Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2023

CSS

COMPUTATIONAL BIOLOGY

(Common for Computer Aided Drug Design/NGS Data Analytics)

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.

2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.

3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours   **Max. Marks : 100**

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. In the given list, which is the simplest amino acid?
   a) Alanine
   b) Glycine
   c) Tyrosine
   d) Asparagine

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2. Which of the following is known as mitoplast?

   a) Mitochondria without outer membrane

   b) Another name for mitochondria

   c) Mitochondria without membranes

   d) Mitochondria without inner membrane

3. The histone octamer contains _____ ?

   a) 5 types of histones

   b) 6 types of histones

   c) 8 types of histones

   d) 8 histones of four different types

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4. Centriole takes part in the formation of _____ ?

a) Nucleus   b) Spindle

c) Cell plate   d) To start cell division

5. The major difference between the human cheek cells and onion peel cells is _____?

a) Presence of mitochondria in onion peel

b) Absence of plasma membrane in cheek cells

c) Cell wall presence in onion peel cells

d) Absence of endoplasmic reticulum in cheek cells

6. Which of the given below cell organelle does not contain DNA?

a) Lysosomes   b) Mitochondria

c) Nucleus   d) Chloroplast

7. Which of the following is the cell's outermost boundary?

a) Cytoplasm   b) Nuclear Membrane

c) Plasma Membrane   d) None of the above

8. What is the mechanism by which water passes through a semipermeable barrier from a higher concentration location to a lower concentration region?

a) Osmosis   b) Diffusion

c) Neither (a) nor (b)   d) Both (a) and (b)

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9. Which of the following statements is true about the cell wall?

a) The cell wall is mainly composed of lipid

b) The cell wall is mainly composed of starch

c) The cell wall is mainly composed of protein

d) The cell wall is mainly composed of cellulose

10. Which of the following statements is true about chromosomes?

a) It is present within the nucleus

b) It carries genes and helps in the inheritance

c) It is composed of DNA in the form of chromatin and protein

d) All of the above

11. The condensation of chromosomes is observed in

a) Prophase I   b) Anaphase I

c) Metaphase I   d) None of the above

12. Chromosome, structure can be observed best during

a) Anaphase   b) Metaphase

c) Prophase   d) None of the above

13. Which of the following monosaccharides is a ketohexose?

a) Glucose   b) Galactose

c) Fructose   d) Mannose

14. Erythrulose is a/an

a) Aldotetrose   b) Aldoheptose

c) Ketotetrose   d) Ketoheptose

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15. Glucose is prepared commercially from the hydrolysis of _____ by boiling it with dilute H_2SO_4, at 393K under pressure.

   a) Starch

   b) Sucrose

   c) Galactose

   d) Dextrose

16. Which of the following is not a reducing sugar

   a) Fructose

   b) Glucose

   c) Glyceraldehyde

   d) Sucrose

17. Starch and glycogen are polymers of

   a) Fructose

   b) Glucose 1 phosphate

   c) Sucrose

   d) a-D-Glucose

18. Which of the following are the major functions of Carbohydrates?

   a) Storage

   b) Structural framework

   c) Transport Materials

   d) Both Storage and structural framework

19. Molisch test is used for

   a) Lipids

   b) Proteins

   c) Mucoproteins

   d) Flavoproteins

20. Deficiency of which of the vitamin causes pernicious anemia

   a) Vitamin K

   b) Vitamin E

   c) Vitamin B_{12}

   d) Vitamin B_6

21. Which of the following is Zero calorie sugar

   a) Aspartame

   b) Cyclamate

   c) Dulcin

   d) Sucralose

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22. Vitamin E is also called

