

Roll No: _____

Department of Computer Science & Engineering
School of Engineering Sciences & technology
Jamia Hamdard

Even Semester Examination August-2023 (Lateral Entry)

Time: 3 Hrs

Subject Name: Analog Circuits

Note: Please do proper numbering of Attempted Questions.

Marks: 75

Subject Code: BTCE 402

ECE

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.	Explain the Principle of Operation of Transistor as an Amplifier?	CO1	BL1
Q2.	Explain the Working of self-Bias Circuit with suitable diagram?	CO1	BL2
Q3.	What do you mean by depletion and diffusion capacitance? How does breakdown in diodes occur? Differentiate between clipper and clamper.	CO2	BL3
Q4.	Construct the First Order High Pass Filter with cut off frequency of 1 KHz. And sketch its frequency response and its pass band where Gain is 10	CO4	BL6
Q5.	Explain the working of Common Emitter RC Coupled Amplifier?	CO4	BL4
Q6.	Show how Colpitts's Oscillator can be converted to Hartley Oscillator?	CO3	BL1
Q7.	Explain the working of SAR (successive approximation) Type ADC with the help of diagram?	CO5	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.	Draw the physical structure of MOSFET and explain the working of depletion type and enhancement type MOSFET in detail. In JFET, derive the expression for Trans-conductance and Drain-Resistance.	CO2	BL5
Q2.	Show Mathematically that the efficiency of Bridge Rectifier is 81.2% and ripple factor is 0.48?	CO2	BL6
Q3.	Draw the circuit diagram for emitter feedback bias. In the same circuit, $R_c = 1.5K$, $R_e = 2K$ and $V_{cc} = 12V$. Assume $V_{BE} = 0.6V$ and $I_{CO} = 0$. Find R_b such that the quiescent collector to emitter voltage $V_{CE} = 5V$. Also find the stability factor S . Take $\beta = 100$.	CO1	BL5
Q4.	A 6-bit R-2R Ladder Digital to Analog Converter (DAC) has an input high level of voltage 5 V. Determine (i) The Resolution of DAC (ii) the output voltage for digital input 011100	CO5	BL5
Q5.	Draw and explain the equivalent circuit of Crystal Oscillator? For the given parameters values of a Crystal as $L_s = 0.8 H$, $C_s = 0.08 pF$, $R_s = 5 K\Omega$ and $C_p = 1 pF$, Determine the Resonant Frequency?	CO3	BL2

Q6.	Write a short note on the following terms with reference to Op-Amp a) CMRR b) Gain c) Slew Rate d) O/P Impedance	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 *****