Code No: 155SR **RA**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, January/February - 2023
ANALOG ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Explain about Zener break down.	[2]
b)	Write a short note on small signal analysis of transistor.	[3]
c)	Define trans conductance of FET.	[2]
d)	How FET works as switch?	[3]
e)	What are the drawbacks of transformer coupled power amplifiers?	[2]
f)	Classify power Amplifiers.	[3]
g)	What is the effect of negative feedback on bandwidth?	[2]
h)	List the four feedback topologies and draw its basic block diagrams.	[3]
i)	Define the input offset current.	[2]
j)	Draw and label the Ideal op-amp.	[3]

PART – B

(50 Marks)

2.a) How the diode used for clipping? Draw and explain two level clipping circuit.
b) Explain about the half-wave rectifier without filters. [5+5]

OR

3. Explain BJT common-base configuration, and sketch a circuit for determining CB characteristics. [10]

4.a) Draw and explain the small signal equivalent circuit of MOSFET.
b) Discuss the MOSFET characteristics in depletion mode. [5+5]

OR

5.a) Compare the performance of BJT and FET amplifiers.
b) Draw and explain the CS amplifier with current source load. Derive an expression for Av. [5+5]

6.a) Derive the expression for maximum conversion efficiency for a simple series fed Class A power amplifier.

b) A push pull amplifier utilizes a transformer whose primary has a total of 160 turns and whose secondary has 40 turns. It must be capable of delivering 40W to an 8 Ω load under maximum power conditions. What is the minimum possible value of V_{CC}? [5+5]

OR

7.a) Briefly explain the distortion in power-amplifier and Thermal stability.

b) Design a class B power amplifiers to deliver 25W to a load resistor R_L=8 ohms, using transformer coupling. Vm=Vcc=25V. Assume necessary data. [5+5]

8.a) Draw the voltage shunt feedback amplifier circuit and explain them briefly.

b) What are the characteristics of an amplifier that are modified by negative feedback? [5+5]

OR

9. Starting from the description of a generalized Oscillator, derive the expression for frequency of Oscillation in a Colpitts Oscillator. [10]

10.a) Draw the current to voltage converter circuit using op-amp.

b) Explain and draw the circuit of a voltage regulator. [5+5]

OR

11. Explain the term Slew rate and how it effects the frequency response of op-amp? Derive the expression for slew rate. [10]

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