

Entrance Examinations – 2019

M.Sc. Biochemistry

Hall Ticket No.

Time : 2 hours

Max. Marks : 100

Please read the following instructions carefully before answering:

1. Enter Hall Ticket number in the space provided above and also on OMR sheet.
 2. Paper contains three sections: Part A, Part B and Part C together with 85 questions for 100 marks. Part A contains 25 questions, each question carries one mark. Part B contains 45 questions, each question carries one mark. Part C contains 15 questions, each question carries two marks.
 3. Part A will be used for tie breaking.
 4. In Part A there is negative marking. 0.33 marks will be deducted for each wrong answer. In Part B there is no negative marking. In Part C there is negative marking. 0.66 marks will be deducted for each wrong answer.
 5. Answers have to be marked on the OMR sheet as per the instructions provided.
 6. Apart from OMR sheet, the question paper contains 15 (fifteen) pages including the instructions and rough work sheets.
 7. Please return the OMR answer sheet at the end of examination.
 8. No additional sheet will be provided.
 9. Rough work can be carried out in the question paper itself in the space provided at the end of the booklet.
 10. Non-programmable calculators are allowed.
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PART A

[Each question has only one right answer. Mark the right answer]

1. Oils are esters whose hydrolysis produces glycerol and _____
 - A) Aromatic carboxylic acids
 - B) Long chain aliphatic carboxylic acids
 - C) Amino acids
 - D) Citric acids
2. Which of the following is not an antibiotic?
 - A) Aspirin
 - B) Amoxicillin
 - C) Ciprofloxacin
 - D) Penicillin
3. The main buffer system of blood is consisting of
 - A) Carbonic acid and bicarbonate
 - B) Carbonic acid and carbonate
 - C) Citric acid and sodium citrate
 - D) Acetic acid and sodium acetate

4. The commonly used bleaching agent is
 A) Ethanol
 B) Carbon dioxide
 C) Oxygen
 D) Sodium hypochlorite
5. The vitamin essential for blood coagulation is
 A) B12
 B) K
 C) B6
 D) A
6. Absolute configuration of an optically pure compound was found to be (S). Which of the following statement is true about the compound?
 A) It is a racemic one
 B) It rotates the plane-polarized light to the right
 C) It rotates the plane-polarized light to the left
 D) The compound is the mirror image of its corresponding (R)-enantiomer.
7. The order of nucleophilicity of the following ions in DMSO is _____
 A) $F^- > Cl^- > Br^- > I^-$
 B) $I^- > Br^- > Cl^- > F^-$
 C) $Cl^- > F^- > Br^- > I^-$
 D) $I^- > Br^- > F^- > Cl^-$
8. The product of the following reaction will be _____

$$R-\overset{\text{O}}{\parallel}{C}-H + R'-CH_2-NO_2 \xrightarrow[\text{Solvent}]{\text{Base}} ?$$
- A) β -Nitroalcohol
 - B) α -Nitroalcohol
 - C) β -Aminoalcohol
 - D) α -Aminoalcohol
9. The function of vitamin B1 coenzyme (thiamine pyrophosphate) is
 A) Aldehyde group removal or transfer
 B) Hydrogen transfer
 C) Acyl group carrier or transfer
 D) Amino or carboxyl group transfer
10. Exergonic reactions are reactions
 A) where free energy of final state is more than free energy of initial state
 B) that require energy during reaction
 C) are thermodynamically unfavorable
 D) with $-\Delta G$ (negative number)

11. When a voltage V is applied across a pair of electrode separated by a distance d , a potential gradient, E , is created between the electrodes. We can calculate 'E' as:

- A) $E=V/d$
- B) $E=(1/v)q$
- C) $E= (Vd)/q$
- D) $E= V+d$

12. If flowers of different colors I) red II) white III) yellow and IV) blue lying on a plate are illuminated by light from a sodium flame (yellow), some flowers will look dark. Which are those? Find the proper set from below.

- A) I & II
- B) I & III
- C) I & IV
- D) II & III

13. If two silver coins were placed equidistance from your eye, one placed under 30 cm of water and the other placed under 30 cm of glass, which one of the silver coins will appear closer?

