GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Tech (Third Semester - Regular) Examinations, November – 2024

23BECP23001 - ANALOG ELECTRONICS CIRCUITS

(Electronics and Communication Engineering)

Time: 3 hrs Maximum: 60 Marks

Answer ALL questions

(The figures in the right-hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	What are the ideal characteristics of operational amplifier?	CO5	K1
b.	Draw the terminal characteristics of a Zener diode.	CO1	K1
c.	For the transistor circuit shown in Fig.A. find the value of V_C if V_{BE} =0.7V and β=100.		

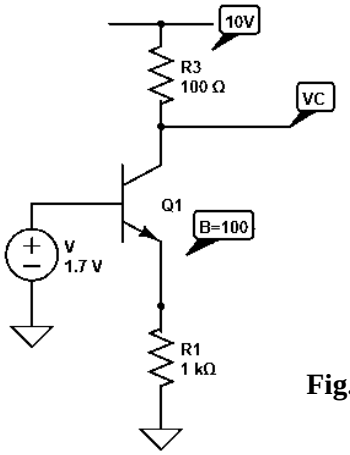


Fig. A

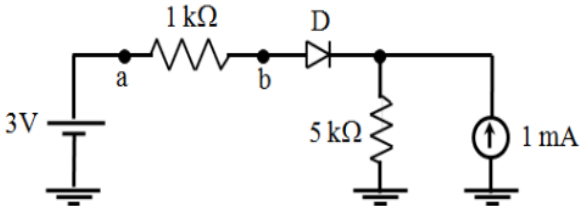
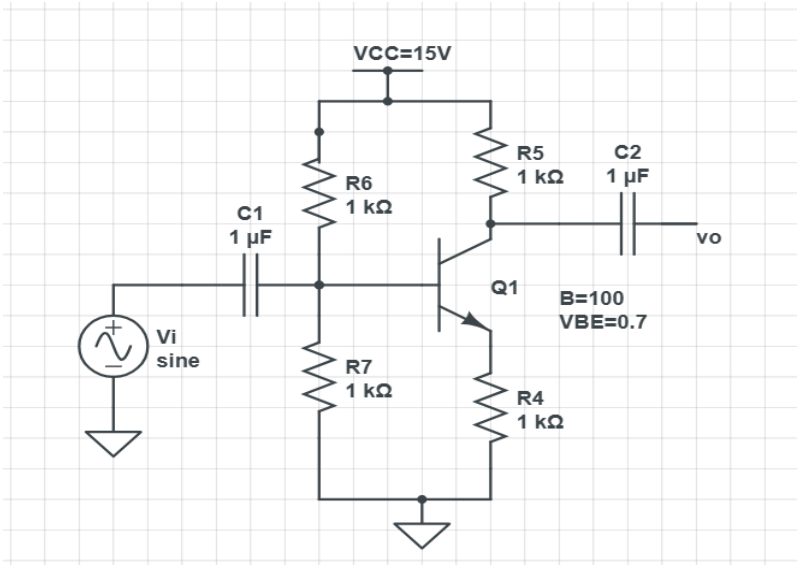


Fig. B

		CO2	K2
d.	Describe about the saturation and ohmic region of operation of a JFET.	CO3	K1
e.	For the ideal diode circuit as shown in Fig B. find the value of V_{ab}.	CO1	K2

PART – B **(10 x 5 = 50 Marks)**

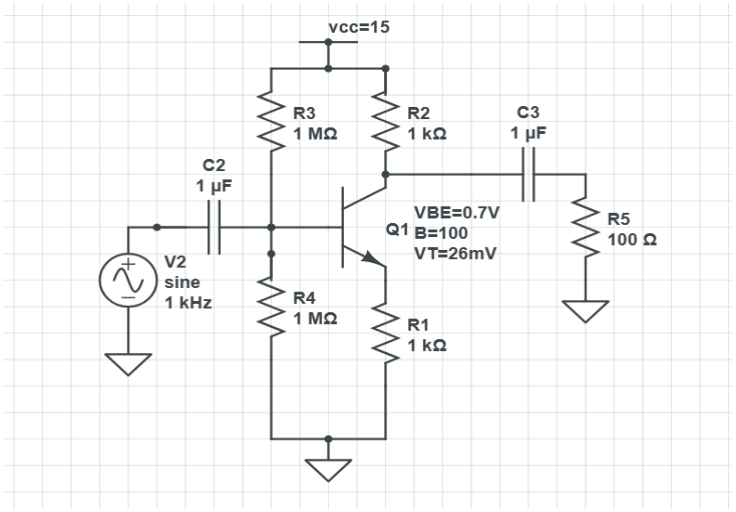
	Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a.	Describe about the working of a bridge type full wave rectifier with proper diagram.	5	CO1	K2
b.	How a two-level clipper circuit works explain with proper diagram.	5	CO1	K2
	(OR)			
c.	Design an integrator circuit using operational amplifier and find the expression of its output.	5	CO5	K2
d.	Design a differentiator circuit using operational amplifier and find the expression of its output.	5	CO5	K2
3.a.	Draw the circuit diagram of a common collector amplifier.	3	CO3	K1
b.	For the transistor circuit shown in figure find the gain if V_T=26 mV, V_{BE}=0.7 V and β=100.	7	CO3	K3



