

	Answer all the questions	**1X10=10 Mark**
10. a.	Find the output voltage(Vo) for the adder circuit shown in Fig.2	

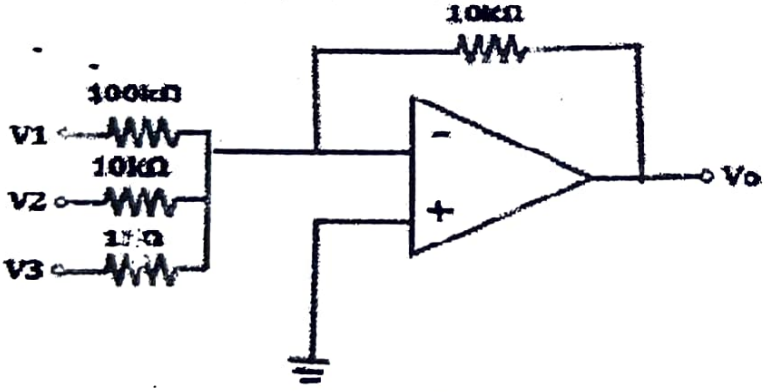


Fig.2

b.	Find IC(Q) and VCE(Q) for the circuit shown in Fig.3	

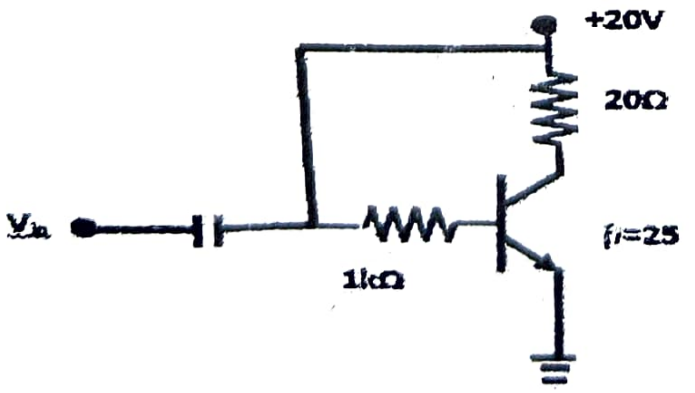


Fig.3