Code No.	V – 2344

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2025

CSS

COMPUTATIONAL BIOLOGY WITH SPECIALIZATION IN (COMPUTER AIDED DRUG DESIGN/NGS DATA ANALYTICS)

For office use only

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								

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Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. Which organelle is known as the powerhouse of the cell?
   A. Nucleus
   B. Mitochondria
   C. Ribosome
   D. Golgi apparatus

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2. Which of the following is present in plant cells but absent in animal cells?

   A. Mitochondria
   B. Nucleus
   C. Cell wall
   D. Lysosome

3. Which organelle is responsible for protein synthesis?

   A. Golgi bodies
   B. Mitochondria
   C. Ribosomes
   D. Chloroplast

4. The fluid-filled space inside the nucleus is called:

   A. Cytoplasm
   B. Nucleoplasm
   C. Chromatin
   D. Nucleolus

5. Chloroplasts contain a green pigment called:

A. Carotene
B. Chlorophyll
C. Xanthophyll
D. Anthocyanin

6. Mitosis results in the formation of ————————

A. Two genetically identical cells
B. Four genetically different cells
C. Two genetically different cells
D. Four genetically identical cells

7. During which phase of mitosis do chromosomes align at the cell equator?

A. Prophase
B. Anaphase
C. Metaphase
D. Telophase

8. Meiosis is important for:

A. Asexual reproduction
B. Growth and repair
C. Gamete formation
D. Mitochondrial division

9. Crossing over occurs during:

A. Metaphase I
B. Prophase I
C. Anaphase II
D. Telophase I

10. Which phase of the cell cycle is the longest?

A. M phase
B. G1 phase
C. S phase
D. Interphase

11. What is the site for gluconeogenesis?

A. Liver
B. Blood
C. Muscles
D. Brain

12. Which of the following is a reducing sugar?

A. Sucrose
B. Glucose
C. Starch
D. Cellulose

13. Cellulose is a polysaccharide found in

A. Animal liver
B. Human blood
C. Plant cell walls
D. Bacterial cell wall

14. Which carbohydrate is stored in animal tissues

A. Cellulose
B. Glycogen
C. Starch
D. Sucrose

15. Which of the following form of lipids are also referred as neutral lipids?

A. Triacylglycerol
B. Maltose
C. Phospholipids
D. Cellobiose

16. Proteins are primarily made up of which smaller units?

A. Nucleotides
B. Fatty acids
C. Amino acids
D. Monosaccharides

17. What type of bond connects amino acids in a protein chain?

A. Hydrogen bond
B. Peptide bond
C. Ionic bond
D. Glycosidic bond

18. The average molecular weight of an amino acid residue in a protein is about _____

A. 128
B. 111
C. 110
D. 100

19. What are the following is not a factor responsible for the denaturation of proteins?

A. pH change
B. Organic solvents
C. Charge
D. Heat

20. How many amino acids are essential in the human diet (cannot be synthesized by the body)?

A. 5
B. 8
C. 10
D. 9

21. Which vitamin is often part of enzyme cofactors?

A. Vitamin D
B. Vitamin K
C. Vitamin B-complex
D. Vitamin A

22. Enzymes are made up of which macromolecule?

A. Lipids
B. Nucleic acids
C. Carbohydrates
D. Proteins

23. The process of copying DNA into RNA is called

A. Translation
B. Transcription
C. Replication
D. Mutation

24. The backbone of DNA is made up of:

A. Sugars and phosphates
B. Sugars and amino acids
C. Phosphate and base pairs
D. Bases only

25. The genetic code is described as "degenerate" because:

A. It has no meaning
B. Some amino acids are coded by more than one codon
C. Codons can code for multiple amino acids
D. It mutates easily

26. Which of the following is a stop codon?

A. AUG
B. GGU
C. AAA
D. UAA

27. What percentage of the human genome is made up of protein-coding genes?

A. Less than 2%
B. 50%
C. 25%
D. 75%

28. What is the significance of non-coding DNA in the genome?
    A. It has no function
    B. It plays a role in gene regulation and structure
    C. It only exists in viruses
    D. It causes genetic diseases