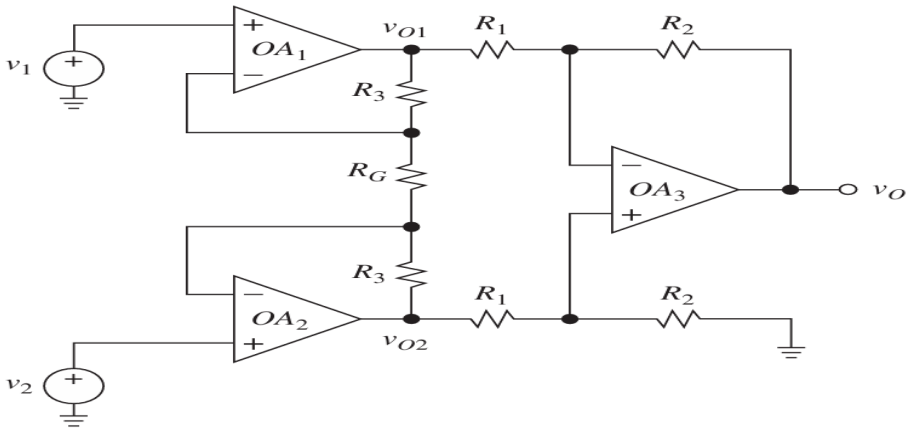
(OR)

c. Find the expression for transconductance (g_m) of an n channel MOSFET. 3 CO4 K1

d. For BJT circuit shown in figure draw the box model, were V_T=26mV, V_{BE}=0.7V and β=100. 7 CO3 K3



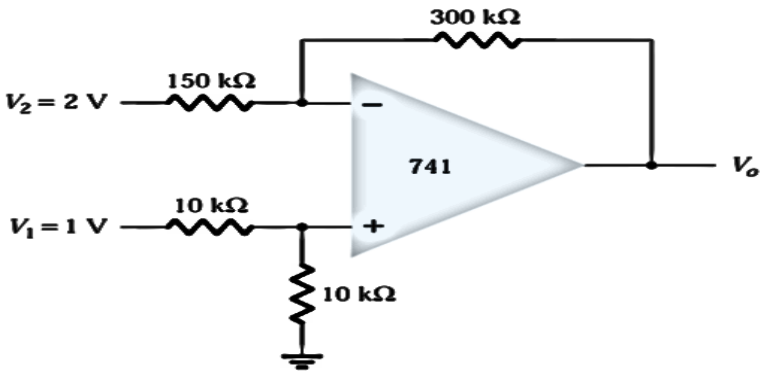
4.a. Find the expression of output v_o for the instrumentation amplifier circuit shown in figure. 5 CO5 K3



b. Draw the circuit of an active low pass filter and find the expression of its cutoff frequency. 5 CO5 K2

(OR)

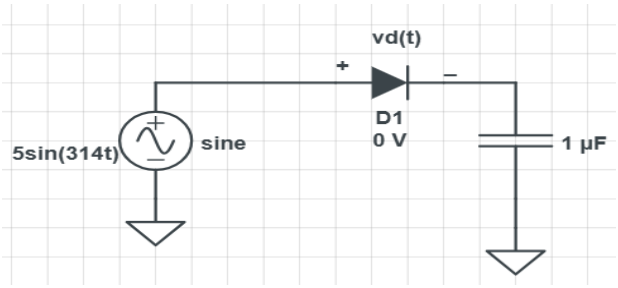
c.	How an inverting Schmitt trigger works explain with proper diagram?	5	CO5	K2
d.	Find the value of output voltage generated by the differential amplifier as shown in figure.	5	CO5	K3



5.a.	Explain about the working of an n channel JFET with proper diagram.	10	CO4	K3

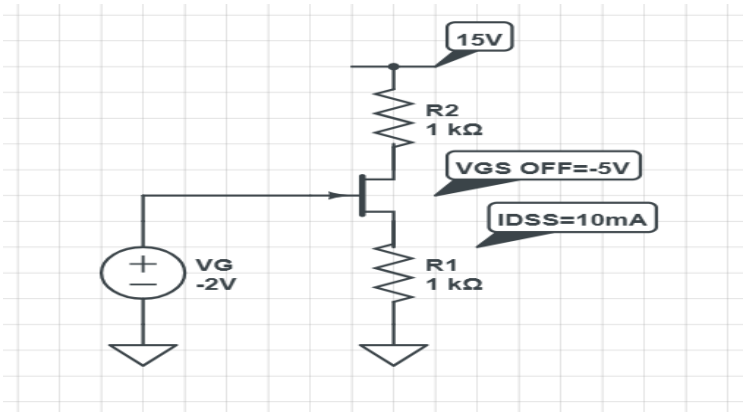
(OR)

b.	Explain about the working of p channel MOSFET with proper diagram.	10	CO4	K3
6.a.	What are the different regions of operation of BJT? and also Explain about switching characteristics of BJT.	5	CO1	K2
b.	For the diode circuit shown in figure draw waveform for $V_d(t)$, assume that capacitor is initially uncharged.	5	CO1	K3



(OR)

c.	Explain about the conditions of oscillation in positive feedback system.	3	CO5	K1
d.	For the JFET circuit shown in figure find the value of V_{GS} and V_{DS}.	7	CO5	K3



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