- A) The silver coin under water
- B) The silver coin under the glass
- C) Both the coins will appear at the same distance
- D) The coin will be invisible through the glass because it is made of silver

14. What happens to the kinetic energy when a charged particle is accelerated through a potential difference V ?

- A) Kinetic energy decreases
- B) Kinetic energy remains same
- C) Kinetic energy increases
- D) Kinetic energy cannot be calculated

15 A piece of ice having volume 10 cc is floating in a glass containing water. When the ice melts then the level of water;

- A) rises by 10 cc
- B) falls by 10 cc
- C) remains unchanged
- D) rises by 5 cc.

16. Given that $(a/b) - (a/c) = 1$, write the formula that will give 'a'.

- A) $a = 1 - (b/c)$
- B) $a = bc / (c - b)$
- C) $a = (c - b) / bc$
- D) $a = 1 - (c / b)$

17. Given the condition $a^2 + b^2 > c^2$, where a , b and c are the sides of a triangle, what kind of triangle will you expect it to be?

- A) Right triangle, where c is the side opposite to the right angle
- B) Acute triangle, where c is the side opposite to the acute angle
- C) Obtuse triangle, where c is the side opposite to the obtuse angle
- D) Can be both A and B.

18. How many dimensions can a line have?
- A) Two
 - B) One
 - C) Zero
 - D) Infinite
19. The sum of the deviations about the mean is always
- A) zero
 - B) positive
 - C) negative
 - D) equal to the standard deviation
20. In an absolutely normal distribution:
- A) Mean, median and mode are different
 - B) Only median and mode are same
 - C) Mean, median and mode are one and the same
 - D) Only mean and mode are same
21. What is the general mode of action of the antibiotic erythromycin? Select the most appropriate answer.
- A) It inhibits specific TCA cycle enzyme in bacteria.
 - B) It disrupts protein synthesis in bacteria.
 - C) It inhibits DNA replication in bacteria.
 - D) It inhibits cell wall synthesis of bacteria.
22. What is the molecular basis for the effect of cholera toxin on duodenal mucosal cells that causes watery diarrhea?
- A) Activation of Toll like receptors of immune cells leading to profuse cytokine production.
 - B) Increased activity of potassium pumps of podocytes of kidney
 - C) Inactivation of neuronal regulation of osmotic balance in intestine
 - D) Increased generation of cyclic adenosine monophosphate (cAMP) in the enterocytes
23. If host cells infected with a pathogenic RNA virus were grown in the presence of carbon-14-labelled deoxyuridine triphosphate ($[^{14}\text{C}]\text{-dUTP}$), which of the following observations will you make?
- A) Newly synthesized viral genome will become radiolabelled.
 - B) Newly synthesized viral genome will not be radiolabelled.
 - C) Newly synthesized host RNA will become radiolabelled.
 - D) Both A and C are correct.
24. Statement (S): The sons of a colour blind woman are always colour blind but not the daughters. Reason (R): Colour blindness is a sex-linked character and such characters are transferred from mother to son.
- A) S is correct but R is not the correct explanation of S
 - B) S is correct and R is the correct explanation of S
 - C) S and R are not related
 - D) Both S and R are incorrect

25. The plasma membrane is permeable to
- A) Glucose
 - B) K⁺
 - C) Water
 - D) GTP

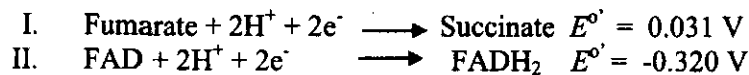
PART B

[These questions may have more than one right answer. Mark all the correct answers. For eg. If there are three right answers for a particular question, all three options must be marked otherwise it will be considered incorrect]

26. The factor(s) which affect pK_a value of an amino acid is / are:
- A) The loss of charge in the α-carboxyl and α-amino groups
 - B) The interactions with other peptide R groups
 - C) pH of the medium
 - D) Molecular weight
27. Free rotation about the peptide bond in a protein is restricted because of
- A) hydrogen bonding to the amide backbone groups
 - B) partial double bond character of N-C alpha
 - C) partial double bond character of the peptide bond
 - D) steric interference of neighboring amino acid side chains
28. Enantiomers are
- A) a compound with very different chemical composition
 - B) a pair of compounds that are non-superimposable mirror image to one another
 - C) a chiral molecule
 - D) superimposable mirror image
29. Quaternary structure of protein refer to
- A) the sum of secondary and tertiary structure
 - B) protein with more than one subunit
 - C) the overall shape of the polypeptide
 - D) the relative orientation of one polypeptide to another polypeptide in a multi-subunit complex
30. Protein A has a binding site for ligand X with a K_d of 10⁻⁶ M. Protein B has a binding site for ligand X with a K_d of 10⁻⁹ M. Choose correct statement(s) about protein A and protein B.
- A) Protein B has more affinity for ligand X compared to protein A
 - B) protein A has low association constant than protein B
 - C) both proteins have similar binding constant
 - D) none of the above

