

M.Phil. Bioinformatics
Entrance Examination
SAMPLE QUESTION PAPER

Instructions: Each of the **questions 1-5** consists of a question and a set of two statements marked I and II. You are to find out whether the data given in these statements are sufficient to answer the question. *For these 5 questions answer choices are the same, as given below:*

- A) If the data in statement I alone is sufficient to answer the question and data in statement II alone is not sufficient to answer the question.**
B) If the data in statement II alone is not sufficient to answer the question and data in statement I alone is not sufficient to answer the question.
C) If the data in either statement I or statement II alone is sufficient to answer the question
D) If the data in both the statements I and II are not sufficient to answer the question.

1. How many students in a class play hockey?

- I. Two thirds of the students play hockey while the remaining 21 play chess
II. All the 42 students in the class who are also above 16 play hockey.

2. Is Mohan older than Sita?

- I. Sohan is younger than Vijay
II. Vijay was five years when Mohan was born

3. Did the car overtake the bus?

- I. The bus was going slower than the car
II. The car had three occupants

4. Only such of those tourists who visited neither the zoo nor the temple, visited the museum, Did Rita visit the temple

- I. She visited the museum
II. She did not visit the zoo

5. What is the age of the father at present?

- I. The son was born when the father was 27 years old.
II. The son is older than the daughter by 4 years
-

6. Pointing to a photograph, a woman says, "this man's son's sister is my mother-in-law". How is the woman's husband related to the men in the photograph

- a) Son-in-law b) Son c) Grandson d) None of these

7. A father is three times as old as his son. After fifteen years the father will be twice as old as his son's age at that time. Hence the father's present age is

- A. 36 B. 42 C. 45 D. 48 E. None of the above

8. Complete the series AZYBYC?

- a) X b) Y c) U d) None of these

9. Examine the following statements:

I. Either A and B are of the same age or A is older than B

II. Either C and D are the same age or D is older than C.

III. B is older than C

Which one of the following conclusions can be drawn from the above statements?

- a) A is older than B
- b) B and D are of the same age
- c) D is older than C
- d) A is older than C

10. If 'HEATER' is coded as 'KBDQHO', then how will you code 'COOLER'?

- a) FLRIHO
- b) ALRIHV
- c) FRLIHO
- d) None of these

11. Arun started walking positioning his back towards the sun. After some time, he turned left then turned right and then towards the left again. In which direction is he going now?

- a) East or South
- b) West or North
- c) North or South
- d) None of these

12. Which of the following words is related to the basic word 'thought'?

- a) speaking
- b) writing
- c) reasoning
- d) None of these

13. If $20-2 = 20$, $25-4 = 50$, $30-8 = 120$, then $24-6 = ?$

- a) 8
- b) 36
- c) 72
- d) None of these

14. According to a military code, SYSTEM is coded as SYSMET, and NEARER is coded as AENRER, What will be the code for FRACTION?

- a) ARFCNOIT
- b) CARFNOIT
- c) FRACNOIT
- d) None of these

15. if all the numbers from 1 to 28 which are exactly visible by 3 are arranged in a descending order, which would come at the sixth place from the top?

- a) 12
- b) 21
- c) 15
- d) None of these

Instructions: questions 16-19 are based on the following information.

At an Electronic Data Processing Unit, five out of the eight program sets P, Q, R, S, T, U, V & W are to be operated daily. On any one day, except for the first day of a month, only three of the program sets must be the ones that were operated on the previous day. The program operating must also satisfy the following conditions:

- (i) *If program "P" is to be operated on day, "V" cannot be operated on that day.*
- (ii) *If "Q" is to be operated on a day, "T" must be one of the programs to be operated after "Q".*
- (iii) *If "R" is to be operated on a day, "V" must be one of the programs to be operated after "R"*
- (iv) *The last program to be operated on any day must be either "S" or "U"*

16. Which of the following is TRUE of any day's valid program set operation?

- a) "P" cannot be operated at third place
- b) "Q" cannot be operated at third place
- c) "T" cannot be operated at third place
- d) "U" cannot be operated at third place

17. Which of the following could be the set of programs to be operated on the first day of a month?
a) Q, R, V, T, U b) W, T, U, V, S c) W, T, S, P, U d) W, R, V, T, U
18. If the program sets "R" and "W" are to be operated on the first day, which of the following could be the other programs on that day?
a) P, T, U b) Q, S, V c) Q, T, V d) T, S, V
19. If "R" is operated at third place in a sequence, which of the following CANNOT be the second program in that sequence? a) Q b) T c) S d) U
-

20. Which would be the proper order of the following:

- (i) Rainbow (ii) Rain (iii) Happy (iv) Child
a) (ii)(iii)(i)(iv) b) (iv)(ii)(iii)(i) c) (ii)(i)(iv)(iii) d) None of these

21. Which one number can be placed at the * sign?

- (2) 4 14
(3) 5 22
(*) 6 32
a) 1 b) 2 c) 3 d) None of these

22. If "light" is called "dark" is called "green", "green" is called "blue", "blue is called "red", "red" is called "white" and "white" is called "yellow", what is the colour of blood?

