

Booklet code: A

H-11

Hall Ticket No

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M. Sc. Entrance Examination. February 2015.

Booklet Code: A

Time: 2 hrs Code No - H-11 (M. Sc. Biochemistry) 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 18 (eighteen) pages including the instructions.
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.

PART A

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

1. Which of the following amino acids is not optically active?
 - A) Lysine
 - B) Alanine
 - C) Glycine
 - D) Tyrosine
2. Predict the signs of ΔH and ΔS for the following reaction:
 $2\text{Cl}(g) \rightarrow \text{Cl}_2(g)$
 - A) ΔH and ΔS are positive
 - B) ΔH is negative and ΔS is positive
 - C) ΔH is positive and ΔS is negative
 - D) ΔH and ΔS are negative

3. The repeating disaccharide unit in cellulose is
 - A) Hemicellulose
 - B) Cellobiose
 - C) Glucose and Galactose
 - D) Fructose and Glucose

4. Among the following which is the best indicator of water pollution due to mixing of human faeces
 - A) Bacillus sp.
 - B) E.coli
 - C) Paramecium
 - D) Trypanosoma

5. Which of the following tumor suppressor gene is popularly known as guardian of the mammalian cell
 - A) cellular Myc
 - B) Retinoblastoma protein Rb
 - C) p53
 - D) PTEN

6. Spermatogenesis takes place in
 - A) Leydig cells
 - B) Sertoli cells
 - C) Prostate cells
 - D) Epididymus

7. Which of the following is true for enzyme catalyzed reaction?
 - A) Enzymes force reactions to proceed in only one direction.
 - B) Enzymes alter the equilibrium of the reaction.
 - C) Enzymes alter the standard free energy of the reaction.
 - D) Enzymes can couple energetically unfavorable reactions to favorable ones.

8. In which type of electronic conversion does an excited molecule decay to its ground state by emitting a photon?
 - A) Absorption
 - B) Fluorescence
 - C) Oxidation
 - D) Reduction

9. How do fatty acid beta-oxidation and fatty acid biosynthesis differ in terms of cellular location?
 - A) Oxidation occurs in mitochondria; biosynthesis occurs in cytoplasm.
 - B) Oxidation occurs in cytoplasm; biosynthesis occurs in mitochondria.
 - C) Oxidation occurs in mitochondria; biosynthesis occurs in lipid vesicles.
 - D) Oxidation occurs in lipid vesicles; biosynthesis occurs in mitochondria

10. The transamination of glutamic acid and oxaloacetate yields?
- A) Oxaloacetate and aspartic acid
 - B) Pyruvate and aspartic acid
 - C) Alpha-ketoglutarate and aspartic acid
 - D) Alanine and alpha-ketoglutarate
11. Which of the following statement is true about stacking interactions? They are
- A) covalent bonds
 - B) ionic interactions
 - C) van der waals interactions
 - D) hydrogen bonding
12. Which of the following statements about gymnosperms is INCORRECT?
- A) Pollination occurs by wind
 - B) Phloem lacks companion cells
 - C) Endosperm is formed after fertilization
 - D) Xylem is without vessels
13. The process by which a diploid embryo sac is developed by the somatic division of nucellus or integuments cells without meiosis is called as
- A) Apospory
 - B) Apogamy
 - C) Adventitive embryony
 - D) Parthenogenesis
14. Grafting is not possible in monocotyledonous plants because they
- A) lack cambium
 - B) have parallel bundles
 - C) are herbaceous
 - D) have scattered vascular bundles
15. In biological membranes, integral proteins and lipids interact mainly by
- A) hydrogen bond
 - B) covalent bond
 - C) hydrophobic interactions
 - D) ionic interactions
16. A green plant bends towards light as it grows because
- A) it needs light to carry on photosynthesis
 - B) it is phototrophic
 - C) light stimulates plant cells on the lighted side to grow faster
 - D) auxin accumulates on shaded side stimulating greater cell elongation