31. The catalytic serine in a serine protease behaves as a _____ in the catalysis.
- A) Nucleophile
 - B) Electrophile
 - C) Base
 - D) Acid
32. Trypsin hydrolyzes the peptide bond in the _____ in a polypeptide.
- A) C-terminal of Phe
 - B) N-terminal of Phe
 - C) C-terminal of Lys
 - D) N-terminal of Lys
33. Which of the following proteolytic enzymes are basic endoproteases?
- A) Pepsin and Rennin
 - B) Trypsin and Chymotrypsin
 - C) Carboxypeptidase A and Carboxypeptidase B
 - D) Transaminases
34. Which of the following are the correct sequences of reactions in glycolysis?
- A) Glucose 6-phosphate -----Fructose 1,6 bis phosphate ----- Glyceraldehyde 3-P
 - B) Glucose 6-P---- Glucose 1-Phosphate---- Phosphoenolpyruvate
 - C) 1,3 bis Phospho glycerate--- Phosphoenol pyruvate----- Pyruvate
 - D) Fructose 1-Phosphate---Fructose 1,6-bis Phosphate----Phosphoenolpyruvate.
35. NADPH required for fatty acid synthesis can be generated from
- A) HMP shunt pathway
 - B) Uronic acid pathway
 - C) Gluconeogenesis
 - D) Glucose 1-P
36. Why do phosphoanhydride linkages have a high ΔG of hydrolysis?
- A) Resonance stabilization of the products of hydrolysis exceeds resonance stabilization of the compound itself
 - B) Electrostatic repulsion between negatively charged phosphate oxygen atoms favors separation of phosphates
 - C) More electronegativity on oxygen atoms tend to favors separation of phosphates
 - D) Phosphoanhydride bonds are unstable and hence favors hydrolysis spontaneously
37. Which of the following compounds increase the rate of respiration of mitochondria?
- A) Dinitrophenol
 - B) Cyanide
 - C) Uncoupler proteins
 - D) Azide

38. If the two reduction half reactions of a redox reaction are follows:



Select the correct statement (s) about the redox reaction

- A) Coupled redox reaction is Fumarate + FAD \longrightarrow Succinate + FADH₂
 - B) Change in reduction potential (ΔE°) is 0.210 V
 - C) FAD is act as a oxidizing agent in the reaction
 - D) Coupled redox reaction is Fumarate + FADH₂ \longrightarrow Succinate + FAD
39. Energy for the addition of amino acids to an elongating protein chain comes from
- A) ATP
 - B) GTP
 - C) incoming monomer
 - D) last monomer of the growing polymer
40. Insulator is a
- A) gene that codes for small nuclear RNA
 - B) a long-range regulatory DNA sequence that blocks the function of an enhancer
 - C) small nuclear RNA that inhibits RNA splicing
 - D) is a protein that protects genes against environmental insults
41. Select bases that can be present in the first position of the anticodon region in tRNA pairing with the Uracil present in the third position of codon (in mRNA).
- A) adenine
 - B) cytosine
 - C) inosine
 - D) guanine
42. Expression of *lac* mRNA is maximal in the presence of
- A) No Glucose + High Cyclic AMP
 - B) + Glucose + High Cyclic AMP
 - C) + Glucose + Low CAMP + Lactose
 - D) No Glucose + high cAMP + Lactose
43. What would be the level of β -galactosidase enzyme in the presence of lactose in an *E. coli* strain harboring a $O^c I^- Z^+$ / $O^+ I^+ Z^-$ as compared to *E. coli* strain harboring a $O^+ I^- Z^+$ / $O^+ I^+ Z^+$ (O^c : Operator constitutive; I: lac repressor and Z: β -galactosidase gene)
- A) High or maximal level
 - B) Low or minimum levels
 - C) Half-maximal
 - D) No synthesis

