18BOU11

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION MAY 2022
(Third Semester)
Branch – **BOTANY**

CHEMISTRY - I

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 1 = 10)

1. According to the Aufbau principle
   a. electrons enter the lowest available energy level
   b. only two electrons can occupy an orbital
   c. orbitals are regions where one is likely to find an electron
   d. electrons tend to remain unpaired

2. Which of the following is incorrect about 's' orbitals?
   a. They are spherical in shape
   b. They can only hold one electron
   c. They are found in all principal energy levels
   d. None of these

3. The number of delocalised π electrons in the benzene ring are
   a. 6 b. 8
   c. 2 d. 4

4. Which Colour layer is represented terpenoid in Salwoski Test?
   a. Green colour b. Blue colour
   c. Red colour d. Yellow colour

5. The number of moles of a substance dissolved in 1000 cm^3 of solution is:
   a. Molality b. Normality
   c. Molarity d. None of above

6. The substance used to develop the thin layer plate in thin layer chromatography is
   a. Silica gel b. Iodine vapour
   c. Methylene blue dye d. All of these

7. Which of the following factors affect the rate of a chemical reaction?
   a. Concentration of reactants b. temperature
   c. catalyst d. all the above

8. Which of the following is an example of homogeneous catalysis?
   a. Enzyme catalysis
   b. Hardening of animal and vegetable oils
   c. Haber's process
   d. Cracking of heavy oils for a synthesis of gasoline

9. Which of the following is a liquid form of aerosol?
   a. Fume b. Dust
   c. Mist d. Smoke

Cont...

10. To test chemical oxygen demand (C.O.D.) of sewage, organic matter is oxidised by potassium dichromate in the presence of_____?
    a. Hydrochloric acid b. Sulphuric acid
    c. Nitric acid d. Citric acid

SECTION - B (25 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 5 = 25)

11. a. Define the following terms.
    i. Hund's rule ii. Pauli exclusion principal

Or

b. Explain the shapes of s and d orbitals.

12. a. Describe the isolation and uses of menthol.

Or

b. Discuss the structure and applications of cellulose.

13. a. Explain the fractional distillation method.

Or

b. Discuss the stream distillation method.

14. a. Describe the order and molecular of reaction.

Or

b. Explain the characteristics of enzyme catalysis.

15. a. Describe the chemical oxygen demand.

Or

b. Write a note on contamination of foods with toxic chemicals.

SECTION -C (40 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 8 = 40)

16. a. Discuss the different types of orbitals.

Or

b. Describe the shapes of PCl_5 and IF_7.

17. a. Explain the preparation, properties and uses of piperine.

Or

b. Describe the preparation, properties and uses of coniine.

18. a. Explain the separation of components by column chromatography

Or

b. Discuss the principle and applications of ion-exchange chromatographic method.

19. a. Explain the parallel reactions.

Or

b. Discuss the mechanism of enzyme catalysis.

20. a. Explain the classification and effects of water pollution.

Or

b. Describe the sources and factors affecting soil pollution.

Z-Z-Z END