

PREVIEW QUESTION BANK

Module Name : BET 2024-ENG
Exam Date : 20-Apr-2024 Batch : 15:00-18:00

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks										
Objective Question														
1	I2001	<p>Match items in List I with items in List II</p> <table border="0"> <tr> <td style="text-align: center;">List I</td> <td style="text-align: center;">List II</td> </tr> <tr> <td>(A) Mitochondria</td> <td>(I) Hydrogen Peroxide generation</td> </tr> <tr> <td>(B) Endoplasmic Reticulum</td> <td>(II) TCA cycle</td> </tr> <tr> <td>(C) Peroxisome</td> <td>(III) Degradation of proteins</td> </tr> <tr> <td>(D) Lysosomes</td> <td>(IV) Protein trafficking and export</td> </tr> </table> <p>Choose the correct answer from the options given below :</p> <p>(1) (A)-(IV), (B)-(II), (C)-(I), (D)-(III) (2) (A)-(I), (B)-(III), (C)-(IV), (D)-(II) (3) (A)-(II), (B)-(IV), (C)-(I), (D)-(III) (4) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	List I	List II	(A) Mitochondria	(I) Hydrogen Peroxide generation	(B) Endoplasmic Reticulum	(II) TCA cycle	(C) Peroxisome	(III) Degradation of proteins	(D) Lysosomes	(IV) Protein trafficking and export	3.0	1.00
List I	List II													
(A) Mitochondria	(I) Hydrogen Peroxide generation													
(B) Endoplasmic Reticulum	(II) TCA cycle													
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2	I2002	<p>Match items in List I with items in List II:</p> <table border="0"> <tr> <td style="text-align: center;">List I</td> <td style="text-align: center;">List II</td> </tr> <tr> <td>(A) pH of a solution</td> <td>(I) Fredrick Sanger</td> </tr> <tr> <td>(B) Base composition of DNA</td> <td>(II) Henderson-Hasselbalch equation</td> </tr> <tr> <td>(C) Molar absorption coefficient</td> <td>(III) Lambert-Beer law</td> </tr> <tr> <td>(D) Dideoxy sequencing</td> <td>(IV) Chargaff's principle</td> </tr> </table> <p>Choose the correct answer from the options given below :</p> <p>(1) (A)-(IV), (B)-(III), (C)-(I), (D)-(II) (2) (A)-(I), (B)-(II), (C)-(IV), (D)-(III) (3) (A)-(II), (B)-(IV), (C)-(III), (D)-(I) (4) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)</p> <p>A1 : 1 A2 : 2 A3 : 3</p>	List I	List II	(A) pH of a solution	(I) Fredrick Sanger	(B) Base composition of DNA	(II) Henderson-Hasselbalch equation	(C) Molar absorption coefficient	(III) Lambert-Beer law	(D) Dideoxy sequencing	(IV) Chargaff's principle	3.0	1.00
List I	List II													
(A) pH of a solution	(I) Fredrick Sanger													
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(C) Molar absorption coefficient	(III) Lambert-Beer law													
(D) Dideoxy sequencing	(IV) Chargaff's principle													

A4 : 4

Objective Question

3	12003	<p>Identify the INCORRECT statement about mitochondria</p> <p>(1) Its number increases by fission</p> <p>(2) Defective mitochondria are removed by a process called mitophagy</p> <p>(3) In actively respiring mitochondria, the matrix is more acidic than the inter-membrane space</p> <p>(4) Many of the mitochondrial proteins are encoded by the nuclear genome</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

4	12004	<p>Which one of the following statements regarding miRNA is INCORRECT?</p> <p>(1) Generated from large precursor RNAs</p> <p>(2) Inhibits translation by binding to the 3'-UTR of mRNAs</p> <p>(3) Biogenesis involves RNase H</p> <p>(4) Present in higher eukaryotes including nematodes, fruit flies, plants, and mammals</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