44. Spontaneous deamination of 5-methyl cytosine results in
- A) Adenine
 - B) Cytosine
 - C) Uracil
 - D) Thymine
45. Severe combined immunodeficiency (SCID) is due to a deficiency of
- A) Dihydrofolate reductase
 - B) Xanthine Oxidase
 - C) Adenosine deaminase
 - D) Cytosine deaminase
46. Which of the following statements about meiosis are true?
- A) Pairing of homologous chromosomes
 - B) Presence of bivalent chromosome
 - C) Chromosome condensation
 - D) DNA replication between Meiosis I and Meiosis II
47. A red flowered balsam was crossed to a white flowered balsam plant. The F1 progeny were all red flowered. The selfing of F1 produced a mixture of red flowered plants and white flowered plants in the ratio of 621 red and 188 white. Which of the following conclusions can be drawn from this experiment?
- A) The parents were true breeding
 - B) The genotype of all F1 plants is same
 - C) There are 4 different genotypes in F2
 - D) Red colour is dominant over white
48. In a cross, F2 plants segregated as 300 tall and 100 short plants. If a tall plant is randomly picked and selfed, which of the following observations are likely to be true
- A) It will produce only tall plants
 - B) It can produce both tall and short plants
 - C) Expected ratio of tall and short plants is always 3:1
 - D) The chances of producing a mixture of tall and short plants are higher than just tall plants
49. Protein kinase C is activated by multiple intracellular messengers. Which of the following activate protein kinase C primarily?
- A) Diacyl glycerol
 - B) cAMP
 - C) cGMP
 - D) Ca^{2+}
50. Which of the following are functions of smooth endoplasmic reticulum?
- A) Lipid biosynthesis
 - B) Detoxification
 - C) Calcium storage
 - D) Glycogen to glucose conversion

51. Given below are some key differences between monocot and dicot roots. Select the CORRECT statement(s).

- A) Dicot roots have cambium and show secondary growth while monocot roots do not have cambium and show no secondary growth.
- B) In a cross-section, metaxylem vessels are generally polygonal in monocot roots and oval or circular in dicot roots.
- C) The pith is absent or very small in dicot roots but large and well developed in monocot roots.
- D) Xylem is usually polyarch in both monocot roots and dicot roots.

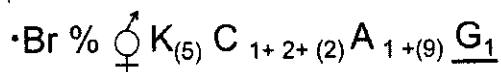
52. Given below are statements about double fertilization, a process that involves the joining of a female gametophyte with two male gametes (sperms). Double fertilization is found in most angiosperms. Select the INCORRECT statement.

- A) It takes place in the microsporangium.
- B) Nucleus of one of the sperms fuses with the egg nucleus.
- C) Nucleus of one of the sperms combines with two polar nuclei of the large central cell of the megagametophyte.
- D) None of its products is a triploid nucleus.

53. Given below are some statements about alternation of generations in land plants. Select the statements which are INCORRECT.

- A) The gametophyte and sporophyte differ in appearance.
- B) The gametophyte and sporophyte do not differ in chromosome number.
- C) Meiosis occurs in sporangia.
- D) Gametes are always produced by meiosis.

54. Select the CORRECT statement(s) that can be depicted by the floral formula given below.



- A) Flower: hypogynous, pentamerous and hermaphrodite
- B) Calyx: 5 sepals, polysepalous in nature
- C) Gynoecium: monocarpellary, superior ovary
- D) Androecium: 10 stamens, monodelphous

55. Complete the sentence with the most appropriate segment given to make a CORRECT statement about tracheids and vessels of plants.

"Tracheids and vessel elements _____"

- A) must die to become functional.
- B) always have companion cells.
- C) have no secondary cell wall.
- D) are found only in the secondary plant body.