 a) Thiamine b) Tocopherol

 c) Calciferol d) Riboflavin

23. Which of the following is responsible for specifying the 3D shape of a protein?

 a) The peptide bond

 b) The amino acid sequence

 c) Interaction with other polypeptides

 d) Interaction with molecular chaperons

24. Which of the following proteins was first sequenced by Frederick Sanger?

 a) Myosin b) Myoglobin

 c) Insulin d) Haemoglobin

25. Which of the following techniques is used to determine the protein structures?

 a) X-ray crystallography

 b) Kryptonics X-ray vision

 c) Magnetic Resonance Imaging (MRI)

 d) None of the above

26. Which of the following represents the two-dimensional structure of proteins?

 a) Quaternary b) Tertiary

 c) Secondary d) Primary

27. For a protein with 100 amino acids, how many possible sequences are there?

 a) $(100)^{20}$ b) $(2)^{100}$

 c) $(100)^{2}$ d) $(20)^{100}$

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28. The Polyacrylamide Gel Electrophoresis (PAGE) of proteins is based on the following properties of proteins.

a) Size and charge only

b) Size and shape only

c) Electric charge only

d) Size, shape and electric charge

29. Which of the following cell organelles is involved in the process of protein synthesis?

a) Vesicles

b) Ribosomes

c) Synchrotrons

d) Mitochondria

30. A polypeptide chain contains two terminals — one carboxyl-terminal (C terminal) and the other amino-terminal (N terminal). Which of the following is true?

a) N terminal is synthesized last during translation

b) C terminal is synthesized first during translation

c) N terminal is represented on the right side and C terminal on the left side

d) N terminal is represented on the left side and C terminal on the right side

31. The largest gene in human is

a) Insulin

b) Tyrosine kinase

c) Dystrophin

d) Phosphofructokinase

32. Which of the following vectors are widely used in human genome project

a) Plasmid and cosmid

b) Phage lamda and M13 vectors

c) Phagemid and shuttle vectors

d) BAC and YAC

33. The prime objective of human genome project was

a) To find out exact function of proteins in humans

b) To sequence the entire base pairs in 23 chromosomes

c) To find out the active genes in human genome

d) To sequence the entire base pairs in 24 chromosomes

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34. Which of the following methodology is used to identify all the genes that are expressed as RNA in Human Genome Project (HGP)?

    a) Sequence Annotation

    b) Expressed Sequence Tags

    c) Karyotyping

    d) Ammonification

35. DNA fingerprinting pattern of the child will be

    a) Exactly similar to both the parents

    b) 100% similar to father

    c) 100% similar to mother

    d) 50% similar to mother and 50% similar to father

36. Which of the following is not a criteria for classification of drugs?

    a) Based on size

    b) Based on chemical structure

    c) Based on drug action

    d) Based on target

37. Which of the following drugs is not classified in the criteria based on the pharmacological effect?

    a) Antihistamines

    b) Antiseptics

    c) Analgesics

    d) Antipyretics

38. Aspirin is converted into salicylic acid in your body by which of the following reactions?

    a) Reduction

    b) Oxidation

    c) Hydrolysis

    d) Substitution

39. Paclitaxel, the potent anticancer drug, was isolated from which natural source?

    a) The pacific yew tree

    b) The Pacific Ocean

    c) A fungus

    d) A bacteria

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40. Equanil act as a/an:

   a) Antihistamine   b) Artificial sweetener

   c) Tranquilizer   d) Infertility drug

41. What keyboard combination can be used to Interrupt (kill) the current foreground process running in the terminal?

   a) Ctrl + E   b) Ctrl + D

   c) Ctrl + C   d) Ctrl + Z

42. Which of the following command is used to test connectivity between two nodes

   a) echo   b) ipconfig

   c) ping   d) iptest

43. Which of the following is the smallest unit of data in a computer?

   a) KB   b) Tb

   c) Byte   d) Bit

44. Which one of the following groups contains ONLY graphical file extensions?

   a) JPG, CPX, GCM   b) GIF, TCE, WMF

   c) TOP, JPG, BMP   d) JPG, GIF, BMP

45. What is the full form of RAM?

   a) Remote Access Memory   b) Random Access Memory

   c) Remote Accesses Memory   d) Read Access Memory

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46. What is a URL?

