

Roll No: _____

Department of Computer Science & Engineering
School of Engineering Sciences & technology
Jamia Hamdard
Even Semester Examination 2023

Time: 3 Hrs

Subject Name: Analog Circuits

Note: Please do proper numbering of Attempted Questions.

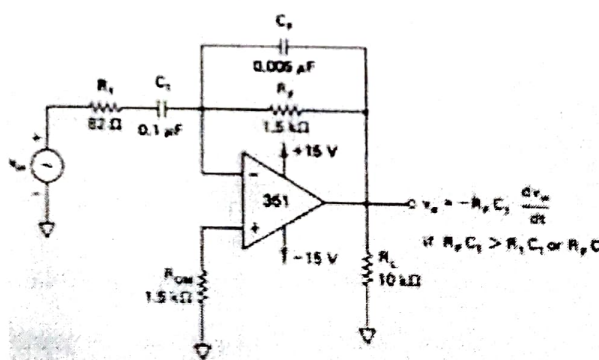
Marks: 75

Subject Code: BTCSE 402

Section A

Note: All the Questions are Compulsory. Each question carry equal marks

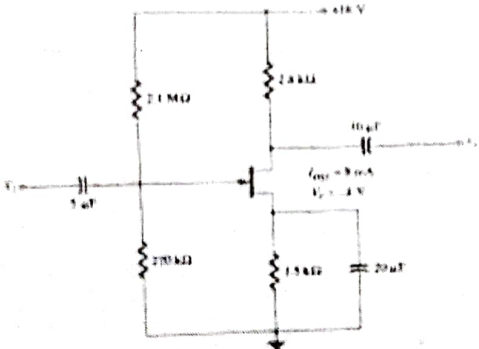
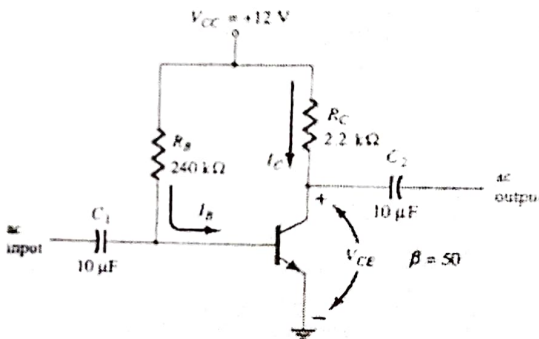
[7 x 5 marks = 35 marks]

Q.No	Question	CO	BL
Q1.	Differentiate between half wave rectifier and full wave rectifier including circuit diagram, waveforms, and mathematical relations	CO1	BL1
Q2.	Explain the concept of inverting and non-inverting amplifier with the help of suitable circuit diagram and mathematical equations.	CO4	BL2
Q3.	Discuss any one example each for ADC and DAC with the help of suitable circuit diagram. Explain the working with the help of suitable examples.	CO5	BL3
Q4.	In a differentiator shown in the figure below, the input is a sine wave with a peak-to-peak amplitude of 3 V at 200 Hz. Sketch its output waveform.  $v_o = -R_f C_1 \frac{dv_i}{dt}$ if $R_f C_1 > R_1 C_1$ or $R_f C_f$	CO2	BL6
Q5.	What is the advantage of using multistage amplifier instead of single stage amplifier? How is the gain and bandwidth of the system dependent on decrease in the number of stages? Justify your answer.	CO2	BL4
Q6.	Explain the Barkhausen criteria?	CO3	BL1
Q7.	Explain the working and significance of current mirror with the help of suitable circuit diagram and mathematical expression	CO3	BL2

Section B

Note: Attempt any Four (4) Questions only. Each question carry equal marks

[4 x 10 marks = 40 marks]

Q. No	Question	CO	BL
Q1.	In a BJT amplifier, discuss the method to draw the DC load line? Draw the circuit diagram showing the development of Voltage-divider biasing method for Field Effect Transistor and explain its working.	CO1	BL2
Q2.	Discuss various characteristics of Op-Amp with the help of suitable mathematical expressions	CO3	BL2
Q3.	In a voltage series feedback, derive the expression for following terminologies a) closed loop voltage gain b) input resistance with feedback c) output resistance with feedback d) Bandwidth with feedback	CO2	BL4
Q4.	For the following diagrams, find the following  Figure (a)  Figure (b) find I_{DQ} & V_{GSQ}, V_D, V_S, V_{DS}, and V_{DG} for Figure a and find I_{BQ}, & I_{CQ}, V_{CEQ}, V_B, V_C, and V_{BC} for figure b	CO1	BL5
Q5.	Discuss different configurations in which a BJT can be used.	CO1	BL2
Q6.	Write a short note on any <u>Two (2)</u> of the following a) Active Filters b) Op-Amp as integrator c) Current shunt Feedback	CO3, CO4	BL2

BL – Bloom's Taxonomy Levels

(1- Remembering, 2- Understanding, 3- Applying, 4- Analyzing, 5- Evaluating, 6- Creating)

CO – Course Outcomes

***** End of Paper *****