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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2021 -24 ONLY)

SUBJECT CODE 21UPS5E10

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER – 2023

B.Sc. – PHYSICS **MAXIMUM MARKS: 70**

SEMESTER: V **TIME : 3 HOURS**

PART – III

BASIC ELECTRONICS AND CIRCUIT SYSTEMS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. Kirchoff's voltage law is connected with
   a. IR drops b. battery EMFs
   c. junction voltage d. both a and b
2. When used in a circuit, the zener diode is always
   a. forward biased b. connected in series
   c. troubled by over heating d. reverse - biased
3. Negative feed back also refered as
   a. Oscillator b. regenerative feedback
   c. degenerative feedback d. clippers
4. An ideal OP-Amp has
   a. nfinite Av b. zero Av c. infinite Ro d. zero Ri
5. The colour of light emitted by a LED depends on
   a. its forward bias b. the type of semiconductor material used
   c. its reverse bias d. forward current

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. (K2)

6. State maximum power transfer theorem.
7. What are the components used in clipping circuit?
8. Name any one of the multistage amplifier.
9. Mention any two applications of an OP-Amp
10. What is lumen?

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SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) State and explain kirchhoffs current and voltage laws.

(OR)

b) Describe the RMS value of Power . Write the expression for "form factor" and "crest or peak factor"

12. a) Draw the circuit diagram for full wave rectifier and explain its working with output response curve.

(OR)

b) What is Zener diode? Explain the forward and reverse bias characteristics of a Zener diode with graph.

13. a) Draw the circuit diagram for common emitter single stage amplifier and explain its operation.

(OR)

b) Discuss the essentials of feedback LC oscillator and deduce the Barkhausan criterion for steady level of oscillation.

14. a) List any four characteristics of an ideal Op-Amp with definition.

(OR)

b) Give the subtractor diagram using Op-amp and deduce its output expression.

15. a) Explain the principle of the light beam detector.

(OR)

b) Write short note on speed response of a photo detector.

SECTION - C (4 X 10 = 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS
(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS (FROM Qn. No : 17 to 21) (K4 (Or) K5)

16. What is JFET? Describe its construction details and working with input and output characteristics curve.

17. Write Thevenin's theorm . Give the steps involved in Thevenizing a circuit.

18. Draw the circuit diagram for common emitter configuration of a transistor and explain its working with input and out put characteristic curves. .

19. With circuit diagram explain the working of colpitt's oscillator give some of its applications.

20. Explain the functions of the inverting and non inverting configurations of an Op-amp with circuits and gain expressions.

21. Give the theory of Light Emitting diode. Explain the construction and functions of LED with its features. Mention any five applications of LED.

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