56. Which of the following invertebrates has hemoglobin as their respiratory pigment dissolved in plasma?

- A) Ascaris
- B) Planorbis
- C) Earthworm
- D) Hirudinaria

57. Hydrostatic skeletal movements are observed in

- A) Echinodermata
- B) Annelida
- C) Arthropods
- D) Mollusca

58. Autotomy is

- A) A predator-escape strategy found in Gecko
- B) Self-suicidal mechanism found in Salamanders under water stress
- C) Observed in *Oxyne panamensis* under persistent mechanical irritation to detach its tail
- D) A process of organ regeneration observed in Hydra

59. Phenotypic plasticity refers to

- A) some of the changes in an organism's behavior, morphology and physiology in response to a unique environment
- B) Adaptive mechanism displayed by *Daphnia* in response to microsporidian parasite infection
- C) Alterations in gene expression due to changes in physical behavior of chromosomes
- D) Genotype of organism remain same but phenotype is altered

60. Given below are sets; Set I has names of animals and Set II has the number of heart chambers in these animals.

Set I (Animal)	Set II (No of Heart chambers)
1) Fish	i) Three
2) Crocodile	ii) Two
3) Cockroach	iii) Four
4) Elephant	iv) Twelve to Thirteen
5) Cobra	

Which of the following combinations represents the correct match if Set I to Set II?

- A) 1-ii 2-iii 3-iv 4-iii 5-i
- B) 1-i 2-ii 3-iv 4-iii 5-iii
- C) 1-ii 2-iii 3-i 4-iv 5-ii
- D) 1-ii 2-i 3-ii 4-iv 5-iii

61. Which of the following statement(s) is / are TRUE for cell mediated immunity?
- A) Cell-mediated immunity cannot be adoptively transferred by serum from sensitized animals.
 - B) Cell mediated immunity involves the activation of phagocytes, antigen-specific cytotoxic T-cells.
 - C) Cell mediated immunity cannot kill self-cancer cells.
 - D) Cell mediated immunity is only generated for large extracellular pathogens.
62. In which of the human immune cells will you find both cell surface proteins MHC I and MHC II?
- A) Dendritic cells
 - B) Macrophages
 - C) Basophils
 - D) B lymphocytes
63. Which of the following is used for the distinguishing various classes of immunoglobulin molecules (Ig)?
- A) The constant regions of the light chains of Ig.
 - B) The constant regions of the heavy chains of Ig.
 - C) The variable regions of the light chains of Ig.
 - D) The variable regions of the heavy chains of Ig.
64. BLAST is a
- A) Pairwise sequence alignment tool
 - B) Pairwise sequence alignment database
 - C) Basic phylogenetic search
 - D) None of the above
65. From the options given below, which one is an example of a structure database?
- A) NCBI
 - B) PIR
 - C) PDB
 - D) ExPaSy
66. In UV absorption spectroscopy, which of the following statements are true?
- A) $\sigma \rightarrow \sigma^*$ transitions are lower in energy than $\pi \rightarrow \pi^*$ transitions
 - B) A conjugated systems of double bonds in a molecule shifts the absorption maxima to higher wavelengths
 - C) $\sigma \rightarrow \sigma^*$ transitions are higher in energy than $\pi \rightarrow \pi^*$ transitions
 - D) $\sigma \rightarrow \sigma^*$ transition are possible
67. The linearity of the Beer-Lambert law is limited by chemical and instrumental factors. Causes of nonlinearity include
- A) deviations in absorptivity coefficients at high concentrations due to electrostatic interactions between molecules in close proximity
 - B) scattering of light due to particulates in the sample
 - C) non-monochromatic radiation
 - D) stray light

68. Bathochromic shift in the absorption spectra
- A) associated with the shift of spectra towards lower energy
 - B) associated with increase of intensity of spectra
 - C) is also called red-shift
 - D) associated with the shift of spectra toward shorter wavelength
69. Reactions that have positive standard free energy changes ($\Delta G_o > 0$) can be made to occur in cells by
- A) coupling them with exergonic reactions via a common intermediate
 - B) manipulating the concentrations of products and reactants such that $G < 0$
 - C) coupling them to the hydrolysis of ATP
 - D) None of the above
70. Which of the following are correct about the stabilizing forces in the protein?
- A) Protein structures from secondary to quaternary are maintained by noncovalent forces
 - B) They include electrostatic interactions but not van der Waals forces, and hydrogen bonding
 - C) Electrostatic interactions are a significant stabilizing force in a protein structure
 - D) Electrostatic interactions occur when excess negative charges in one region are neutralized by positive charges in another region

PART C

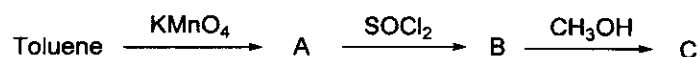
[Each Question has only one right answer. Mark the right answer]

