

Entrance Examinations – 2019
Ph.D. Biochemistry

Hall Ticket No.

Time : 2 hours

Max. Marks : 70

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 two Sections : **Part – A** and **Part – B** together with 60 questions for 70 marks. **Part – A** contains 25 questions. Questions 1 to 15 carries one mark each. Questions 16 to 25 carries 2 marks each. **Part – B** contains 35 questions; each question carries one mark and **there is no negative marking**.
3. Answers have to be marked on the OMR sheet as per the instructions provided.
4. Apart from OMR sheet, the question paper contains 15 (Fifteen) pages including the instructions.
5. **Please return the OMR answer sheet at the end of the examination.**
6. No additional sheet will be provided.
7. Rough work can be carried out in the question paper itself in the space provided at the end of the booklet.
8. Non programmable calculators are allowed.

PART A

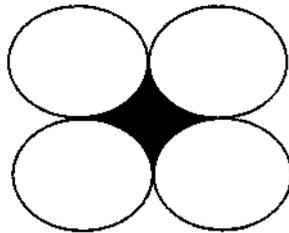
[Each question has only one right answer. Mark the right answer. There is no negative marking.]

1. A litre of water was evaporated from 8L of salt solution containing 8% NaCl. The percentage of NaCl left in the remaining solution is
 - A. $7\frac{1}{2}$ %
 - B. 7% %
 - C. $9\frac{1}{2}$ %
 - D. None of these
2. In an examination, 34% of the candidates fail in Biochemistry and 42% in Molecular Biology. If 20% fail in Biochemistry and Molecular Biology, the percentage of those passing in both subjects is
 - A. 44
 - B. 45
 - C. 46
 - D. 47

3. If angles $\angle P$, $\angle Q$, $\angle R$ and $\angle S$ of the quadrilateral $PQRS$, taken in order, are in the ratio 3:7:6:4, then $PQRS$ is a

- A. Rhombus
- B. Parallelogram
- C. Trapezium
- D. Kite

4. Find the area of shaded region, if the radius of each circle is 1 cm



- A. $(4 - \pi) \text{ cm}^2$
- B. $(5 - \pi \times \sqrt{3}) \text{ cm}^2$
- C. $(2 - \pi \times \sqrt{3}) \text{ cm}^2$
- D. None of these

5. A glass cylinder with diameter 14 cm has water to a height of 15 cm. A metal cube of side 6 cm is immersed in it completely. The height by which water will rise is

- A. 1.35 cm
- B. 1.4 cm
- C. 1.45 cm
- D. 1.5 cm

- 6. In the following multiplication problem, find the numerical values of T, F and H in that order

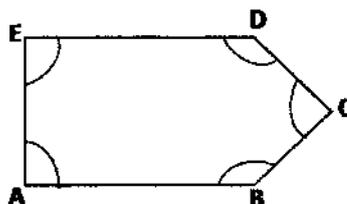
$$\begin{array}{r}
 \text{LTBDF} \\
 \underline{\quad 46} \\
 \text{34TGFT} \\
 \underline{\text{23D4HD}} \\
 \text{D6LF6L8}
 \end{array}$$

- A. 2, 8, 9
- B. 8, 3, 9
- C. 6, 3, 5
- D. 8, 4, 7

7. Perimeter of a circle is equal to that of a square. Ratio of their area is

- A. 14:11
- B. 13:10
- C. 11:14
- D. 10:13

8. In figure below, ABCDE is a regular pentagon. Then $\angle ABC + \angle BCD + \angle CDE + \angle DEA + \angle EAB$ is equal to



- A. 360°
- B. 540°
- C. 720°
- D. None of these

9. Find the angle between the hour hand and the minute hand of a clock, when the time is 25 min to 8.

- A. $12\frac{1}{2}^\circ$
- B. $17\frac{1}{2}^\circ$
- C. 20°
- D. $22\frac{1}{2}^\circ$

10. The shape of a red blood cell can be approximated as a disk of $7\ \mu\text{m}$ in diameter and $3\ \mu\text{m}$ thick. If the cell density is close to $1.30\ \text{g/ml}$, how much does a single red blood cell weigh?