17. A buffer solution contains a mixture of a weak acid at a concentration of 10mM and its potassium salt has a concentration of 1mM. The pH of the buffer solution is approximately
- A) pKa
 - B) pKa, -1
 - C) pKa, -2
 - D) pKa+1
18. Which of the following amino acid is a diamino monocarboxylic acid?
- A) Leucine
 - B) Lysine
 - C) γ -Carboxyglutamic acid
 - D) Glycine
19. The sugar residues of amylose are in
- A) beta-1,4 linkages
 - B) alpha-1,4 linkages
 - C) beta-1,6 linkages
 - D) alpha 1,6 linkages
20. The disease pellagra is due to deficiency of
- A) vitamin B6
 - B) biotin
 - C) niacin
 - D) pantothenic acid
21. The probability that a leap year will have 53 Fridays is
- A) 1/7
 - B) 2/7
 - C) 3/7
 - D) 4/7
22. Which one features is common to earthworm, cockroach and scorpion?
- A) Cephalization
 - B) Antennae
 - C) Nephridia
 - D) Ventral nerve cord
23. Intestinal epithelia in humans has microvilli, the function of which is similar to the function of
- A) Hepatic caecae in cockroach
 - B) Malphigian tubules of cockroach
 - C) Typhlosole in earthworm
 - D) Gizzard of birds
24. Which of these lung volumes/capacities is the largest?
- A) vital capacity
 - B) expiratory reserve volume
 - C) inspiratory reserve volume
 - D) tidal volume

25. In the conversion of a Grignard reagent into an aldehyde, the other components used are

- 1) HCOOCH_3 2) $\text{CH}_3\text{COOCH}_3$
3) CO_2 4) HCN

Choose the correct answer from below:

- A) 1, 3 and 4
B) 2 and 4
C) 1 and 2
D) 1 and 4

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. A disease is inherited as an autosomal recessive trait. Which of the following statements are likely to be true about this disease?

- A) Two affected parents will never have a normal child
B) If the child has the disease, it automatically means that one of the grandparents had the disease
C) If one affected individual has a child with an unaffected individual, their children will never be affected.
D) Two unaffected individuals can produce an affected child

27. Reactions with positive standard free energy change ($\Delta G > 0$) are routinely carried out by living organisms. This is because

- A) providing energy in the form of ATP hydrolysis
B) Coupling it to other exergonic reactions
C) Using enzymes to decrease ΔG
D) Maintaining favourable local concentrations of substrates and products

28. An average lemon has about 2ml of juice of which citric acid is 4%. If the molecular weight of citric acid is 192Da, how many molecules of citric acid are there in a lemon?

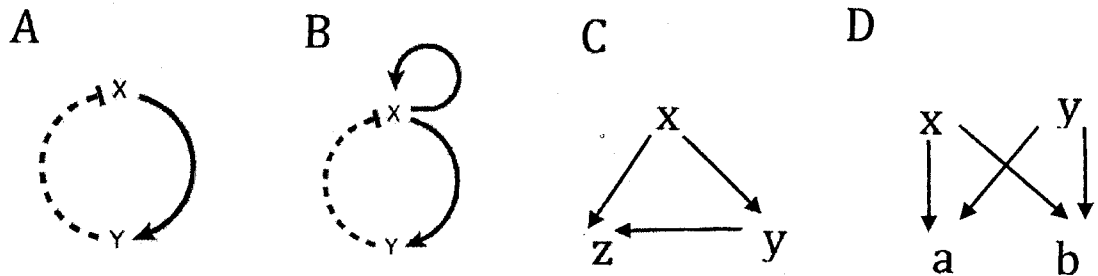
- A) 2.509×10^{23}
B) 5.09×10^{23}
C) 6.023×10^{22}
D) 2.509×10^{24}

29. Which of the following will react with water?

- A) CHCl_3
B) CCl_3CHO
C) CCl_4
D) $\text{ClCH}_2\text{CH}_2\text{Cl}$

30. Which of the following atoms have the same number of unpaired electrons?
- A) Copper ($Z=29$)
 - B) Scandium ($Z = 21$)
 - C) Manganese ($Z= 25$)
 - D) Chromium ($Z= 24$)
31. Conversion of an aldose to ketose sugar by an isomerase proceeds through
- A) Formation of an ene-diol intermediate
 - B) Formation of a Hemiacetal intermediate
 - C) Formation of an adduct intermediate
 - D) None of the above
32. Which of the following statement is true
- A) For fatty acid synthesis NADPH is required which comes from TCA cycle
 - B) For fatty acid synthesis NADPH is required which comes from HMP shunt pathway
 - C) For fatty acid synthesis NADPH is required which comes from gluconeogenesis
 - D) For fatty acid synthesis NADPH is required which comes from glycolysis
33. The difference in DNA and RNA structure is the presence of uracil in RNA instead of thymine in DNA. At molecular structural level there is only a difference of
- A) Ketone group
 - B) Aldehyde group
 - C) Methyl group
 - D) Carboxylic group
34. On what basis DNA is separated in the presence of cesium chloride by ultracentrifugation?
- A) Charge
 - B) Density
 - C) Mass
 - D) Length
35. Which of the following statements about DNA replication are true?
- A) The 5' to 3' exonuclease activity of DNA polymerase removes the RNA primer
 - B) DNA synthesis does not require ATP
 - C) DNA ligase is required for replication of the 3' to 5' strand
 - D) Unwinding of DNA for replication requires the action of helicases

