PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – CHEMISTRY

BASIC ELECTRONICS FOR CHEMISTS

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (5 x 1 = 5)

1. A transistor has ____
   (i) One pn junction   (ii) two pn junction
   (iii) Three pn junction   (iv) four pn junction

2. Op amp is a _____ type of amplifier.
   (i) Current   (ii) voltage
   (iii) Power   (iv) resistance

3. The octal equivalent of the decimal number $(417)_{10}$ is _____
   (i) $(641)8$ (ii) $(619)8$
   (iii) $(640)8$ (iv) $(598)8$

4. How many types of the counter are there?
   (i) 2   (ii) 3
   (iii) 6   (iv) 8

5. The multiplies and the meter coil in a voltmeter are in ____
   (i) Series   (ii) parallel
   (iii) Series parallel   (iv) parallel – series

SECTION - B (15 Marks)
Answer ALL Questions
ALL questions carry EQUAL marks   (5 x 3 = 15)

6 a Explain the Intrinsic semiconductor with a diagram.
                          OR
   b Illustrate the principle of Transistor amplifier.

7 a Discuss the working principle of a Inverting amplifier.
                          OR
   b Determine the function of Solar cell.

8 a Explain the block diagram of RS flip – flop with truth table.
                          OR
   b Discuss briefly about the working of a Digital clock.

9 a Illustrate the operation of asynchronous counters.
                          OR
   b Define the Accuracy of a D/ A converter.

10 a Explain the working of a Potentiometer with a neat diagram.
                          OR
   b Discuss the operation of a Flame photometer.

<u>SECTION -C (30 Marks)</u>
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 6 = 30)

11. a. Elucidate the function of Resistors in semiconductor device .
                                    OR
    b. Determine the Zener diode and its characteristics.

12. a. Enumerate the operation of Comparator.
                                    OR
    b. Design the Astable multivibrator using IC 555 timer and explain its operation.

13. a. Describe the logic gates – AND , OR and NOT and its truth tables.
                                    OR
    b. Describe the operation of a JK Master Slave flip-flop with the help of a truth table.

14. a. Elucidate the Binary up counter with neat circuit diagram.
                                    OR
    b. Enumerate the operation of weighted resistor D/A convertor.

15. a. Describe the operation of a Voltmeter.
                                    OR
    b. Explain the operation of a Photoelectric Colorimeter.

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