- a) red b) dark c) white d) None of these

Instructions: "Read the following information carefully and answer questions 23-27

- (i) A, B, C, D, E and F are six member of a family
(ii) There are two married couples among them
(iii) C is the mother of A and F
(iv) A is the grandson of B
(v) The total number of female members in the family is there.

23. Which of the following pairs is one of the married couples?

- a) EF b) BD c) EB d) None of these

24. Who is the wife of E?

- a) B b) C c) Data inadequate d) None of these

25. How is B related to F?

- a) Sister b) Grandmother c) Wife d) None of these

26. Which of the following is a group of female members?

- a) BDE b) AFB c) DCF d) BCF

27. How is F related to A?

- a) Brother b) Daughter c) Mother d) None of these
-

Instruction for question 28 -31: find the next number in the sequence

28. 5, 2, 11, 23? a) 196 b) 367 c) 254 d) 235
29. 600, 180, 54? a) 27 b) 0.18 c) 18 d) 16.2
30. 0, 5, 17, 24? a) 37 b) 29 c) 35 d) 39
31. 48, 40, 36, 34, 33? a) 31.5 b) 35 c) 32.5 d) 33

32. The minimum number of colours required to paint all the sides of a cube, so that two adjacent faces should not have the same colour, is?

- a) 6 b) 4 c) 3 d) None of these

Instructions for questions 33-36 , you are given two quantities, You are to determine a relationship between the two quantities. The answer choices for these are the same, as follows:

- A. If the quantity in column A is greater than the quantity in column B.
B. If the quantity in column B is greater than the quantity in column A.
C. If the quantities are equal.
D. If the comparison cannot be determined from the information that is given.

33.

Quantity A: Time to travel 95 miles at 50 miles per hour

Quantity B: Time to travel 125 miles at 60 miles per hour

34.

Quantity A: $(9/13)^2$

Quantity B: $(9/13)^{1/2}$

35.

Quantity A: $4 / 100$

Quantity B: $0.012 / 3$

36.

Quantity A: The number of months in 7 years

Quantity B: The number of days in 12 weeks

Read the following passage and answer the Questions 37 -40

An employee has been assigned the task of allotting offices to six of the staff members. The offices are numbered 1 - 6. The offices are arranged in a row and they are separated from each other by six foot high dividers. Hence voices, sounds and cigarette smoke flow easily from one office to another.

Miss Robert's needs to use the telephone quite often throughout the day. Mr. Mike and Mr. Brown need adjacent offices as they need to consult each other often while working. Miss. Hardy, is a senior employee and has to be allotted the office number 5, having the biggest window. .

Mr. Donald requires silence in the offices next to his. Mr. Tim, Mr. Mike and Mr. Donald are all smokers. Miss Hardy finds tobacco smoke allergic and consecutively the offices next to hers to be occupied by non-smokers.

Unless specifically stated all the employees maintain an atmosphere of silence during office hours.

37. The ideal candidate to occupy the office furthest from Mr. Brown would be

A. Miss Hardy B. Mr. Mike C. Mr. Tim D. Mr. Donald E. Mr. Robert

38. The three employees who are smokers should be seated in the offices.

A. 1, 2 and 4 B. 2, 3 and 6 C. 1, 2 and 3 D. 1, 2 and 3 E. 1, 2 and 6

39. The ideal office for Mr. Mike would be. A. 2 B. 6 C. 1 D. 3 E. 4

40. In the event of what occurrence, within a period of one month since the assignment of the offices, would a request for a change in office be put forth by one or more employees ?

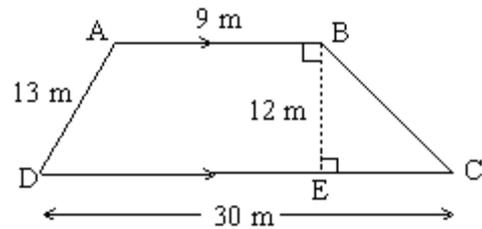
A. Mr. Donald quitting smoking.