36. Biodiversity hot spots are characterized on the basis of
- Endemic flowering plants
 - Species of flowering plants
 - Rich composition of vascular plant species
 - High rates of endemism
37. If R represents receptor; E-effector protein; G- G protein; S-second messenger, a typical secondary messenger involved signal transduction set up will be
- R-E-S-G
 - R-S-E-G
 - R-G-E-S
 - R-G-S-E
38. Which of the following pictorial representation best represents the feed-forward regulation of hormone action:

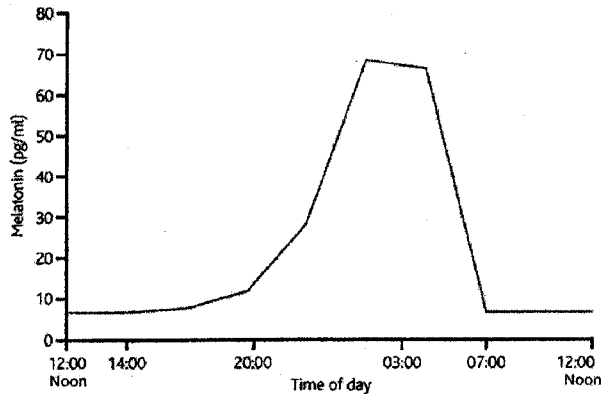


- A
 - B
 - C
 - D
39. Conserved serine, histidine and aspartate residues are present in the catalytic center of all serine proteases. Which of the following describes the role of the histidine residue in the mechanism of this reaction?
- covalent binding of acyl groups
 - hydrophobic stabilization of the substrate
 - proton transfer
 - cation binding
40. In muscle when the demand for ATP is high and oxygen is in short supply, which dehydrogenase catalyzes the oxidation of NADH?
- Pyruvate dehydrogenase
 - Lactate dehydrogenase
 - Glucose-6-phosphate dehydrogenase
 - Malate dehydrogenase

41. Which of the following statements about DNA replication in *E. coli* is NOT TRUE?
- A) DNA replicates only in S-phase of the cell cycle
 - B) *E. coli* chromosome is a single replicon
 - C) Replication is initiated at multiple origins simultaneously
 - D) The replication fork moves bidirectionally from the origin
42. Which of the following statement best summarizes the light reaction of photosynthesis?
- A) Light energy is captured, NADPH and ATP are produced, CO₂ is reduced and oxygen is consumed.
 - B) Light energy is captured, ATP is produced, and NADPH and oxygen are consumed.
 - C) Light energy is captured, NADPH and ATP are produced, water is reduced and oxygen is generated.
 - D) Light energy is captured, NADPH and ATP are consumed water reduction generates oxygen.
43. Which of the following statements about chemical adsorption are NOT TRUE?
- A) It is specific and occurs only when bond formation between adsorbent and adsorbate molecules are possible
 - B) Forms a mono-molecular layer
 - C) Enthalpy of adsorption is usually high, above 60kJ/mol
 - D) It is reversible in nature
44. The coordination number of central metal in a complex is determined by
- A) The number of ligands around a metal ion bonded by sigma and pi bonds both
 - B) The number of ligands around a metal ion bonded by pi bonds only
 - C) The number of ligands around a metal ion bonded by sigma only
 - D) The number of only anionic ligands bonded to the metal ion
45. Which of the following changes decrease the vapour pressure of water kept in a sealed vessel?
- A) Decreasing the quantity of water
 - B) Adding salt to water
 - C) Decreasing the volume of the vessel to one-half
 - D) Decreasing temperature of water
46. The following fatty acid, in which the indicated carbon is labeled with ¹⁴C, is fed to an animal: ¹⁴CH₃(CH₂)₉COOH. After allowing 30 minutes for fatty acid β oxidation, the label would most likely be recovered in:

- A) acetyl-CoA
B) beta-hydroxy butyryl-CoA
C) propionyl-CoA
D) both acetyl-CoA and propionyl-CoA
47. How many EDTA (ethylenediaminetetraacetic acid) molecules are required to make an octahedral complex with Ca^{2+} ion?
A) One
B) Two
C) Six
D) Three
48. Which of the following statements about eukaryotic gene expression is correct:
A) mRNA is modified at both the 5' and 3' ends after transcription
B) Poly cistronic transcripts are rare
C) Ribosomes are bound to mRNA for nuclear export
D) A single primary transcript can produce different mature mRNAs
49. A drug that blocks DNA synthesis is unlikely to affect which of the following processes:
A) nucleotide excision repair systems
B) photoreactivation system
C) gene conversion
D) recombination repair
50. Which of the following statements about mitosis and cell division is true
A) Damaged DNA arrests cell cycle in G1 and G2 phase
B) DNA is synthesized in S phase of the cycle
C) Chromosomes condense during mitosis
D) Exit from cell cycle involves protein degradation
51. When one compares the DNA sequence of prokaryotes and eukaryotes, the maximum sequence variation is likely to be found in the
A) rRNA
B) mRNA
C) tRNA
D) hnRNA
52. Triploids can be produced in tissue culture through culture of
A) axillary buds
B) root culture
C) embryo culture
D) endosperm culture

53. The sequence of development of embryosac is
- A) archesporium > megaspore > megaspore mother cell > embryosac
 - B) archesporium > megaspore > megasporangium > embryosac
 - C) megasporangium > megaspore > archesporium > embryosac
 - D) archesporium > megaspore mother cell > megaspore > embryosac
54. Which one of the following statements best describes what is meant by the ion product of water?
- A) The total number of negatively and positively charged ions in 1L of an aqueous solution of an electrolyte
 - B) The product of the concentrations of hydrogen ions and hydroxyl ions that are derived only from water molecules in aqueous solutions of electrolytes
 - C) The number of ionized molecules of H_2O in 1 mole of pure water
 - D) The product of the concentrations of hydrogen ions and hydroxyl ions in water or in aqueous solution of electrolytes
55. The absorption of light by cells in the retina of the eye results in the conversion of
- A) beta carotene to retinal
 - B) cis-retinal to all trans retinal
 - C) all trans retinal to cis-retinal
 - D) retinal to retinol
56. In deciphering the genetic code, synthetic trinucleotides were prepared using the polynucleotide phosphorylase enzyme. What would be the approximate percentage of concentrations of the trinucleotides CAA if A and C were mixed together at 1:4 ratio approximately.
- A) 3%
 - B) 15%
 - C) 60%
 - D) 80%
57. Start site of prokaryotic messenger RNA is selected by ribosomes using
- A) tRNA
 - B) 23SrRNA
 - C) 16SrRNA
 - D) 5SrRNA
58. Melatonin is a hormone that regulates the sleep-wake cycles. Given below is a plot tracing levels of Melatonin in a healthy individual. Which of the following inferences can be drawn from the graph:

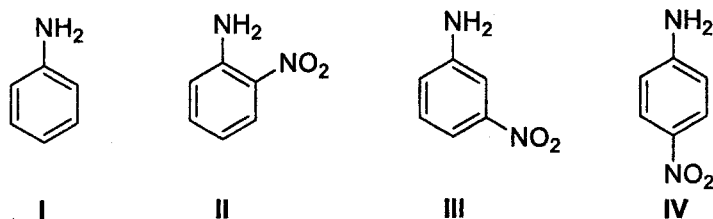


- A) Production of melatonin by the pineal gland is inhibited by light and permitted by darkness
- B) The pineal gland would produce melatonin during the same time of the day always without showing any seasonal change.
- C) If a person is given melatonin, he would feel drowsy
- D) Giving melatonin would cause wakefulness in a person
59. Which of the following enzyme(s) are released in their zymogen form?
- A) Tyrosine Kinase
- B) Chymotrypsin
- C) Maltase
- D) Trypsin
60. Paired appendages are absent in all of the following EXCEPT:
- A) Hemichordates
- B) Cephalochordates
- C) Urochordates
- D) Gnathostomata
61. In which of the infection by following pathogens, an intermediate host is absent?
- A) *Entamoeba*
- B) *Plasmodium*
- C) *Candida albicans*
- D) *Trypanosoma*
62. Immunogen is an antigen that can cause an immune response. Which of the following is NOT true regarding effective immunogens?
- A) Foreign to the host
- B) Fairly large (molecular weight > 6000)
- C) Chemically complex (e.g. proteins made of many nucleotide bases)
- D) Requires a carrier-conjugate to cause the generation of antibodies