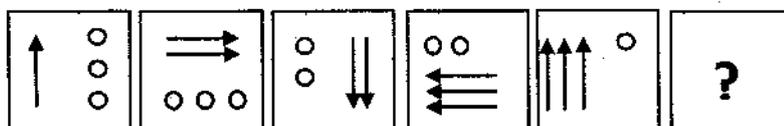
- A. $1.5 \times 10^{-10}\ \text{g}$
- B. $1.5 \times 10^{-8}\ \text{g}$
- C. $1.5 \times 10^{-6}\ \text{g}$
- D. $1.5 \times 10^{-4}\ \text{g}$

11. Choose the figure that is different from others. Mark the most appropriate answer.

- A.
- B.
- C.
- D.

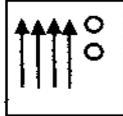
12. Select a figure from the answer figure which continues the same series as given in the problem figure.

Problem figure

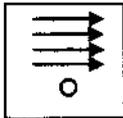


Answer figure

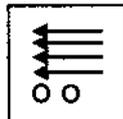
A.



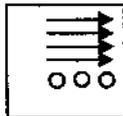
B.



C.



D.



13. A multiple choice examination has 5 questions. Each question has three alternative answers of which exactly one is correct. The probability that a student will get 4 or more correct answers just by guessing is

- A. $13/3^5$
- B. $11/3^5$
- C. $10/3^5$
- D. $17/3^5$

14. Consider the following statements:

- (a) Mode can be computed from histogram.
- (b) Median is not independent of change of scale.
- (c) Variance is independent of change of origin and scale.

Which of these is/are correct?

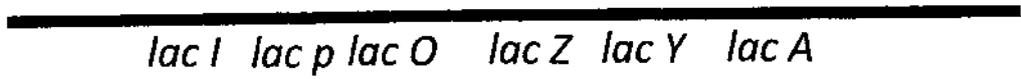
- A. Only (a)
- B. Only (b)
- C. Only (a) and (b)
- D. (a), (b) and (c)

15. If a vertex of a triangle is (1,1) and the mid-point of two sides through this vertex are (-1, 2) and (3,2). Then the centroid of the triangle is

- A. $(-1, 7/3)$
- B. $(-1/3, 7/3)$
- C. $(1, 7/3)$
- D. $(1/3, 7/3)$

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16. The accompanying figure depicts the map of a part of *E. coli* genome harboring the lac operon.



lac mRNA would hybridize to which of the following DNA?

- 1) *lac I*; 2) *lac O*; 3) *lac Z*; 4) *lac Y*; 5) *lac A*

- A. Only 1, 2 and 3
- B. Only 1, 3 and 4
- C. Only 2, 3, 4 and 5
- D. Only 3, 4 and 5

17. A mutant of *E. coli* with a heat-sensitive DNA ligase (25°C permissive, 37°C nonpermissive) has been used to show that lagging strand DNA synthesis is discontinuous. Examination of DNA replication in the presence of - [³H]- thymidine in the mutant would demonstrate which of the following?

- A. The accumulation of short segments of unlabeled DNA at 25°C and at 37°C
- B. The accumulation of short segments of unlabeled DNA at 25°C but not at 37°C
- C. The accumulation of short segments of radioactive DNA at 37°C but not at 25°C
- D. The accumulation of short segments of radioactive DNA at 25°C but not at 37°C

18. During the erythrocytic stage infection of *Plasmodium*, the parasite undergoes repeated rounds of replication, egression and invasion. Stage specific gene expression is known to be coordinated by the functional state of chromatin. State of chromatin is regulated by proteins that bind to chromatin and modify histones.

A research group wanted to understand the function of a novel protein X. *In silico* studies showed that protein X has DNA binding domain and it was also found to interact with other proteins involved in histone modifications.

