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Total Pages : 3

Roll No.

MPHY-508

Analog Electronics

M.Sc. Physics (MSCPHY-20)

2nd Semester Examination, 2022 (June)

Time : 2 Hours]

Max. Marks : 40

Note : This paper is of Forty (40) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Ten (10) marks each. Learners are required to answer any Two (02) questions only.

(2×10=20)

1. Explain the concept of feedback with the help of neat circuit diagrams. Also discuss the effect of feedback on amplifier gain and band width.

2. Draw the circuit diagram of full wave rectifier, for corresponding waveforms and derive its ripple factor and efficiency.
3. Explain the structure and working of N-channel FET and its V-I characteristics. In what way it is different from a bipolar junction transistor?
4. Draw the circuit diagram of Astable multivibrator using transistor and derive its frequency with the help of waveform diagram.
5. Draw the equivalent circuit of an OP-AMP in the inverting configuration. Derive an expression for closed loop gain. What is Miller effect?

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Five (05) marks each. Learners are required to answer any Four (04) questions only. (4×5=20)

1. Explain P-N junction diode and Zener diode? Describe the working P-N junction diode under forward and reverse biasing.
2. Explain open loop and closed loop gains of an OP-AMP?

3. Draw a neat diagram of single stage RC coupled amplifier and explain its operation.
 4. Explain the working of the square wave and triangular wave generation.
 5. What is a transistor? How it is analogous to a valve? Explain the output characteristics of a common-base transistor.
 6. Discuss oscillatory circuit? Explain Hartley oscillator.
 7. What are the characteristics of an ideal OP-AMP? Explain the term "CMRR".
 8. Distinguish between inverting and non-inverting OP-AMP?
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