63. The cell surface molecule on immune cells that helps the innate immune system recognize a foreign antigen is

- A) Antibody
- B) Toll-like receptor
- C) T cell receptor
- D) HLA Class IIA

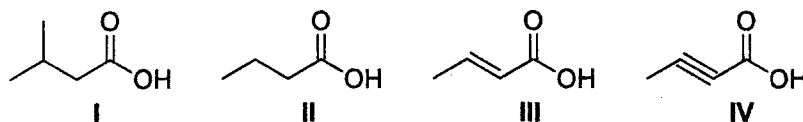
64. Among the following given compounds



The decreasing order of their basicity is:

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

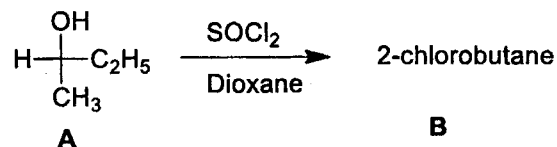
65. Among the following given compounds



The decreasing order of their acidity is:

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

66. An optically active alcohol (A) reacts with SOCl_2 to form product (B) as shown:



In this regard, which one of the following statements is true?

- A) A and B are both *R*-isomer.
- B) A and B are both *S*-isomer.
- C) A is *R*-isomer and B is *S*-isomer
- D) A is *S*-isomer and B is *R*-isomer

67. One difference between sphingomyelin and lecithin is that
- Sphingomyelin contains choline and lecithin does not
 - Sphingomyelin contains a acyl (fatty acyl) group and lecithin does not
 - Sphingomyelin contains phosphate and lecithin does not
 - Sphingomyelin contains a ceramide and lecithin does not
68. Which of the following pairs of amino acids could form a salt bond at pH 7.4?
- Glycine and Arginine
 - Valine and Lysine
 - Leucine and Histidine
 - Glutamate and Arginine
69. Ramachandran plots are derived on the basis of free rotation of which of the following bond?
- C-N
 - C=O
 - C α -C
 - C-H
70. Which of the following can work as an antacid?
- Magnesium trisilicate
 - Sulphadiazine
 - Magnesium sulphate
 - Sodium bicarbonate

PART C

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

71. In mongrels, black is dominant over spotted. A true breeding black dog is crossed with a spotted dog, and the F1 are interbred. The probability that the first puppy born will have a spotted coat is
- 25%
 - 50%
 - 100%
 - 0%
72. Four babies are born in a hospital with the blood groups indicated below. The pairs of parents with their respective blood groups are shown. Match the child with the correct parent.

i	A	a	AB and O
ii	B	b	A and B
iii	AB	c	O and O
iv	O	d	B and B

- A) i-a, ii-d, iii-c; iv-b
- B) i-c, ii-d; iii-b; iv-a
- C) i-b ii-d; iii-a; iv-c
- D) I-a; ii-d; iii-b; iv-c

73. In sheep, H is dominant over h and produces horns. Two horned sheep were crossed and they produced 2 horned progeny and one unhorned progeny. When the unhorned progeny is mated to one of its parents, what percent of this breeding is likely to produce unhorned sheep?

- A) 0
- B) 25
- C) 50
- D) 75

74. The number of workers working in a mill listed according to wages per week is entered into an excel sheet as follows:

Wages per week (Rs)	Number of workers
10-20	4
20-30	6
30-40	10
40-50	20
50-60	10
60-70	6
70-80	4

The mean deviation from median of this data is:

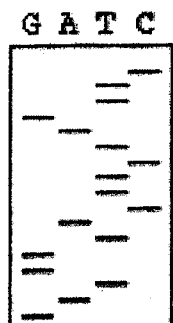
- A) 4
- B) 11,33
- C) 12.33
- D) 47

75. Lipoproteins differ in the ratio of protein to lipids, and in the particular apoproteins and lipids that they contain. Match the following

