Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electronics & Communication Engineering) (Sem.–4)

ANALOG CIRCUITS

Subject Code : BTEC-401-18

M.Code : 77565

Date of Examination : 20-11-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What do you mean by Avalanche effect and Zener effect?

b) Define dynamic resistance of a PN junction diode in forward biasing.

c) What is current series feedback?

d) Classify the power amplifier based on the position of Q point on the ac load line.

e) Why is the efficiency of class a amplifier is the lowest of all the power amplifiers?

f) What is loop gain feedback amplifier?

g) What are the uses of two transistors in Wein bridge oscillator?

h) What is the difference between Class-B and class-AB operations?

i) Compare AC amplifier and DC amplifier.

j) Explain the importance of multistage amplifiers.

SECTION-B

2. Define Alpha and Beta of a transistor and derive the relationship between them.

3. Draw the circuit of transistor in common emitter configuration. Sketch the output characteristics. Indicate the active, saturation and cut-off regions.

4. What is Barkhausen criterion for oscillations?

5. Explain stabilization of gain with negative feedback.

6. Derive the expression for following parameters for a class B push-pull amplifier :

   a) Q-point

   b) DC input power

   c) AC output power

   d) Maximum Efficiency.

SECTION-C

7. Explain the working of Transformer coupled and Direct coupled amplifier with diagram.

8. For a transformer coupled class A amplifier, derive the expression for the following:

   a) I_{CQ} and V_{CEQ}

   b) AC output power P_{ac}

   c) DC output power P_{ac}

   d) % Efficiency

   e) Maximum efficiency.

9. Write short note on the following :

   a) Wein Bridge oscillator

   b) Push pull amplifier.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.