SECTION 'C' $4 \times 10 = 40$

Long Answer questions (Word limit 400-450 words.)

UNIT-I

Q. 1. Explain briefly the construction, characteristics and principle of operation of LDR.

OR

What is LED? Give is construction, principle of working and applications.

UNIT-II

Q. 2. Describe the construction and working of a solar cell.

OR

Explain the construction, working and characteristics of photo transistor.

UNIT-III

Q. 3. Draw schematic block diagram of the basic OP-amp with inverting and no-inverting inputs. Sketch their equivalent circuits.

OR

Sketch the circuit diagram of non-inverting amplifier with feedback and determine the expression for closed loop voltage gain, input resistance of OP-amp, with feedback and output resistance with feedback.

UNIT-IV

Q. 4. Describe the functions of an OP-amp as a summing. Scaling and averaging amplifiers.

OR

Describe OP-amp circuits for monostable multivibrator. Explain their operation.

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ROLL NO.....

PHY. 204/21

II SEMESTER EXAMINATION, 2021

M.Sc. (PHYSICS)

PAPER-IV

ELECTRONICS-II

TIME: 3 HOURS **MAX.- 80**

MIN.- 16

Note: **The question paper consists of three sections A, B & C. All questions are compulsory.**
Section A- Attempt all multiple choice questions.
Section B- Attempt one question from each unit.
Section C- Attempt one question from each unit.

SECTION 'A' $2 \times 8 = 16$

MCQ (Multiple Choice Questions)

1. Photo conductive device uses :

(a) metallic conductors (b) good quality insulators

(c) semiconductors (d) None of these

2. An LED is :

(a) an ohmic devices (b) a display device

(c) a voltage regulated device (d) All the above

3. In a photo transistor, the photo current is :

(a) emitter base junction (b) collector base junction

(c) collector (d) either (a) or (b)

4. A photocell solar cell is actually a device which utilises :

(a) photoconductive effect (b) photovoltaic effect

(c) photoemissive effect (d) photoresistive effect

5. A differential amplifier :

(a) is a part of an OP-AMP (b) has one input and one output

(c) has two output (d) (a) and (b)

6. The differential gain is :

(a) very high (b) very low

(c) dependent on input voltage (d) above 100

7. The input offset current equals the ----------:

(a) difference between two base currents

(b) average of two base currents

(c) collector current divided by current gain

(d) None of these

8. The common mode voltage gain is :

(a) smaller than differential voltage gain

(b) equal to differential voltage gain

(c) greater than differential voltage gain

(d) None of these

SECTION 'B' $4 \times 6 = 24$

Short Answer Type Questions (Word limit 200-250 words.)

UNIT-I

Q. 1. Explain radiative and non-radiative transition.

OR

Write the advantages and disadvantages of LEDs.

UNIT-II

Q. 2. Derive the expression for gain of the photoconductive detector.

OR

Write the advantages and limitations of Solar cells.

UNIT-III

Q. 3. Draw the basic circuit of a differential amplifier.

OR

What are common mode and differential mode signals.

UNIT-IV

Q. 4. Discuss the two applications of summing amplifiers.

OR

Discuss the operation of an OP-amp integrator.

P.T.O.