29. When was the Human Genome Project officially completed?
    A. 1990
    B. 1995
    C. 2003
    D. 2010

30. What is the main difference between antiseptics and disinfectants?
    A. Antiseptics are stronger than disinfectants
    B. Both are used interchangeably
    C. Disinfectants are used on living tissues
    D. Antiseptics are used on living tissues, disinfectants on non-living surfaces

31. Antibiotics are ineffective against:
    A. Viruses
    B. Bacteria
    C. Fungi
    D. Protozoa

32. What concentration of alcohol is most effective as a disinfectant?
    A. 100%
    B. 70%
    C. 10%
    D. 40%

33. Resistance to antimicrobials can be caused by:
    A. Proper dosage
    B. Natural immunity
    C. Overuse and misuse of drugs
    D. None of the above

34. What is antibiotic resistance?
    A. The body becomes immune to antibiotics
    B. Antibiotics lose their expiry
    C. Bacteria start producing antibiotics
    D. Bacteria mutate and become resistant to antibiotics

35. What is the primary function of an antacid?

A. To kill bacteria
B. To neutralize stomach acid
C. To aid digestion of proteins
D. To relieve pain

36. In which organelle does translation occur in eukaryotic cells?

A. Nucleus
B. Mitochondria
C. Ribosome
D. Lysosome

37. What are introns?

A. Protein-coding regions
B. Regulatory DNA elements
C. Enzymes that assist in translation
D. Non-coding sequences removed during RNA splicing

38. Which gland is known as the "master gland"?

A. Pituitary gland
B. Thyroid gland
C. Pancreas
D. Adrenal gland

39. During DNA replication, which enzyme is responsible for unwinding the DNA double helix?

A. Ligase
B. DNA polymerase
C. Helicase
D. RNA polymerase

40. What is the function of antihistamines in medicine?

A. Lower blood sugar levels
B. Prevent allergic reactions
C. Treat fungal infections
D. Increase blood clotting

41. What comes next in the series?

1, 2, 6, 24, 120, ————————?

A. 600
B. 840
C. 720
D. 960

42. Each image in the series contains a circle, triangle, and square. In every next figure, the circle and triangle swap positions, while the square remains stationary.

Which object will be in the top-left corner in the 5th figure?

A. Circle
B. Triangle
C. Square
D. Can't be determined

43. Find the next term in the series:

A, E, I, M,————————— ?

A. N
B. R
C. Q
D. S

44. Person A faces North. He turns 90° clockwise, then 180° anti-clockwise. Which direction is he facing now?

A. East
B. North
C. South
D. West

45. Find the missing number:

5, 15, 45, 135, ————————?

A. 540
B. 405
C. 415
D. 315

46. If the day before yesterday was Monday, what day will it be 3 days after tomorrow?

A. Thursday
B. Friday
C. Saturday
D. Sunday

47. Statement:

Bank employees must wear ID badges at all times inside the premises.

Identify the assumption of this statement.

A. Bank employees don't know each other
B. Badges are fashionable
C. Customers don't trust employees
D. ID badges increase professionalism and security

48. Statement:

Should sports be made compulsory in schools?

Arguments:

(a) Yes, it ensures physical fitness and teaches teamwork.

(b) No, it will waste the time that should be spent on academies.

A. Only Argument (a) is strong
B. Both (a) and (b) are strong
C. Only Argument (b) is strong
D. Neither (a) nor (b) is strong

49. A man says, "That boy is my mother's husband's only daughter's son."

Question: How is the man related to the boy?

A. Uncle
B. Father
C. Brother
D. Grandfather

50. Complete the following analogy series:

Paleontology: Fossils :: Astrobiology: ?

A. Extraterrestrial life
B. Planets
C. Stars
D. Black holes

51. Six people A, B, C, D, E, and F are sitting in a circle. A is to the left of B, F is to the right of D, who is opposite to B. Who is sitting to the immediate left of F?

A. A
B. C
C. E
D. B

52. A man walks 30 m north, then turns right and walks 40 m, then again turns right and walks 30 m. He is now how far from the starting point?