71. An yeast with the genotype *TRP1ADE2* was crossed with a *trp1ade2*. All progeny were either *Trp1ADE2* or *trp1ade2*. This is most likely due to
- A) Co-dominance
 - B) linkage
 - C) selection pressure
 - D) non-disjunction
72. A homozygous recessive is crossed with a heterozygous individual. The probability of obtaining a homozygous recessive phenotype is
- A) 0%
 - B) 50%
 - C) 25%
 - D) 75%
73. You have prepared a 2 molar solution of NaCl (MW 58.44) by dissolving its appropriate amount in 1 L of water. What would be the density of the solution in g/mL?
- A) 1
 - B) 1.2
 - C) 1.117
 - D) 2

74. A substrate that undergoes first order chemical reaction is found to have only 1/32 of it remained after 50 minutes of reaction time. What is the half-life of the substrate in minutes?

- A) 6.4
- B) 10
- C) 1.56
- D) 3.2

75. In the following series of reactions, what will be the product C?



- A) $\text{C}_6\text{H}_5\text{COCH}_3$
- B) $\text{C}_6\text{H}_5\text{CH}(\text{Cl})\text{CH}_3$
- C) $\text{C}_6\text{H}_5\text{CH}_2\text{OCH}_3$
- D) $\text{C}_6\text{H}_5\text{COOCH}_3$

76. Find out the ion that would have smallest diameter?

- A) O_2^-
- B) Na^+
- C) Al_3^+
- D) F^-

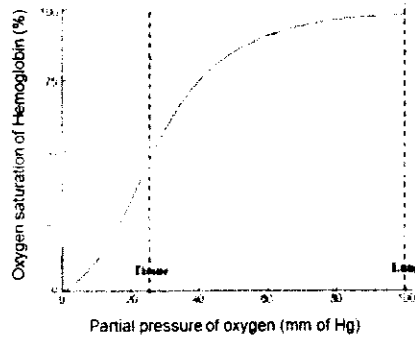
77. Assuming an enzyme behaves according to the Michaelis-Menten equation what percentage of V_{max} would be observed at $[\text{S}]$ at $2 K_M$? ($v = V_{\text{max}}/(1 + K_M/[\text{S}])$)

- A) 9.1%
- B) 33.3 %
- C) 66.7%
- D) 90.9%

78. Suppose that negatively supercoiled DNA with linking number (L) = 23, Twisting number (T) = 25, and writhing number (W) = -2, is acted upon by DNA gyrase and ATP. After one catalytic cycle, what would be the values of L , T , and W ?

- A) $L = 25, T = 25, W = 0$
- B) $L = 24, T = 25, W = -1$
- C) $L = 22, T = 25, W = -3$
- D) $L = 21, T = 25, W = -4$

79. With the help of the oxygen saturation curve for hemoglobin, calculate what percentage of oxygen picked up by hemoglobin in the lung is released in the tissues if the pO_2 in the lung is 100 mm of Hg and pO_2 in the tissues is 25 mm of Hg?