B. The installation of a noisy teletype machine by Miss Hardy in her office.

C. Mr. Robert's needing silence in the office (s) next to her own. .

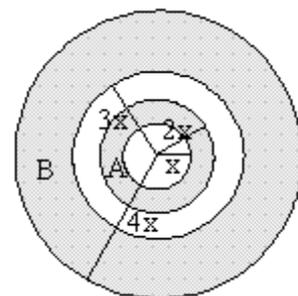
D. Mr. Brown suffering from laryngitis.

E. Mr. Tim taking over the duties formerly taken care of by Miss. Robert. .



41. A plot of land is in the shape of a trapezium whose dimensions are given in the figure . The perimeter of the field is A. 50 m B. 64 m C. 72 m D. 84 m

42. Four concentric (having the same center) circles with radii, and $4x$ are drawn to form two rings A and B as shown in the figure. Ratio of the area of inner ring A to the area of outer ring B is A. $1 : 4$ C. $2 : 3$ D. $3 : 7$ E. None of the above



$x, 2x, 3x$ figure. $1 : 2$ B.

43. All German philosophers, except for Marx, are idealists. which of the following can the statement above be most inferred?

A. Except for Marx, if someone is an idealist philosopher, then he or she is German.

B. Marx is the only non-German philosopher who is an idealist.

C. If a German is an idealist, then he or she is a philosopher, as long as he or she is not Marx.

D. Marx is not an idealist German philosopher.

E. Aside from the philosopher Marx, if someone is a German, then he or she is an idealist.

From properly he or she

Instructions for Q. Nos 44 to 51: There are figures drawn in three sections of the large square on the left hand side of the page. One of the small squares is empty. This square can be filled by only one of the five boxes on the right. Choose the box that you think will best complete the large square.

Instructions for Q. Nos 52 to 60: On the left of the page is a sequence of figures in five boxes. One of the boxes is empty. This box can be filled by only one of the figures in the five boxes on the right. Choose the figure that you think will best complete the sequence.

61. Which one contains four pyrimidine bases ?
 a) GATCAATGC b) GCUAGACAA
 c) UAGCGGUAA d) TGCCTAACG
62. Maximum amount of RNA is found in
 a) Cytoplasm b) Nucleolus c) Ribosome d) Chloroplasts
63. Base pairs present in one turn of DNA are
 a) 12 b) 11 c) 10 d) 9
64. ELISA test is used to
 a) Separate viral DNA b) Purify proteins
 c) Isolate DNA sequences d) Identify specific proteins
65. Electron transport requires
 a) Cytochromes b) Phytochromes c) Enzymes d) Hormones
66. Shape of chromosome is determined by position of
 a) Centrosome b) Centromere c) Telomere d) Micromere
67. The Nobel Prize for Medicine in 2006 is shared by
 (a) Manuel A Fernandez and Robert G. Parton
 (b) Andrew Z. Fire and Craig C Mellow
 (c) Jane H. Dyson and Peter E. Wright
 (d) David d. Dyson and Den McEtheny
68. During cell cycle RNA and proteins are synthesized in
 a) S-phase b) G₁-phase c) G₂-phase d) Both B & C
69. Ligase is an enzyme required for
 a) Breaking of DNA b) Joining DNA bits
 c) Renaturation of DNA d) Proof reading
70. Nucleotide arrangement in DNA can be seen by
 a) X ray crystallography b) Electron microscope
 c) Ultra centrifuge d) Light microscope
71. Termination codon for protein synthesis are
 a) AUU, AUG and GUU b) UGA, UAA and UAG
 c) UAU, UAG and UUA d) AAA, UUU and UGA
72. Distance between two strands of DNA is
 a) 3.4 Å b) 20 Å c) 34 Å d) 340 Å
73. An isolated DNA molecule is heated to 82⁰_C– 90⁰_C it
 a) Changes into RNA b) Breaks into fragments
 c) Uncoils and separate into distinct strands d) Begins replication
74. Smallest segment of genetic material affected by mutation is
 a) Recon b) Cistron c) Mutan d) Exon
75. DNA strand is synthesized in the direction
 a) 5' → 3' b) 3' → 5' c) 1' → 4' d) 6' → 1'
76. Life appeared on earth
 a) ≈ 5000 million years ago b) ≈ 3500million years ago
 c) ≈ 1000 million years ago d) ≈ 500 million years ago
77. Reverse transcriptase is
 a) RNA dependant DNA polymerase
 b) DNA dependant RNA polymerase
 c) RNA dependent RNA polymerase

