2021/TDC/CBCS/ODD/
BTCHCC–303T/303

TDC (CBCS) Odd Semester Exam., 2021
held in March, 2022

BIOTECHNOLOGY

(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 any *ten* of the following questions : 2×10=20

1. What is Pauli's exclusion principle?
2. How does orbital energy vary with atomic number?
3. What is Bohr's theory?

4. Give any two examples of *p* block elements.
5. Which is more electronegative between oxygen and nitrogen? Explain why.
6. Which among the following has the greatest atomic radius and why?

   H, He, Li, Be, B

7. What is viscosity?
8. Which is more viscous between ethanol and water? Why?
9. What is surface tension?
10. Give an example of a detergent. How does it differ from soap?
11. How does the viscosity of oil change with temperature?
12. How does the viscosity of steam differ from that of water at room temperature?
13. Is water a strong or weak electrolyte? Justify.
14. Which is a stronger acid between phosphoric acid and nitric acid? Why?
15. What is phenolphthalein?

SECTION—B

Answer any *five* of the following questions : 6×5=30

16. State and discuss Schrödinger's wave equation. What is the significance of ψ and ψ^2?

17. State Aufbau's principle and its limitations.

18. What are *s* and *p* block elements? Differentiate between their properties.

19. Write a note on electronegativity. How does it vary in the periodic table? 2+4=6

20. How does the surface-tension of a liquid vary with the addition of various solutes?

21. What is coefficient of viscosity? How is it determined?

22. Explain the cleansing action of detergents. Add a note on the structure of water. 3+3=6

23. Explain why the viscosity of liquids and gases varies with temperature.

24. Write a note on ionization constant and factors affecting degree of ionization. What are acid-base indicators? 4+2

25. What is a strong acid? Discuss the dissociation constants of monoprotic, diprotic and triprotic acids. 1+5

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