TDC (CBCS) Odd Semester Exam., 2019

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

UNIT—I

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

(a) State the de Broglie equation.

(b) What is Aufbau's principle?

(c) What are *s*-block elements?

2. *(a)* Describe Heisenberg's uncertainty principle and its significance. 6

Or

(b) Explain the variation of orbital energy with atomic number.

UNIT—II

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

(a) Define orbital energy.

(b) Name the elements having the smallest and largest atomic radii respectively.

(c) Differentiate between atomic number and atomic mass.

4. *(a)* Differentiate between *d*- and *f*-block elements citing examples of each. 3+3=6

Or

(b) Write short notes on shielding effect and effective nuclear charge. 3+3=6

UNIT—III

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

(a) Define viscosity.

(b) What do you mean by boiling point of a liquid?

(c) Which liquid has the highest surface tension?

6. *(a)* What is surface tension? Explain the effect of addition of various solutes on surface tension 2+4=6

Or

(b) Write a note on the physical properties of liquids. 6

UNIT—IV

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

(a) What types of bonds are formed between molecules in water?

(b) Define polarity.

(c) What is detergent?

8. *(a)* Explain the cleansing action of detergents. 6

Or

(b) Explain how the viscosities of liquids and gases vary with a change in temperature.

UNIT—V

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

(a) Define an electrolyte citing a suitable example.

(b) Define pH of a solution.

(c) Define pK_a of an acid.

10. (a) Discuss the common ion effect. Give one example each of a strong electrolyte and a weak electrolyte. 4+1+1=6

Or

(b) Discuss acid-base titration curves. What is the colour of phenolphthalein in acidic and basic conditions? 4+1+1=6

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