a) A computer software program

b) A type of file

c) The address of a document or "page" on the World Wide Web

d) An acronym for Unique Resources Learning

47. What's a web browser?

a) Set of web files

b) A computer that stores WWW files

c) A person who likes to look at websites

d) A software program that allows you to access sites on the World Wide Web

48. Computers calculate numbers in _____ mode?

a) Decimal   b) Octal

c) Binary   d) Prime number

49. Which of the following command make the selected text bold?

a) Ctrl + L   b) Ctrl + B

c) Ctrl + C   d) Ctrl + Q

50. The speed of a modern printer is generally measured in

a) LPS   b) PPM

c) PPS   d) DPI

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51. Which of the following memory is non-volatile memory?

a) Secondary memory

b) Random memory

c) RAM

d) ROM

52. SVG stands for

a) Scalar Vector Graphics

b) Scalable Vector Graphics

c) Scaled Value Graphics

d) Super Vector Graphics

53. _____ is the computer program that would convert an assembly language to the machine language.

a) Interpreter

b) Compiler

c) Comparator

d) Assembler

54. 1 Gigabyte (Gb) =

a) 1,024 Mb

b) 1,000 Mb

c) 1,200 Mb

d) 1,275 Mb

55. Unsolicited email is known as

a) Phishing

b) Spam

c) Malware

d) Eware

56. What is the full form of LAN?

a) Local Access Network

b) Local Area Network

c) Local Accelerator Network

d) Logical Area Network

57. PDF document stands for

   a) Printed Document Format   b) Public Document Format

   c) Portable Document Format   d) Published Document Format

58. Which operating system is developed and used by Apple Inc

   a) Windows   b) Android

   c) iOS   d) UNIX

59. Firewall in computer is used for

   a) Security   b) Data Transmission

   c) Authentication   d) Monitoring

60. Which of the following is NOT a database management software

   a) MySQL   b) Oracle

   c) SQL   d) Pascal

61. Which of the following is the smallest fraction

   a) $\dfrac{5}{8}$ b) $\dfrac{6}{7}$

   c) $\dfrac{12}{13}$ d) $\dfrac{14}{12}$

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62. Which of the following can replace in

$$\frac{4}{x} = \frac{x}{100}$$

a) 5 b) 10

c) 16 d) 20

63. Raju saved Rs. 9760 in 8 years. In each year he saved 200 more than he did in the preceding year after first year. Money, he saved in the first year was

a) 500 b) 600

c) 520 d) 620

64. Sum of squares of three natural numbers is 149. Then the sum of these numbers is

a) 20 b) 21

c) 24 d) 26

65. Among three numbers, product of the first number and the second number is 700. The product of second and third is 480 and product of first and third is 840. Find the numbers

a) 35,20,24 b) 30,10,15

c) 35,10,22 d) 35,20,36

66. One student was asked to add 16 and subtract 10 from a number. By mistake he added 10 and subtracted 16. If his answer is 14. What was the correct answer?

a)   20   b)   26

c)   32   d)   36

67. A person travels from A to B. Half of its distance is covered with speed 20km/hr and remaining with a speed of 30 km/hr. What is the average speed?

a)   25 km/hr   b)   24 km/hr

c)   50 km/hr   d)   22.5 km/hr

68. If a light flashes every 8 seconds, how many times will it flash in 1/2 of an hour?

a)   120 times   b)   225 times

c)   221 times   d)   300 times

69. In a row of students, Ramesh is 14th from the left and Suresh is 18th from right. If they interchange their positions, Ramesh becomes 6th from left. Then what will be the position of Suresh from the right?