Experimental findings:

- 1) They found that conditional knockdown of protein X has no effect on parasite replication as compared to normal parasite.
- 2) However, the number of infected RBCs post egression was less in protein X knockdown strain.
- 3) Upon knockdown of protein X, a subset of genes was up-regulated in the later stages of parasite as compared to wild-type parasite line.
- 4) Functional enrichment analysis revealed that genes which showed altered expression belong to exported and invasion family
- 5) In a ChIP experiment protein X was found to be enriched on the promoters of genes which showed altered expression.

Choose the best conclusion that explains the above experimental findings:

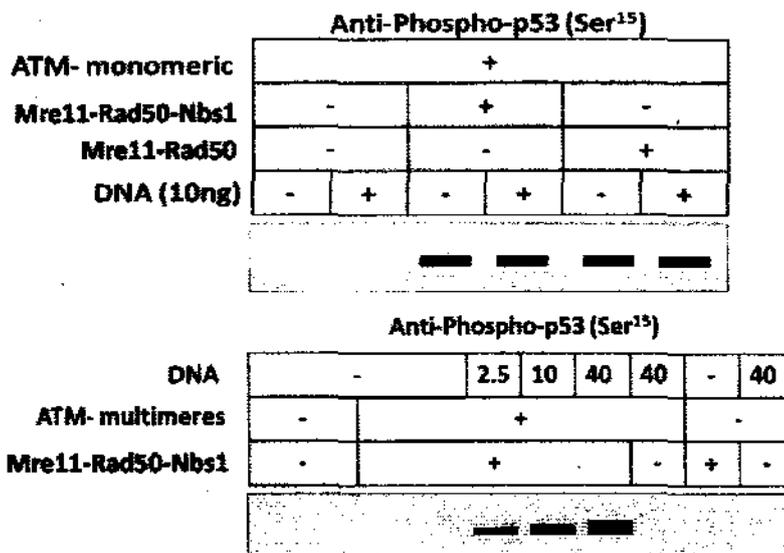
- A. Protein X is essential for parasite proliferation as well as replication.
- B. Knocking down of protein X results in defective egression whereas invasion is normal.

C. The above experiment could not establish any involvement of protein X in parasite egression or invasion.

D. Protein X enrichment to the promoter of invasion genes enhances their expression.

19. In mammalian cells, DNA double-strand breaks trigger activation of the ataxia-telangiectasia mutated (ATM) protein kinase, which phosphorylates downstream targets that initiate cell cycle arrest, DNA repair, or apoptosis. Several of these targets, including p53, Chk2, Brca1, H2AX, Mre11-Rad50-Nbs1 (MRN) complex, are essential for DNA double-strand-break repair and genomic stability.

In vitro kinase assay was performed to understand the factors important in ATM activation. As a readout phosphorylation of p53 at Ser15 was monitored using Anti-phospho-p53(Ser15) antibody. Analyze the following western blots:



Following conclusions were drawn from above blots:

1. Unlike monomeric ATM, multimeric ATM required both MRN complex and DNA for Activity.
2. Nbs1 is not that essential for ATM activation *in vitro*.
3. Activation of ATM is MRN independent.
4. With increase in DNA concentration the activity of ATM increases.

State which of the following combination is correct:

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

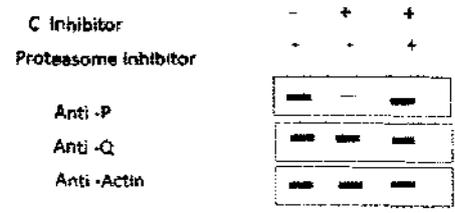
20. It was observed that when a molecular chaperon C is inhibited the cells become sensitive to DNA damaging agent. To understand this mechanism a series of experiments were performed.

- 1) Cells were treated with DNA damaging agent and two Genes P and Q were found to be up regulated.
- 2) Yeast two hybrid was performed to check for the interaction of P and Q with chaperon C and only P was found to interact with C.

