## BIOCHEMISTRY-PAPER I

VCD 15/10/19

**TIME: 3 HRS** **MAX MARKS 100**

Instructions to the candidate if any:
1. All the questions are compulsory. Choice is internal
2. Figures to the right indicates full marks
3.All questions carry equal marks.
4.Draw flowcharts/diagrams wherever necessary

**Q1 a) State True or False** [4M]
i. For an acidic solution at 25°C, $[OH^-]<[H^+]$
ii. $NH_4OH$ is the conjugate base of $NH_4Cl$
iii. Lysine is the simplest amino acid
iv. A solution with pOH 8 is acidic

**Q1 b) Attempt any three of the following** [9M]
i.Give titration curve of glycine
ii .What is pH and pKw
iii. Explain phosphate buffer system
iv.Define physiological buffer and Henderson Hasselbalch equation
v . Explain buffering capacity
vi .Draw titration curve of aspartic acid

**Q1 c) Attempt any two of the following** [12M]
i . Write short note on Hb-HHb buffer system
ii. Explain Sorensons reaction and formol titration
iii.Calculate pH of mixture of 0.044 M acetic acid and 0.056 M sodium acetate (pKa =4.76)
iv. Explain titration curve of lysine

**Q2 a) State True or False** [4M]
i. Diffusion requires membrane
ii. Distance affects diffusion
iii. Colloids are always neutral
iv.Viscosity of water is higher than oil

**Q2b) Attempt any three of the following** [9M]
i . Explain significance of osmosis
ii . Explain factors affecting surface tension
iii .What is morality & normality. Give equation
iv .Explain renal dialysis
v . How is diffusion affected by distance?
vi . Explain precipitation of colloids

**Q2 c) Attempt any two of the following** [12M]
i. Explain donnan membrane equilibrium

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ii . Elaborate on surface area and electric charge on colloids
iii .What do you mean by volume percentage. What is volume percentage if 25.5 grams of NaCl dissolved in 250 ml solution
iv .Calculate the ionic strength of 2MKCl solution

**Q3 a) State True or False:** **[4M]**

i. In compound microscope the orientation of the image you see is flipped in relation to the actual object you're examining
ii. Diaphragm determines how much light falls on the specimen.
iii. Phase contrast microscopy is valuable for visualizing yeast cells.
iv. Image observed in the microscope will not appear upside down.

**Q3 b) Attempt any three of the following:** **[9M]**

i. State the difference between SEM and TEM microscopy.
ii Elaborate on the applications of Dark field and bright field microscopy.
iii.Write about the principle and significance of Confocal Microscopy.
iv.Write about the different parts of a compound microscope. Elaborate any one.
v. State the importance of condenser and diaphragm in light microscopy.
vi. Write about TEM and its advantages.

**Q3 c) Attempt any two of the following:** **[12M]**

i. Elaborate on Electron microscopy. Applications and advantages of SEM.
ii. Write a detailed account of Time lapse microscopy with its applications, advantages and disadvantages.
iii. Write an informative note simple florescence microscopy
iv. Elaborate on Phase Contrast microscopy.

**Q4 a) Define any five of the following** **[10M]**

i. Buffer ii. Buffer capacity iii. Ionic strength iv. Flocculation v. Diaphragm

vi. Objective vii. Refractive index

**Q4 b) Attempt any three of the following** **[15M]**

i. Isoelectric precipitation of casein
ii. Ionic product of water
iii. How is surface tension measured?
iv. Role of bile in digestion
v. Write a detailed account of Confocal Scanning Laser Microscopy.
vi. Write an elaborative note on DIC.

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