a)   21st b)   20th

c)   10th d)   9th

70. At 5:20, the hour hand and the minute hand of a clock form an angle of

a)   30°   b)   40°

c)   45°   d)   60°

71. In three numbers, 2nd number is two times the 1st number and it is three times the third number the ratio between the numbers is

    a) 3:6:2   b) 1:2:3

    c) 1:3:2   d) 1:4:6

72. If A is 40% more than B and B is 20% less than C then A:C is?

    a) 28:25   b) 20:25

    c) 4:2   d) 2:4

73. If the price of sugar be increased by 25%, find by how much percent must its consumption be decreased to keep the expenditure fixed on sugar?

    a) 20%   b) 25%

    c) 50%   d) None of these

74. The salary of a worker was first increased by 20% and thereafter decreased by 10%. What was the effect in his salary?

    a) 8% Increase   b) 8% Decrease

    c) 10% Increase   d) 10% Decrease

75. In an examination, 42% students failed in History and 52% failed in Geography. If 17% students failed in both subjects, find the percentage of those students who passed in both the subjects.

    a) 27   b) 47

    c) 80   d) 53

76. Introducing a man, Sheetal said, "he is the only son of my mother's mother". How is the Sheetal related to the man?

a) Mother
b) Aunt
c) Sister
d) Niece

77. If 4 men or 6 women can complete a work in 13 days. In how many days will 6 men and 4 women complete it?

a) 14
b) 13
c) 10
d) 6

78. Find the wrong number in the series.

7, 28, 63, 124, 215, 342

a) 7
b) 28
c) 124
d) 215

79. Sam starts walking straight towards east. After walking 75 m he turns to the left and walks 25 m straight. Again he turns to the left and walks a distance of 40m straight; again he turns to the left and walks a distance of 25 m. How far is he from the starting point?

a) 140 m
b) 35 m
c) 115 m
d) 25 m

80. $\sqrt{221^2 - 220^2}$

a) 1
b) 441
c) 21
d) None of these

81. If 15 men can reap the crops of a field in 28 days, in how many days will 5 men reap it

    a) 50 days   b) 60 days

    c) 84 days   d) 9.33 days

82. How many times the hands of a clock coincide in a day

    a) 24   b) 22

    c) 23   d) 21

83. A train moving at a speed of 90 km/hr crosses a pole in 7 seconds, find the length of the train.

    a) 150 m   b) 165 m

    c) 175 m   d) 170 m

84. Which of the following is the same as Vienna, Sofia, Helsinki

    a) Srilanka   b) Pakistan

    c) Bhutan   d) Kathmandu

85. The day before 2 days after the day before tomorrow is Saturday. What day is it today?

    a) Monday   b) Friday

    c) Wednesday   d) Tuesday

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86. Find the number of triangles in the figure given below.
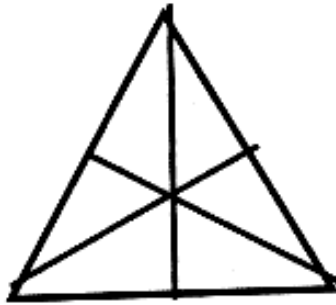
  a) 16   b) 13

