TDC (CBCS) Odd Semester Exam., 2023

BIOTECHNOLOGY

(Honours)

(3rd Semester)

Course No. : BTCHCC–303T

(Chemistry—I)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer *ten* questions, selecting any *two* from each Unit : 2×10=20

UNIT—I

1. What is Pauli's exclusion principle?

2. Deduce de Broglie equation.

3. What is Aufbau's principle?

UNIT—II

4. What is Slater's rule?

5. What do you mean by effective nuclear charge?

6. Write a note on atomic radii (van der Waals).

UNIT—III

7. What is coefficient of viscosity?

8. What is the vapour pressure of a liquid?

9. Write down the physical properties of liquids.

UNIT—IV

10. What is viscosity of a liquid?

11. What are detergents?

12. What happens to the viscosity of water when a detergent is mixed to it?

UNIT—V

13. What is an acid-base indicator?

14. What do you mean by strong and weak electrolytes?

15. What is common-ion effect?

SECTION—B

Answer *five* questions, selecting *one* from each Unit :   6×5=30

UNIT—I

16. Explain Bohr's theory. What is Heisenberg's uncertainty principle?   4+2=6

17. What is Hund's rule of maximum multiplicity? Discuss Schrödinger's wave equation.   3+3=6

UNIT—II

18. What do you mean by electronegativity? Write a note on shielding effect.   3+3=6

19. What do you mean by s-, p-, d- and f-block elements? Give examples of s-block and p-block elements.   4+2=6

UNIT—III

20. Discuss the effect of addition of solutes on surface tension.

21. What is surface tension? How is coefficient of viscosity determined? 2+4=6

UNIT—IV

22. Discuss the structure of water. Write briefly on cleansing action of detergents. 3+3=6

23. Explain why viscosity of liquid and gases varies with temperature.

UNIT—V

24. What are the factors affecting degree of ionization? Add a note on ionization constant. 3+3=6

25. Explain the working of phenolphthalein as an acid-base indicator with appropriate structure. What do you mean by weak acids and bases? 4+2=6

★ ★ ★