A. 20 m
B. 40 m
C. 30 m
D. 10 m

53. From point A, walk 10m East, turn right, walk 5m, turn left, walk 3m. Where are you relative to A?

A. 13m East, 5m North
B. 7m East, 5m North
C. 15m East, 3m South
D. 10m East, 8m North

54. Identify the missing analogy

Clock: Time:: Thermometer:?

A. Heat
B. Weather
C. Temperature
D. Degree

55. What comes next in the sequence?

10:00 AM, 1:00 PM, 4:00 PM, 7:00 PM, ——————

A. 9:00 PM
B. 10:00 PM
C. 11:00 PM
D. 12:00 AM

56. Identify the next pattern

AB, DE, GH, ——————

A. IJ
B. JK
C. KL
D. LM

57. A car drives 12km north, turns left and drives 5km, then turns right and drives 8km. How far is it from the starting point?

A. 13 km
B. 15 km
C. 17 km
D. 20 km

58. In a queue, A is 15th from front and B is 20th from end. If they swap, A becomes 20th. Total people?

A. 36
B. 35
C. 37
D. 34

59. In a row of 12 persons, M is sitting 3rd from the left end, and N is sitting 5th from the right end. How many persons are sitting between M and N?

A. 3
B. 5
C. 4
D. 6

60. If in a certain code language, 'PRAY' is written as 'SQDZ', how is 'FINE' written?

A. IHRE
B. IHQF
C. IGQD
D. JGRF

61. A man travelled first half of his journey at a speed of 60 kmph and the second half of his journey at a speed of 40 kmph. Find the average speed of the man.

A. 55 kmph
B. 57.5 kmph
C. 50 kmph
D. 52.5 kmph

62. The ratio of speeds of p : q : r is 8:7: 6. Find the ratio of their time taken.

A. 21 : 24 : 28
B. 28 : 24 : 21
C. 12 : 14 : 18
D. 18 : 14 : 12

63. A man travels at a speed of 47 kmph for 5.7 hours and 65 kmph for 5.5 hours. Find his average speed.

A. 52 kmph
B. 56 kmph
C. 64 kmph
D. 72 kmph

64. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is:

A. 2.3 m
B. 4.6 m
C. 7.8 m
D. 9.2 m

65. The angle of elevation of the sun, when the length of the shadow of a tree 3 times the height of the tree, is:

A. 30°
B. 60°
C. 45°
D. 90°

66. A man is standing 80 meters away from a tower. The angle of elevation from his eye to the top of the tower is 30°. Find the height of the tower.

A. 46.19 m
B. 40 m
C. 50 m
D. 60 m

67. Person A can do a work in 6 days and Person B can do the same work in 12 days. How long will they take to finish the work together?

A. 4 days
B. 3 days
C. 2 days
D. 5 days

68. A can do a piece of work in 40 days. He works for 8 days. B then finishes the remaining work in 16 days. How long would B take to do the whole work alone?

A. 20 days
B. 36 days
C. 40 days
D. 32 days

69. A and B together can do a work in 8 days. B alone can do it in 12 days. In how many days can A alone do it?

A. 24
B. 20
C. 18
D. 16

70. 15% of 80 is the same as ———————— % of 60.

A. 10
B. 30
C. 20
D. 40

71. A shirt costs ₹500. If its price increases by 10%, what is the new price?

A. 450
B. 600
C. 500
D. 550

72. If 60% of a number is 90, what is 80% of the same number?

A. 100
B. 150
C. 120
D. 140

73. What is the surface area of a cube with side length 3 cm?

A. 9 cm^2
B. 81 cm^2
C. 27 cm^2
D. 54 cm^2

74. What is the total surface area of a cuboid is with dimensions 6 cm x 4 cm × 5 cm?

A. 120 cm^2
B. 150 cm^2
C. 148 cm^2
D. 240 cm^2

75. A sphere is melted and recast into a cylinder of height 12 cm. What is the radius of the cylinder if the sphere's radius was 6 cm?

A. 3 cm
B. 9 cm
C. 6 cm
D. 12 cm

76. How many 3-digit numbers can be formed using the digits 1, 2, 3, 4 without repetition?

A. 24
B. 36
C. 12
D. 48

77. How many 6-digit numbers have all digits odd and no repetition?

A. 120
B. 240
C. 360
D. 480

78. A and B can do a piece of work in 72 days. B and C can do it in 120 days. A and C can do it in 90 days. In what time can A alone do it?