  c) 9   d) 7

87. S C D, T E F, U G H, _____ W K L

  a) C M N   b) U J I

  c) V I J   d) I J T

88. Bromine is related to halogen as the same way as krypton is related to

  a) Radioactive element   b) Metal

  c) Transition metals   d) Noble gases

89. "Warning" is related to "Danger" in the same way "Mystery" is related to

  a) Clue   b) Risk

  c) History   d) Defective

90. What comes next in the series A, C, F, J

  a) O   b) P

  c) Q   d) R

91. $\dfrac{1120}{\sqrt{?}} = 80$

   a) 3.74   b) 149.67

   c) 196   d) 225

92. Safe : Secure; Protect :

   a) Lock   b) Guard

   c) Sure   d) Conserve

93. In a Kilometer race, A beats B by 40 meters or by 5 seconds. What is the time taken by A over the course

   a) 1 min 57 seconds   b) 2 minutes

   c) 1.5 minutes   d) None

94. A shopkeeper sold an article for Rs. 2500/-. If the cost price of the article is Rs 2,000/, find the profit percent.

   a) 23%   b) 25%

   c) 27%   d) 29%

95. Pick the odd pair out from the below

   a) Plant : Leaves   b) Book : Papers

   c) Chair : Television   d) Car : Tyres

96. Identify the odd one out

    a) Granite   b) Basalt

    c) Pumice   d) Sandstone

97. Choose the alternative which is closely resembles the water image of the given combination/figure.

    ADVANCE

    a) ƎƆИAVꓷA   b) VꓷAVИCE

    c) ƎИAVꓷA   d) None

98. 9, 256,529,573 which of these do not belong to the group

    a) 9   b) 256

    c) 529   d) 573

99. When the two hands are in opposite direction then what is the difference of degree and min between the two hands?

    a) 180° and 30 min   b) 150° and 30 min

    c) 60° and 15 min   d) 120° and 10 min

100. Find out the one which does not belong to that group.

    a) Snow   b) FOG

    c) Smoke   d) Steam

ANSWER SHEET

1	A	B	C	D	E	26	A	B	C	D	E	51	A	B	C	D	E	76	A B C D E
2	A	B	C	D	E	27	A	B	C	D	E	52	A	B	C	D	E	77	A B C D E
3	A	B	C	D	E	28	A	B	C	D	E	53	A	B	C	D	E	78	A B C D E
4	A	B	C	D	E	29	A	B	C	D	E	54	A	B	C	D	E	79	A B C D E
5	A	B	C	D	E	30	A	B	C	D	E	55	A	B	C	D	E	80	A B C D E
6	A	B	C	D	E	31	A	B	C	D	E	56	A	B	C	D	E	81	A B C D E
7	A	B	C	D	E	32	A	B	C	D	E	57	A	B	C	D	E	82	A B C D E
8	A	B	C	D	E	33	A	B	C	D	E	58	A	B	C	D	E	83	A B C D E
9	A	B	C	D	E	34	A	B	C	D	E	59	A	B	C	D	E	84	A B C D E
10	A	B	C	D	E	35	A	B	C	D	E	60	A	B	C	D	E	85	A B C D E
11	A	B	C	D	E	36	A	B	C	D	E	61	A	B	C	D	E	86	A B C D E
12	A	B	C	D	E	37	A	B	C	D	E	62	A	B	C	D	E	87	A B C D E
13	A	B	C	D	E	38	A	B	C	D	E	63	A	B	C	D	E	88	A B C D E
14	A	B	C	D	E	39	A	B	C	D	E	64	A	B	C	D	E	89	A B C D E
15	A	B	C	D	E	40	A	B	C	D	E	65	A	B	C	D	E	90	A B C D E
16	A	B	C	D	E	41	A	B	C	D	E	66	A	B	C	D	E	91	A B C D E
17	A	B	C	D	E	42	A	B	C	D	E	67	A	B	C	D	E	92	A B C D E
18	A	B	C	D	E	43	A	B	C	D	E	68	A	B	C	D	E	93	A B C D E
19	A	B	C	D	E	44	A	B	C	D	E	69	A	B	C	D	E	94	A B C D E
20	A	B	C	D	E	45	A	B	C	D	E	70	A	B	C	D	E	95	A B C D E
21	A	B	C	D	E	46	A	B	C	D	E	71	A	B	C	D	E	96	A B C D E
22	A	B	C	D	E	47	A	B	C	D	E	72	A	B	C	D	E	97	A B C D E
23	A	B	C	D	E	48	A	B	C	D	E	73	A	B	C	D	E	98	A B C D E
24	A	B	C	D	E	49	A	B	C	D	E	74	A	B	C	D	E	99	A B C D E
25	A	B	C	D	E	50	A	B	C	D	E	75	A	B	C	D	E	100	A B C D E

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ROUGH WORK

ROUGH WORK

ROUGH WORK

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