3) Co- immunoprecipitation was further performed to study interaction, given below is the picture of the western blot obtained:



- 4) RT PCR analysis revealed no effect on transcription level of gene P and Q upon inhibition of chaperon C.
- 5) In order to determine whether P or Q are the client of chaperone C the steady-state level of proteins P and Q were determined in the presence of two inhibitors: one that inhibits chaperone C activity and another that inhibits proteasome mediated degradation. It is established that if C is inhibited any of its clients would degrade via the proteosomal pathway. The bolt of such experiment is shown below:



On basis of above experiments following statements were made, state which one is correct.

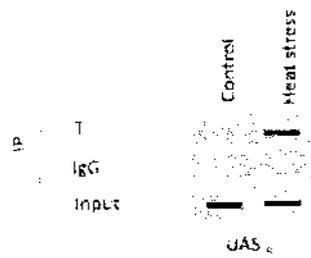
- A. Gene P and Q function as complex and both are client of C.
- B. P and Q do not form a complex and only gene P is client of C.
- C. Gene P and Q form a complex and only P is client of C.
- D. Gene P and Q form a complex and only Q is client of C.

21. In an organism, expression of few genes were found to be altered when external stress of heat was given. Given below is the Ct value obtained though real time RT-PCR for genes involved in a pathway under control and experimental conditions

Gene	Ct value(control)	Ct value(heat stress)	Function
V	13	14	Virulence
R	21	26	HDAC, Regulator of virulence gene
T	17	18	Transcription factor
House keeping gene	15	17	Normalising Control

To get the molecular insight of the phenomenon, chromatin immunoprecipitation was performed in control and heat stress condition using anti- T antibody and IgG which served as negative control. Given below is the gel picture of PCR done using primer specific to R promoter from IP DNA of above mentioned antibodies:

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- In T knock out background, no transcription alteration of both V and R was observed. On basis of above experiments, following statements were made, state which one is correct.
- Upon heat stress, V and T are up-regulated 2 fold while R is down regulated 3 fold; and T acts as a repressor for the R gene expression.
 - Upon heat stress, V and R are up-regulated 2 fold and 8 fold, respectively while T is down regulated 2 fold; and T acts as an activator for the R gene expression.
 - Upon heat stress, V and T are up-regulated 2 fold while R is down regulated 6 fold; and T acts as a repressor for the R gene expression.
 - Upon heat stress, V and T are up-regulated 2 fold while R is down regulated 8 fold; and T acts as a repressor for the R gene expression.

22. The following data was obtained from a transduction experiment:

Donor: $trp^+ leu^+ arg^-$

Recipient: $trp^- leu^- arg^+$

Among the trp^+ transductants, the researcher obtained the following phenotype:

$leu^+ arg^+$	48
$leu^+ arg^-$	24
$leu^- arg^+$	144
$leu^- arg^-$	3

The order of the loci is most likely to be:

- Leu arg trp
- Arg leu trp
- Trp arg leu
- Arg trp leu

23. If a double crossover occurs in a paracentric inversion, the four meiotic products are likely to be

- inviable
- viable
- only non-recombinants are viable
- dicentric chromosomes

24. Two bacterial strains, one isolated from sugar syrup (B_{syrup}) and other from soil (B_{soil}), utilized glucose as the sole carbon source. The kinetic parameters of the enzymes from these bacteria that use glucose as substrate are given below.

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Strain	B _{syrup}	B _{soil}
K _m	1000 mM	10mM
V _{max}	1000 mmol/min	100 mmol/min

The enzymes isolated from these two bacterial strains were then assayed in three different concentrations of glucose, 10mM, 100mM and 1000mM. Which of the following statements will be correct?

- A. Strain B_{soil} will have higher v_o at 100 mM glucose than B_{syrup}
- B. Strain B_{syrup} will have higher v_o at 100 mM glucose than B_{soil}
- C. Strain B_{soil} will have higher v_o at 10 mM glucose than B_{syrup}
- D. Strain B_{soil} will have higher v_o at 1000 mM glucose than B_{syrup}

25. Measurement of the tryptophan fluorescence of a protein at different pH gives the following data:

pH	Fluorescence at 335nm (arbitrary units)
1.5	5
2.0	5
2.5	10
3.0	35
3.5	70
4.0	95
5.0	100
7.0	100

What is the energy of unfolding of protein at pH 2.5? Assume T = 25 °C = 298 K and gas constant, R is 8.3145 J/mol K.