- | | |
|----------------|---|
| 1) chylomicron | A) 2nd highest in triacylglycerols as % of weight |
| 2) VLDL | B) highest in cholesteryl esters as % of weight |
| 3) LDL | C) high protein/lipid ratio |
| 4) HDL | D) lowest in density |

- A) 1-C, 2-B, 3-A, 4-D
- B) 1-D, 2-A, 3-B, 4-C
- C) 1-D, 2-B, 3-D, 4-C
- D) 1-B, 2-A, 3-C, 4-D

76. In the DNA sequence given below all Thymidines (T) are labeled with radioactive tritium (^3H) and the Cytidine (C) with radioactive phosphate (P^{32}). This DNA is incubated with DNA polymerase I and dTTP. In the resulting product what would be the status of the ^3H and ^{32}P .
- 5'--- ^3H TTTTTTC ^{32}P
 3'-----AAAAAAAAAAAAA5'
- A) ^3H and ^{32}P will disappear
 B) ^3H will reduce and ^{32}P remains the same
 C) ^3H will disappear and ^{32}P remains the same
 D) ^3H will remain the same and ^{32}P will disappear
77. When $[S] = 0.5 \cdot K_m$, where $[S]$ is the substrate concentration and K_m is the Michaelis Menten constant, the velocity (v_o) of an enzyme catalyzed reaction is about:
- A) $0.1 \cdot V_{\text{max}}$.
 B) $0.3 \cdot V_{\text{max}}$.
 C) $0.5 \cdot V_{\text{max}}$.
 D) $1.0 \cdot V_{\text{max}}$.
78. You have been asked to make a solution called X. The composition of X is 25 mM Tris.HCl (pH 8), 10 mM NaCl and 5mMEDTA. You are given three stock solutions: (i) 1 M Tris.HCl (pH 8) (ii) 0.5 M NaCl (iii) 0.1M EDTA. How much of each stock solution will you mix to prepare 100 ml of solution X?
- A) 25 ml of 1 M Tris. HCl (pH 8) + 50 ml of 0.5 M NaCl + 5ml of 0.1M EDTA + 20 ml of H_2O .
 B) 5 ml of 1 M Tris. HCl (pH 8) + 4 ml of 0.5 M NaCl + 0.5ml of 0.1MEDTA + 90.5 ml of H_2O .
 C) 2.5 ml of 1 M Tris. HCl (pH 8) + 2 ml of 0.5 M NaCl + 5ml of 0.1MEDTA + 90.5 ml of H_2O .
 D) Solution X cannot be made for the supplied stock solutions.
79. Which of the following sequences would form the most stable stem loop structure?
- A) 5'CGCUUA.....UAAGGC3'
 B) 5'CGCAUU.....UAAGGC3'
 C) 5'CGCUUA.....AUUCGC3'
 D) 5'CGCUUA.....UAAGCG3'
80. A single-stranded fragment of DNA was sequenced by Sanger's dideoxy method. All four reactions separated on a polyacrylamide gel are shown below. The dideoxy nucleotide used is indicated on top of the gel picture. What is the sequence of the DNA?



- A) 5'GATGGTGCTTCTAGTTC3'
 B) 5'CTTGATCTTCGTGGTAG3'
 C) 5'CTACCACGAAGATCAAG3'
 D) 5'GAACTAGAAGCACCATC3'

81. Which of the following compounds shows optical isomerism?

- A) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
 B) $[\text{ZnCl}_4]^{2-}$
 C) $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$
 D) $[\text{Co}(\text{CN})_6]^{3-}$

82. Expression of a gene can often be quantified using its mRNA expression level through microarrays. The expression of a kinase gene, GSK3 β , in several samples designated 1-10 is as follows:

Gene	1	2	3	4	5	6	7	8	9	10
GSK3 β	8.7	8.0	8.5	8.2	8.3	8.7	9.0	9.0	9.0	9.2

The variance and standard deviation, respectively, of this data, after rounding off to the nearest value are:

- A) 0.201 and 0.44
 B) 0.21 and 0.45
 C) 0.5 and 0.7
 D) 0.51 and 0.71

83. You were given 3 tubes, A, B and C containing either tRNA or mRNA or DNA. The tubes were not labeled. The following results were obtained by you in trying to identify the contents of the tube.