- d) DNA dependent DNA polymerase
78. Central Drug Research Institute (CDRI) is located in
a) Lucknow b) Mysore c) Dehradune d) Delhi
79. Major proteins involved in the production of antibodies are
a) Albumin b) α -Globulin c) β -Globulin d) γ -Globulin
80. Genome size of human (*Homo sapiens*)
a) 9×10^9 bp b) 5×10^9 bp c) 3×10^9 bp d) 2×10^9 bp
-
81. Numbers are stored and transmitted inside a computer in
(a) binary form (b) ASCII code form (c) decimal form (d) alphanumeric form
82. The storage required for an image such as an X-ray image is approximately
(a) a few bytes (b) a few hundred bytes (c) a few gigabytes (d) in megabyte range.
83. The typical hard disk storage capacity of a PC is of the order of (a) 32 MB (b) 2 Gb (c) 2 Tb (d) 5120 Kb
84. CD-ROM capacity is around (a) 100 Mb (b) 650 Mb (c) 1 Gb (d) 4 Gb
85. A GUI is (a) hardware (b) language interpreter (c) software interface (d) operating system
86. The clock speed of a modern PC is of the order of (a) 400 Khz (b) 400 Hz (c) 400 Mhz (d) 400 Ghz
87. RS-232 is a standard that applies to: A. serial ports B. parallel ports C. game ports D. networks E. digital frequencies
88. _____ is the term used to refer to the process of two modems establishing communications with each other.
A. interacting B. handshaking C. connecting D. linking E. pinging
89. On-chip cache has: (a) lower access time than RAM (b) larger capacity than off chip cache (c) its own data bus (d) become obsolete
90. Given that the bl register contains 'B', the effect of the following instruction **or bl, 0010 0000** is to
(a) clear bl (b) store 'b' in bl (c) store 0010 0000 in bl (d) leave bl unchanged
- 91 . Consider the following program:
- ```
main()
{
 struct node
 {
 int a;
 int b;
 int c;
 };
 struct node s= { 3, 5,6 };
}
```

```

struct node *pt = &s;
printf("%d" , *(int*)pt);
}

```

The output for this program is: (a) 3 (b) 5 (c) 6 (d) 7

92. Consider the following code segment:

```

int foo (int x , int n)
{
 int val;
 val =1;

 if (n>0)
 {
 if (n%2 == 1) val = val *x;
 val = val * foo(x*x , n/2);
 }
 return val;
}

```

What function of x and n is computed by this code segment?

(a) xn (b) x\*n (c) nx (d) None of the above

93. Consider the following program:

```

main()
{
 int a[5] = {1,2,3,4,5};
 int *ptr = (int*)&a+1;

 printf("%d %d" , *(a+1), *(ptr-1));

}

```

The output for this program is: (a) 2 2 (b) 2 1 (c) 2 5 (d) None of the above

94. Consider the following program:

```

void foo(int [][][3]);
main()
{
 int a [3][3]= { { 1,2,3} , { 4,5,6},{7,8,9}};
 foo(a);
 printf("%d" , a[2][1]);
}

```

```

void foo(int b[][][3])
{
 ++ b;
 b[1][1] =9;
}

```

The output for this program is: (a) 8 (b) 9 (c) 7 (d) None of the above

95. Consider the following program:

```
main()
{
 int a, b,c, d;
 a=3;
 b=5;
 c=a,b;
 d=(a,b);
 printf("c=%d" ,c);
 printf("d=%d" ,d);
}
```

The output for this program is:

(a) c=3 d=3 (b) c=5 d=3 (c) c=3 d=5 (d) c=5 d=5

96. Java is a A. Compiled language B. Interpreted Language C. Both A & B D. Either A or B E. HTTP Language

97. The Regular Expression (aa|bb)+ does not match

A. aa B. bbaa C. aabbaaaa D. abab

98. With SQL, how do you select all the columns from a table named "Persons"?

A. SELECT \* FROM Persons  
B. SELECT \*.Persons  
C. SELECT Persons  
D. SELECT [all] FROM Persons

99. What purpose do classes serve?

A. data encapsulation  
B. providing a convenient way of modeling real-world objects  
C. simplifying code reuse  
D. all of the above

100. Which is not a protection level provided by classes in C++?

A. protected  
B. hidden  
C. private  
D. public

**PAPER ENDS**