- A. $\Delta G^{\circ}_{\text{unf}} = -7.2 \text{ kJ mol}^{-1}$
- B. $\Delta G^{\circ}_{\text{unf}} = +1.9 \text{ kJ mol}^{-1}$
- C. $\Delta G^{\circ}_{\text{unf}} = -3.3 \text{ kJ mol}^{-1}$
- D. $\Delta G^{\circ}_{\text{unf}} = -5.4 \text{ kJ mol}^{-1}$

PART B

[Each question has only one right answer. Mark the right answer. There is no negative marking.]

26. Coupling causes the peaks in ¹H NMR spectra to be split into

- A. Two peaks
- B. Multiple peaks equal to the number of hydrogens on surrounding atoms
- C. Multiple peaks equal to the number of surrounding carbon atoms
- D. Multiple peaks equal to the number of hydrogen on surrounding atoms, plus one

27. What is the correct increasing order of wave number associated for $C \equiv C$, $C = C$ and $C - C$?
- $C - C > C = C > C \equiv C$
 - $C \equiv C > C = C > C - C$
 - $C - C > C = C < C \equiv C$
 - $C \equiv C < C - C > C = C$
28. Absorption of radiation in the UV range attributable to $n \rightarrow \pi^*$ electronic transitions is characteristic of which of the following types of compounds?
- Aromatic hydrocarbons.
 - Unsaturated carbonyl compounds
 - Non-conjugated polyenes
 - Conjugated polyenes
29. A sequence of amino acids in a certain protein is found to be -Ser-Gly-Pro-Gly-. The sequence is most probably part of a(n):
- Antiparallel sheet.
 - Parallel sheet.
 - Helix.
 - Turn
30. Which of the following statements about nuclear transport is incorrect? Mark the most appropriate answer.
- Proteins destined to nucleus contain signal sequences
 - Small proteins can freely enter the nucleus
 - Signal sequence is removed after transport into nucleus
 - Nuclear localization sequences are sufficient to target any protein into the nucleus
31. Addition of N-linked oligosaccharides is done
- On ribosomes
 - In ER and then modified in Golgi
 - In cis-Golgi followed by additional changes in trans-Golgi only
 - In all Golgi compartments and in the secretory vesicles
32. In a three-point test cross, the most frequent classes of progeny were ABc and abC and the low frequency were AbC and aBc. Which allele is in the middle?
- A/a
 - B/b
 - C/c
 - Not enough information to decipher this
33. Which of the following statements about cytoplasmic inheritance is incorrect?
- Uniparental inheritance
 - Non-Mendelian segregation
 - Progeny may have different degrees of heteroplasmy
 - Can be mapped relative to nuclear genes
34. Genome imprinting is
- Printing genome sequences on arrays
 - Silencing of one copy of the chromosome
 - Parent of origin dependent expression of genes

D. Editing genome sequences

35. Which protein is involved in the separation of the two interlinked daughter chromosomes when DNA replication is terminated in *E. coli*?

- A. DnaB
- B. Topoisomerase III
- C. Topoisomerase IV
- D. Tus

36. What would happen if the concentration of dideoxynucleotides was too high in a chain termination sequencing reaction? Mark the most appropriate answer.

- A. The reaction would yield very long molecules and there would be little sequence data close to the primer.
- B. The reaction would produce very short molecules.
- C. The reaction would not proceed as the high concentration of the dideoxynucleotides would inhibit the DNA polymerase.
- D. The fluorescence of the sequencing products would be too high and difficult to read.

37. Which of the following statements about recA, a protein involved in homologous recombination in *E. coli*, is wrong?

- A. It hydrolyzes ATP to promote branch migration.
- B. It binds to single-stranded DNA to form a filament.
- C. It is an ATP-dependent nuclease that generates single-stranded DNA.
- D. It facilitates the search of duplex DNA for regions with sequence similarities to the invading single-stranded DNA.