A. 152 days
B. 151 days
C. 121 days
D. 120 days

79. If the circumference of a circle is increased by 50%, then its area will be increased by

A. 50%
B. 100%
C. 150%
D. 200%

80. Bommesh gave one-fourth of his money to Arun. Arun in turn gave one third of what he received to Gowtham. If the difference between the amounts of Arun and Gowtham is Rs. 100, how much money did Bommesh had?

A. 1200
B. 600
C. 800
D. 900

81. In Linux, what is the standard file system layout for system directories?

A. FAT
B. NTFS
C. ext4
D. Filesystem Hierarchy Standard (FHS)

82. In which language UNIX is written?

A. C++ B. C

C. Python D. A and B

83. Programmers use ———————— known as loops.

A. Repetition structure B. Goto

C. Unconditional structure D. Conditional structure

84. Entity is a ————————

A. Object of relation B. Present working model

C. Thing in real world D. Model of relation

85. Match the Following Linux Commands with Their Descriptions

a.	pwd	1.	Displays the contents of a directory
b.	cd	2.	Changes the current directory
c.	ls	3.	Shows the current working directory
d.	rm	4.	Removes a file or directory
e.	chmod	5.	Changes the permissions of a file or directory

A. a-3, b-2, c-1, d-4, e-5

B. a-1, b-2, c-3, d-4, e-5

C. a-2, b-3, c-1, d-5, e-4

D. a-4, b-1, c-2, d-3, e-5

86. Who invented WWW in 1989?

A. Ted Nelson B. Tim Berners-Lee

C. Robert E.Kahn D. Linus Torvalds

87. Which one of the following is not used to generate dynamic web pages?

A. PHP B. ASP.NET

C. CSS D. Javascript

88. The attribute specifies the web page to be placed in the frame initially.

A. name B. src

C. cols D. rows

89. What does "IMAP" stand for in the context of email?

A. Instant Messaging and Privacy

B. Internet Message Access Protocol

C. Intranet Mail and Personalization

D. Internet Multimedia and Applications Protocol

90. In Internet Protocol (IP), data is organised in the form of

A. Bundles B. Switches

C. Packets D. Parts

91. A data structure that follows the FIFO principle.

A. Array B. Queue

C. Stack D. Union

92. The result of >> of 11001 by 3-bits will be ——————

A. 01000 B. 01111

C. 00110 D. 00001

93. The two types of ASCII are —————— and ——————

A. ASCII-4 and ASCII-8 B. ASCII-8 and ASCII-16

C. ASCII-7 and ASCII-8 D. ASCII-4 and ASCII-16

94. Which of the following is a characteristic of an efficient algorithm?

A. Uses minimal CPU time B. Is easy to implement

C. Uses minimal memory D. All of the above

95. Consider the following algorithm for calculating the n^{th} Fibonacci number: function fib(n):

if n <= 1 return n else return fib(n-1) + fib(n-2). What is the time complexity of this algorithm?

A. O(n) B. O(log n)

C. O(n^2) D. O(2^n)

96. Which Big O notation represents constant time complexity?

A. O(1)
B. O(n)
C. O(log n)
D. O(n^2)

97. What type of database is MongoDB?

A. Object-Oriented Database
B. Relational Database
C. NoSQL Database
D. Network Database

98. Statement: In interpreters, semantic analysis can be delayed until runtime. Reason: Interpreters only perform lexical and syntax analysis during interpretation.

A. Both Statement and Reason are true, and Reason explains the Statement.
B. Both are true, but Reason doesn't explain the Statement.
C. Statement is true, Reason is false.
D. Both are false.

99. Which of the following is NOT a characteristic of cloud computing?

A. On-demand self-service
B. Broad network access
C. Limited scalability
D. Resource pooling

100. What is a trigger in a database?

A. A stored procedure that runs when a specific event occurs
B. A method to generate unique keys
C. A method to define relationships between tables
D. A constraint used to maintain data integrity

RESPONSE 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

ROUGH WORK

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