Jan-2023

BLDE (DEEMED TO BE UNIVERSITY)

B.SC. IN BIOTECHNOLOGY

[Time: 3 Hours] [Max.Marks: 80]

II SEMESTER

PAPER – I (Fundamental Chemistry - II)

QP CODE: 8275

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Questions **10X1 = 10 Marks**

1. Describe Bohr's model of hydrogen atom. High light limitations of this model.

Short Essays: (Any – 8) **5 X 8 = 40 Marks**

2. Explain resonance effect. Write the resonance structure of CO3 (-)[carbonate ion).
3. Explain homolytic and heterolytic cleavage. Write down species generated by homolytic cleavage of Br2, H2 and heterolytic cleavage of hydroxy group in ethanol, and carbon-halogen bond in 1,1,-dimethyl-1-bromoethane
4. Draw shape of sp2 hybrid and p orbital in carbon atom. How the orbital shapes would help to explain different strength of sigma and pi bonds in ethene molecule.
5. How Rutherford discovered and postulated nucleus in an atom?
6. What do you understand by eigen function? Explain.
7. What is the difference between bonding and antibonding orbitals? Can electrons be filled in antibonding orbitals
8. Classify elimination reactions and explain the notations used to represent.
9. Give any three methods for synthesis of alkenes.
10. Explain solvation and solvation energy? How the solvation affects reactivity?

Short Answers: (Any – 10) **3 X 10 = 30 Marks**

11. Indicate polarity of carbonyl group in acetone (CH3-CO-CH3) and the site where species such as proton, and ammonia would attack.
12. Write electronic configuration of nitrogen atom (atomic number 7).
13. Mention any two reactions of alkynes.
14. Draw a transition state diagram of SN2 reaction taking any one example.
15. What is meso compound? Draw the structure of any one meso molecule.
16. Draw all the resonance structures of p-cresol ion [p-H3C-Ph-O(-)]
17. Write on the nature of covalent bond and its strength.
18. Draw the shapes of the following molecules/species - methane, CH3 (-), and ethylene.
19. Explain what is lattice energy?
20. What is the difference between orbit and orbital?
21. Draw Lewis structure for oxygen and water molecules.

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II SEMESTER
PAPER – II (Biochemistry and Metabolism)
QP CODE: 8276

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Questions **10X1 = 10 Marks**

1. Write an account of classification of lipids with suitable examples.

Short Essays: (Any – 8) **5 X 8 = 40 Marks**

2. Describe the structure and functions of mucopolysaccharides.
3. Essential fatty acids,
4. Give an account of the determination of primary structure of protein.
5. Explain the Lock and Key Hypothesis
6. What are different form of DNA
7. Describe physical & chemical properties of lipids
8. Importance of cholesterol in biological membrane
9. Coenzymes
10. Discuss the biological importance of amphipathic lipids.

Short Answers: (Any – 10) **3 X 10 = 30 Marks**

11. Osazone formation
12. Iodine number
13. Sphingolipids
14. Importance of vitamin B12
15. Define Zwitterion
16. Denaturation of DNA
17. Examples of polysaccharides
18. Oxidative phosphorylation
19. Peptide bond
20. Tertiary structure of protein
21. Glycosidic bond

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II SEMESTER
PAPER – III (Biostatistics)
QP CODE: 8277

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Questions **10X1 = 10 Marks**

1. Define sampling and sampling Techniques

Short Essays: (Any – 8) **5 X 8 = 40 Marks**

2. What are measures of dispersion? Explain.
3. Discuss null hypothesis, type I and type II errors
4. A sample of heights of 6,400 Englishmen has a mean of 67.85 inches and S.D of 2.56 inches while a sample of heights of 1,600 Australians has a mean of 68.55 inches with S.D of 2.52 inches. Do the data indicate that the Australians are on the average taller than Englishmen?
5. Explain two methods of sample size calculation in research study.
6. Explain the graphical methods of representing quantitative data and Qualitative data
7. Explain the procedure involved in testing of hypothesis.
8. Applications of non-parametric tests
9. Construct a continuous frequency distribution of the fallowing data on the amount of time (in hours) that 36 students devoted to leisure activities during a typical school week:

23	26	20	13	26	35
24	23	14	16	17	31
18	21	13	15	27	36
14	16	10	19	29	37
20	15	11	20	31	39
24	19	15	21	33	45

10. Write application of statistics in Research

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Short Answers: (Any – 10) **3 X 10 = 30 Marks**

11. State the law of Addition of probabilities for any two events.

12. What is the test statistic used to test the significance of the difference between the means of two small samples?

13. If S 2 = 36 and X = 18, what is coefficient of variation?

14. Define Primary and Secondary data

15. Define population and sample.

16. What is grouped and ungrouped data?

17. Write the types of averages.

18. Calculate the sample size for following study design: The prevalence of LBW in a population is expected to be 30%. Calculate the sample size required with relative error of 10% and confidence interval of 95% and also for 10% absolute error

19. Classify and list the tests used for hypothesis testing of parametric data

20. Define measure of central tendency and state any two measures.

21. State the applications of Z – test & F – test.