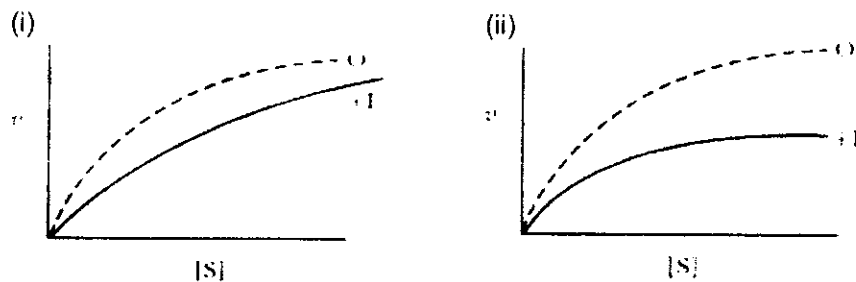


- A) about 25 - 30%
 B) about 53 - 55 %
 C) about 73 - 75%
 D) about 97- 98%
80. The $[H^+]$ concentration at pH 4.4
 A) 10 times higher than the $[H^+]$ concentration at pH 6.4
 B) 100 times lower than the $[H^+]$ concentration at pH 3.4
 C) 100 times higher than the $[H^+]$ concentration at pH 6.4
 D) 100 times higher than the $[H^+]$ concentration at pH 5.4
81. What is the ratio of conjugate base to weak acid in a buffer when the pH increases two units to the pK_a ?
 A) 10
 B) 100
 C) 1
 D) 10^3
82. The DNA from the bacteriophage $\phi X174$ has a base composition of 25% A, 33% T, 24% G and 18% C. Which of the following best explains this observation?
 A) In viral genomes, the base pairing does not follow the standard Watson-Crick rules and allows G-A and C-T base pairs.
 B) Viral genomes are linear and tolerate base-pair mismatches.
 C) Nucleic acids from viruses are tightly complexed with nucleic acid binding proteins and so cannot base pair with one another
 D) The genome of bacteriophage $\phi X174$ is single-stranded.

83. The initial radioactivity of an isotope used in a medical treatment was 5,300 Bq. If the isotope has half-life of 24 hours, how much radioactivity from the isotope will remain after 96 hours?

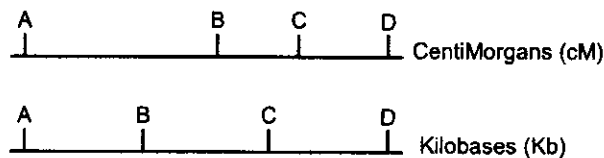
- A) 4,309 Bq
- B) 331 Bq
- C) 531 Bq
- D) 1.89×10^{-5} Bq

84. Given below are two Michaelis–Menten kinetics plots of enzymes without (O) and with inhibitors (I). Select the most appropriate statement from the statements given below.



- A) Inhibitor in Plot (i) is a competitive inhibitor and that in Plot (ii) is a non-competitive inhibitor.
- B) The K_{cat} (turnover) of the enzyme in Plot (i) without or with the inhibitor will be approximately equal when $[S]$ is very high.
- C) Inhibitor in Plot (i) is a non-competitive inhibitor and the K_{cat} (turnover) of the enzyme in Plot (ii) without or with the inhibitor is approximately equal when $[S]$ is very high.
- D) Both the statements A and B are correct

85. The uppermost panel of the accompanying figure shows the locations of four genes on the genetic map of an organism; the lower panel shows the locations of the same four genes on a physical map derived from the nucleotide sequence of the DNA of that organism.



The maps are not identical because

- A) There is no relationship between the position of genes in a genetic map and their positions on the DNA
- B) Recombination frequencies per kb of DNA are not uniform throughout a chromosome
- C) The further apart two genes are, the more likely they are to recombine
- D) Some genes contain introns

ROUGH

University of Hyderabad

Entrance Examinations - 2019

School/Department/Centre : Biochemistry, School of Life Sciences

Course/Subject

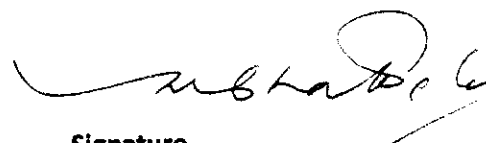
: M. Sc. Biochemistry

Code No. T10

BOOKLET A

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	B	26	A,B,C	51	A,C	76	C
2	A	27	C,D	52	A,D	77	C
3	A	28	B,C	53	B,D	78	D
4	D	29	B,D	54	A,C	79	B
5	B	30	A,B	55	A	80	C
6	D	31	A	56	B,C,D	81	B
7	A	32	C	57	A,B,D	82	D
8	A	33	B	58	A,C	83	B
9	A	34	A,C	59	A,B,D	84	D
10	D	35	A	60	A	85	B
11	A	36	A,B	61	A,B	86	
12	C	37	A,C	62	A,B,D	87	
13	B	38	B,D	63	B	88	
14	C	39	D	64	A	89	
15	C	40	B	65	C	90	
16	B	41	A,C,D	66	B,C	91	
17	B	42	D	67	A,B,C,D	92	
18	B	43	C	68	A,C	93	
19	A	44	D	69	A,B,C	94	
20	C	45	C	70	A,C,D	95	
21	B	46	A,B,C	71	B	96	
22	D	47	A,B,D	72	B	97	
23	B	48	B,D	73	C	98	
24	B	49	A,D	74	B	99	
25	C	50	A,B,C,D	75	D	100	

Note/Remarks :


Signature
School/Department/Centre