5	12005	<p>Match items in List I with items in List II :</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">List I</td> <td style="text-align: center;">List II</td> </tr> <tr> <td>(A) Sulphur containing amino acid</td> <td>(I) Aspartic acid</td> </tr> <tr> <td>(B) Optically inactive amino acid</td> <td>(II) Methionine</td> </tr> <tr> <td>(C) Acidic amino acid</td> <td>(III) Lysine</td> </tr> <tr> <td>(D) Basic amino acid</td> <td>(IV) Glycine</td> </tr> </table> <p>Choose the correct answer from the options given below :</p> <p>(1) (A)-(IV), (B)-(I), (C)-(II), (D)-(III)</p> <p>(2) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)</p> <p>(3) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)</p> <p>(4) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)</p>	List I	List II	(A) Sulphur containing amino acid	(I) Aspartic acid	(B) Optically inactive amino acid	(II) Methionine	(C) Acidic amino acid	(III) Lysine	(D) Basic amino acid	(IV) Glycine	3.0	1.00
List I	List II													
(A) Sulphur containing amino acid	(I) Aspartic acid													
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(D) Basic amino acid	(IV) Glycine													

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

6	12006	<p>The rate constant of a first order reaction has the unit</p> <p>(1) s^{-1} (2) $\text{mol L}^{-1} s^{-1}$ (3) $\text{mol L}^{-1} s$ (4) $\text{mol}^{-1} \text{L s}^{-1}$</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

7	12007	<p>How many grams of NaOH is required to make 100 ml of 0.2 M solution of NaOH?</p> <p>(1) 2 (2) 40 (3) 8 (4) 0.8</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

8	12008	<p>Match items in List I with items in List II</p> <table><thead><tr><th>List I</th><th>List II</th></tr></thead><tbody><tr><td>(A) Sucrose</td><td>(I) Monosaccharide</td></tr><tr><td>(B) Maltose</td><td>(II) Glucose + Galactose</td></tr><tr><td>(C) Fructose</td><td>(III) Glucose + Fructose</td></tr><tr><td>(D) Lactose</td><td>(IV) Glucose + Glucose</td></tr></tbody></table> <p>Choose the correct answer from the options given below</p> <p>(1) (A)-(I), (B)-(IV), (C)-(II), (D)-(III) (2) (A)-(II), (B)-(I), (C)-(IV), (D)-(III) (3) (A)-(IV), (B)-(II), (C)-(III), (D)-(I) (4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)</p>	List I	List II	(A) Sucrose	(I) Monosaccharide	(B) Maltose	(II) Glucose + Galactose	(C) Fructose	(III) Glucose + Fructose	(D) Lactose	(IV) Glucose + Glucose	3.0	1.00
List I	List II													
(A) Sucrose	(I) Monosaccharide													
(B) Maltose	(II) Glucose + Galactose													
(C) Fructose	(III) Glucose + Fructose													
(D) Lactose	(IV) Glucose + Glucose													

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

9	12009	How many oxygen atoms, in terms of Avogadro's number (N_A), are present in 9.0 g of H_2O ? (1) N_A (2) $2N_A$ (3) $N_A/2$ (4) $N_A/4$ A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

10	12010	Polymerisation of isoprene gives (1) Natural rubber (2) Polyester (3) Buna-N (4) Neoprene A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

11	12011	How many pi-bonds are present in cyano-benzene? (1) 6 (2) 5 (3) 4 (4) 3 A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question				
12	12012	<p>Given below are two statements :</p> <p>Statement I : Penicillin is an antibiotic derived from fungus.</p> <p>Statement II : Antibiotics are compounds obtained from micro-organisms and are used as pain killers.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct</p> <p>(2) Both Statement I and Statement II are incorrect</p> <p>(3) Statement I is correct but Statement II is incorrect</p> <p>(4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00

Objective Question				
13	12013	<p>In which of the following collisions, the total linear momentum of two colliding bodies is completely conserved?</p> <p>(1) Elastic collision</p> <p>(2) Completely inelastic collision</p> <p>(3) Partially elastic collision</p> <p>(4) Any type of collision i.e. elastic, completely inelastic, or partially elastic</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00

Objective Question				
14	12014		3.0	1.00

Arrange the following in the ascending order of their frequencies

- (A) Ultraviolet Rays
- (B) Microwaves
- (C) X-rays
- (D) Sound waves
- (E) Infrared waves

Choose the correct answer from the options given below :

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

15	12015	<p>The value of acceleration due to gravity on the surface of earth is g. If diameter of earth becomes 4 times its present value and mass remains unchanged, the new value of g on the surface of earth will be</p> <ul style="list-style-type: none"> (1) 4 g (2) 16 g (3) $g/4$ (4) $g/16$ <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