38. Which of the following immune cells is represented if the immune cell is CD45+, CD3+, is cytotoxic, can kill virus infected cells, and many also interact with lipid or glycolipid antigen presented by CD1 molecules?

- A. Natural Killer Cells
- B. Natural Killer-T cells
- C. Mast cells
- D. Type 2 T helper cells

39. Which of the following statements is correct for MHC class III genes?

- A. Encode glycoproteins expressed on the surface of nearly all nucleated cells.
- B. Encode $\beta 2$ -microglobulin gene that forms a part of MHC class I molecule.
- C. Encode glycoproteins that primarily present exogenous antigenic peptides to CD4+ T cells.
- D. Encode components of the complement system.

40. Which of the following mechanisms does not contribute to the generation of diversity of T-cell receptors when compared to the immunoglobulin diversity?

- A. Somatic hypermutation
- B. Combinatorial V-(D)-J joining
- C. Non-templated (N) nucleotides added by Terminal deoxynucleotidyl transferase (TdT) at the junctions
- D. Palindromic (P) nucleotides addition at the junctions

41. A patient suffering from anemia goes to a doctor. A blood test revealed vitamin B12 deficiency and circulating antibodies directed against gastric parietal cells. Hyposecretion of which of the following gastric secretory products is responsible for this case of anemia?

- A. Histamine
- B. Gastrin
- C. Pepsinogen
- D. Intrinsic factor

42. Which of the following enzyme has bound Thiamine pyrophosphate

- A. Pyruvate decarboxylase
- B. Alanine transaminase
- C. Pyruvate carboxylase
- D. Pyruvate Kinase

43. Tandem enzymes have two different activities on the same polypeptide chain. Which of the answer is correct?

- A. Glucose 6-phosphate dehydrogenase and Transaldolase
- B. Phosphofructokinase-2 and Adenylate Transferase
- C. Transketolase and Tyrosine transaminase
- D. Histidine decarboxylase

44. Glutamine serves as an amide group donor for the biosynthesis of which of the following. Mark the most appropriate answer.

- A. Histidine, Tryptophan, Glucosamine 6-phosphate, Nucleotides
- B. Tyrosine, Aspartate, Ornithine
- C. Tryptophan, Galacturonic acid
- D. Lysine, Leucine, Ornithine

45. Which of the following statement is correct

- A. N-linked glycan core oligosaccharide is formed on Dolichol pyrophosphate sequentially and contains N-Acetylglucosamine, Mannose, and Glucose residues linked to Asparagine residue in proteins.
- B. N-linked core oligosaccharide is formed on Dolichol pyrophosphate and contains Mannose, Galactose and Galactosamine sugars linked to Serine Hydroxy groups in proteins
- C. Nucleotide diphosphate sugars are not the sugar donors in Glycoprotein biosynthesis
- D. Individual sugars are added directly to the protein through specific enzymes.

46. Which of the following statement is correct

- A. UDP-GlcNAc-Phosphotransferase absence leads to non-phosphorylation of mannose residues on lysosomal enzymes and causes I-cell disease.
- B. UDP-GalNAc-Phosphotransferase absence leads to I cell disease
- C. I cell disease is related to the absence of the LDL-Receptor
- D. Arginine mutated to Alanine in Mannose 6-phosphate receptors can target lysosomal enzymes

47. 1. After plotting Lineweaver-Burk plot of the kinetic data of an enzyme, its slope was found to be 0.095 s. The plot intercepts the Y-axis at $0.0126 \text{ s} \cdot \mu\text{M}^{-1}$. Calculate the K_M of the enzyme in mM.