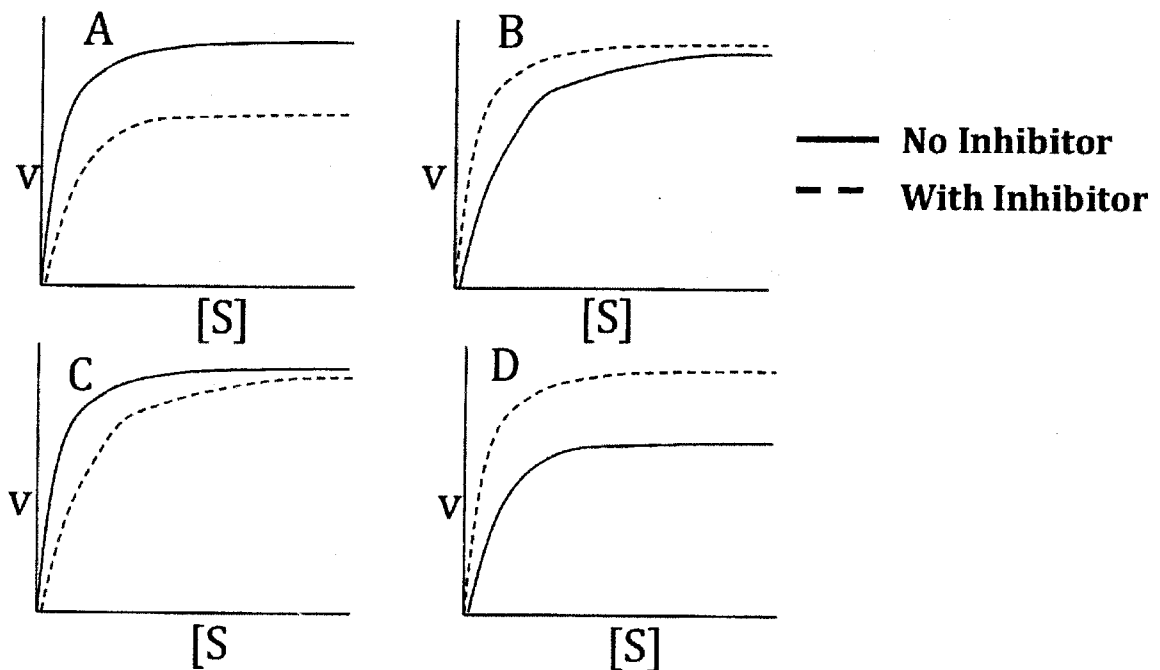
- i) Upon treatment with alkali and separation on agarose gels, only tube B had high molecular weight nucleic acid while A and C produced low molecular weight nucleotides.
 ii) Absorption at 260nm gave the following results:

	A_{260}	Heating to 80°C and A_{260}
A	0.3	0.3
B	0.5	0.74
C	0.36	0.45

Based on these two pieces of data, which of the following identities is most likely to be correct?

- A) Tube A = DNA; B=mRNA; C=tRNA
- B) Tube A = mRNA; B=DNA; C=tRNA
- C) Tube A = tRNA; B=DNA; C=mRNA
- D) The information is not sufficient for identifying the components

84. Which of the following graphs represents a Michaelis-Menten plot for competitive inhibition?

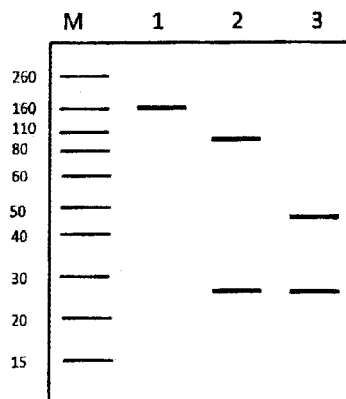


- A) Plot A
- B) Plot B
- C) Plot C
- D) Plot D

Booklet code: A

H-11

85. You isolated a unique proteolytic enzyme which cleaved Immunoglobulin G (IgG) at one single defined site in the lower hinge region below the disulphide bonds of the antibody. The sample after digestion with this proteolytic enzyme was fractionated on a native gel which is given below. Which of the lanes represent the digested IgG? Given M is protein molecular weight marker in kDa.



- A) Lane 1
- B) Lane 2
- C) Lane 3
- D) both lanes 2 and 3

-----Rough work-----