



2022/TDC/ODD/SEM/BTCHCC-303T/303

TDC (CBCS) Odd Semester Exam., 2022

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

UNIT—I

1. Answer any two of the following questions :

2×2=4

(a) What is Bohr's theory?

(b) What is Hund's rule of maximum multiplicity?

(c) Deduce de Broglie equation.

(Turn Over)



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2. Answer any *one* of the following questions : 6

(a) Discuss the atomic spectrum of hydrogen atom.

(b) Discuss Schrödinger's wave equation. What is the significance of ψ and ψ^2 ?

4+2=6

UNIT—II

3. Answer any *two* of the following questions : 2×2=4

(a) Give one example each of s-block and p-block elements.

(b) What is screening effect?

(c) What is electronegativity? What is the most electronegative element in periodic table?

1+1=2

4. Answer any *one* of the following questions : 6

(a) What is effective nuclear charge? How does it vary across the groups and periods in periodic table?

(b) What do you mean by s, p, d, f block elements? What are the general electronic configurations of s- and p-block elements?

4+2=6

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(Continued)

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UNIT—III

5. Answer any *two* of the following questions : 2×2=4

(a) What is surface tension? What is its unit? 1+1=2

(b) Why is glycerol more viscous than water?

(c) What is vapour pressure of a liquid?

6. Answer any *one* of the following questions : 6

(a) What is coefficient of viscosity? How is it determined? 2+4=6

(b) Discuss the effect of addition of solutes on the surface tension of a liquid.

UNIT—IV

7. Answer any *two* of the following questions : 2×2=4

(a) What are detergents?

(b) How does the viscosity of water change with increase in temperature?

(c) Discuss the structure of water.

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(Turn Over)



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8. Answer any *one* of the following questions : 6

(a) What is viscosity of a liquid? What is its unit? What happens to the viscosity of water when a detergent is mixed to it?

2+1+3=6

(b) Explain why the viscosity of liquid and gases varies with temperature.

UNIT—V

9. Answer any *two* of the following questions :

2×2=4

(a) What is an electrolyte? Can water be considered as an electrolyte?

1½+½=2

(b) What is common-ion effect?

(c) What is the full form of pH? What is the range of pH at 25 °C?

1+1=2

10. Answer any *one* of the following questions : 6

(a) What is an acid-base indicator? Explain the working of phenolphthalein as acid-base indicator (with structure).

2+4=6

(b) How can the strength of an acid be determined by pH-metric acid-base titration with a base of known strength?