- A. 1.33×10^{-4}
- B. 7.54×10^{-3}
- C. 0.133
- D. 7.54

48. Which of the following amino acid cannot act as a nucleophile in the enzyme catalysis?

- A. Serine
- B. Aspartate
- C. Histidine
- D. Asparagine

49. Which of the following method cannot be used to determine the molecular weight of an enzyme?

- A. Size-exclusion chromatography
- B. Ultracentrifugation
- C. Biuret method
- D. SDS-PAGE

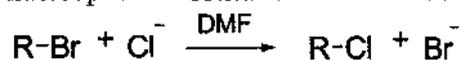
50. Which of the following molecules has 3 σ and 2 π bonds?

- A. HCN
- B. C_2H_4
- C. C_2H_2
- D. CO_2

51. Which of the following aldehyde does not undergo Cannizzaro's reaction?

- A. Formaldehyde
- B. *para* methylbenzaldehyde
- C. Trichloroacetaldehyde
- D. Acetaldehyde

52. Which of the following molecule will undergo complete inversion of configuration during a nucleophilic substitution reaction such as



- A. $CH_3-C_6H_4-CH_2-Br$
- B. $CH_3-C_6H_4-CH(CH_3)-Br$
- C. $CH_3-C_6H_4-C(CH_3)_2-Br$
- D. $CH_3-C_6H_4-CH(CH_3-C_6H_4)-Br$

53. Which of the following tools you will use to align distant pair of amino acid sequences:

- A. BLAST
- B. PSI-BLAST
- C. NCBI
- D. None of the above

54. Family relationships can be found in the following database:

- A. NCBI
- B. PROSITE
- C. PDB
- D. DDBJ

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55. If succinate is the substrate, how many H^+ ions would have translocated across the inner membrane of mitochondria via the q cycle redox loop mechanism?

- A. 2
- B. 3
- C. 4
- D. 6

56. When radioactive 3H -NADH is added to a cell extract containing mitochondria, radioactivity quickly appears in the mitochondrial matrix. However, when ^{14}C -NADH is added to the same cell extract, no radioactivity is found in the mitochondrial matrix. This is because

- A. ^{14}C -NADH cannot pass through the mitochondrial membranes whereas 3H -NADH can pass through the membranes.
- B. ^{14}C -NADH has very short half-life when compared to 3H -NADH
- C. The radioactive 3H is transported through the membranes via shuttle system whereas ^{14}C cannot pass through the membrane
- D. ^{14}C -NADH is rapidly utilized in the cytosol

57. How long does it take to synthesize a protein of molecular weight 50,000 at $37^\circ C$?

- A. 17 sec
- B. 27 sec
- C. 63 sec
- D. 87 sec

58. Four genes *kyuA*, *kyuB*, *kyuC*, and *kyuQ* are required to synthesize substance Q from P in the reaction sequence $P \rightarrow B \rightarrow C \rightarrow A \rightarrow Q$. Each of these biochemical reactions can be detected. The product of a gene *kyuA* is needed to synthesize substance A from C. Similarly product of gene *kyuB* is needed to synthesize B from P; product of gene *kyuC* is needed to synthesize C from B; and product of gene *kyuQ* is needed to synthesize Q from A. Addition of radio labeled ^{14}C -P yields ^{14}C -Q. A mutant is found for which addition of ^{14}C -P yields ^{14}C -A, but no ^{14}C -Q. In what gene is the mutation?

- A. *kyuA*
- B. *kyuB*
- C. *kyuC*
- D. *kyuQ*

59. You have a liquid culture of yeast *Saccharomyces cerevisiae*. You have diluted it 10^5 fold and plated 0.1 ml of the diluted culture on a solid agar plate to obtain 63 colonies. What was the OD_{600} of the initial culture? [Given that $1OD_{600} = 3 \times 10^7$ cells/ml.]

- A. 0.21
- B. 0.33
- C. 2.1
- D. 3.3

60. What is the probability that the imidazole ring of histidine will be charged at pH 7? [Given that the pK_a value for the ring is 6.0]

- A. 0%
- B. 9%
- C. 27%
- D. 90%

University of Hyderabad

Entrance Examinations - 2019

School/Department/Centre : Department of Biochemistry

Course/Subject : PhD Biochemistry (V-67)

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

Note/Remarks: Revised



Signature