



UN – 484

I Semester B.Sc. Examination, November/December 2015
(Semester Scheme) (Repeaters)
BIOCHEMISTRY – I
(70 – 2011-12 and Onwards) (60 – Prior to 2011-12)

Time : 3 Hours

Max. Marks : 70/60

- Instructions :**
- The paper is common for repeaters appearing for 70 marks and 60 marks.
 - Question paper has **two** Parts : Part **A** and Part **B**.
 - For 70 marks answer **any eight** questions from Part **A** and **any nine** questions from Part **B**.
 - For 60 marks answer **any six** questions from Part **A** and **any eight** questions from Part **B**.

PART – A

Answer the following questions. **Each** question carries **two** marks.

- What are isotonic solutions ?
- Define Hybridisation.
- What is meant by intrinsic viscosity ?
- What factors do the following prefixes indicate ?
a) Micro b) Nano c) Pico d) Milli
- What are polar and non-polar molecules ?
- What are reversible cells ?
- Define surface tension.
- Give an example of natural and artificial semi-permeable membrane.
- Calculate the oxidation number of Mn in KMnO_4 .
- Define electronegativity.
- Write the possible values of l and m when $n=3$.
- What is an isotherm ?

P.T.O.



PART - B

Answer the following. **Each** question carries **six** marks.

13. a) Describe the formation of sodium chloride by Born Haber's Cycle.
b) How is Viscosity related to the size and shape of molecules ? (4+2)
14. a) Give any four properties of
1) α - particles and 2) β - particles.
b) State Henry's law of gas solubility. (4+2)
15. a) Describe the determination of molar mass of a non-volatile solute by depression in freezing point method.
b) Define molal elevation constant. (4+2)
16. a) On the basis of hybridisation, discuss the formation of ethene molecule.
b) State group displacement law. (4+2)
17. a) Derive Henderson-Hasselbalch equation for an acidic buffer.
b) State Van't Hoff-Bogle's Law. (4+2)
18. a) How is the pH of a solution determined using glass electrode ?
b) Classify the following as Lewis acids and Lewis bases : AlCl_3 , BF_3 , NH_3 , SO_3 . (4+2)
19. a) 4.83×10^{-3} kg of a solute was dissolved in 20.38×10^{-3} kg of a solvent, the elevation in boiling point was 0.3 K. Calculate its molecular weight ($K_b = 0.52 \text{ K. kg. mol}^{-1}$).
b) Define equivalent conductance. Give its SI unit. (4+2)
20. a) What is an universal indicator ? How is the pH of a solution determined by colorimetric method ?
b) Give two examples each for homo and hetero biopolymers. (4+2)
21. a) Mention any two applications of
1) P^{32} and 2) C^{14} .
b) What are significant figures ? (4+2)



22. a) Using molecular orbital theory, explain the formation of oxygen molecule and its magnetic property.

b) Give the postulates of VBT. — (4) (4+2)

23. a) Derive De-Broglie's equation.

b) Define lattice energy. — the amount of energy released when the compound is formed from its constituent gaseous atoms (4+2)

24. a) Describe the determination of viscosity of a liquid using Oswald's viscometer.

b) Mention the applications of adsorption. (4+2)

25. a) State and illustrate the following with suitable examples.

i) Hund's rule ii) (n+l) rule.

b) Why is the atomic radius of caesium larger than that of sodium. (4+2)

Due to inter nuclear forces