16	12016	<p>A ball is thrown vertically upwards in the air with a certain velocity (v). Its acceleration and velocity at the highest point, respectively, will be</p> <ul style="list-style-type: none"> (1) $-g, 0$ (2) $0, v$ (3) $g, 0$ (4) $0, 0$ <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p>	3.0	1.00
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		A4 : 4		
Objective Question				
17	I2017	<p>The velocity of light in vacuum is 3×10^8 m/s. If the refractive index of glass is 1.5, what will be the velocity of light in glass?</p> <p>(1) 4.5×10^8 m/s (2) 2×10^8 m/s (3) 3×10^8 m/s (4) 0 m/s</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
Objective Question				
18	I2018	<p>Sunita is looking for her father. She went 90 m east before turning to her right. She went 20 m, took a right turn and walked for 30 m to look for her father at her uncle's place. Not finding him there, she went 100 m to the North before meeting her father in a street. How far is Sunita from her starting point?</p> <p>(1) 80 m (2) 100 m (3) 140 m (4) 260 m</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
Objective Question				
19	I2019	<p>If sales tax is reduced from $3\frac{1}{2}\%$ to $3\frac{1}{3}\%$, then what will be the reduction in the net price of an article with a marked value of ₹ 8,400?</p> <p>(1) ₹ 23 (2) ₹ 32 (3) ₹ 14 (4) ₹ 45</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
Objective Question				
20	I2020		3.0	1.00

15 men, working 9 h a day, can reap a field in 16 days. In how many days will 18 men reap the same field, working 8 h a day?

- (1) 14 days (2) 15 days
(3) 13 days (4) 16 days

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

21	I2021	<p>A 150 m long train is running with a speed of 68 km/h. How long will it take for the train to pass a man who is running at 8 km/h in the same direction as the train?</p> <p>(1) 12 s (2) 11 s (3) 9 s (4) 10 s</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

22	I2022	<p>What is the value of 'a' in the equation given below?</p> $\frac{9}{7} \times \frac{9}{7} - \frac{a}{7} \times \frac{9}{7} + \frac{16}{7} \times \frac{16}{7} = 1$ <p>(1) 1 (2) 7 (3) 4.57 (4) 32</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

23	I2023	<p>380 bananas are distributed among 85 students. Each boy student gets four bananas and each girl student gets five. The number of boys is</p> <p>(1) 15 (2) 38 (3) 40 (4) 45</p>	3.0	1.00
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		A1 : 1 A2 : 2 A3 : 3 A4 : 4		
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Objective Question

24	12024	In a certain code language, '134' means 'good and tasty'; '478' means 'see good pictures' and '729' means 'pictures are faint'. Which of the following digits stands for 'see'?	3.0	1.00
		(1) 9 (2) 2 (3) 1 (4) 8		
		A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question

25	12025	In a row of boys, A who is 10 th from the left and B who is 9 th from the right interchange their positions. A now becomes 15 th from the left. How many boys are there in the row?	3.0	1.00
		(1) 23 (2) 31 (3) 27 (4) 28		
		A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question

26	12026	Find the next number in the series 84, 83, 79, 70, 54	3.0	1.00
		(1) 20 (2) 39 (3) 29 (4) 23		
		A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question				
27	12027	<p>10 workers working for 9 hours a day complete a piece of work in 20 days. In how many days will 15 workers working for 12 hours complete the same piece of work?</p> <p>(1) 10 days (2) 12 days (3) 9 days (4) 15 days</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
28	12028	<p>A, B and C started a business and invested capital in the ratio of 3 : 2 : 1. The ratio of months for which they invested is 3 : 5 : 4. If A's profit share is ₹ 1000/- more than C's, then B's share in the profit in Rs will be</p> <p>(1) 1,200 (2) 2,500 (3) 1,500 (4) 2,000</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
29	12029	<p>Ram invested Rs. 75,000 in a business. After few months, Shyam also joined him with an investment of Rs. 50,000/-. At the end of the year the total profit was divided between them in 3 : 1 ratio. After how many months did Shyam join the business?</p> <p>(1) 4 (2) 6 (3) 8 (4) 2</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
30	12030		3.0	1.00

Fill the missing number in the given series

4, 6, 10, 18, ————— 66,130

(1) 30

(2) 38

(3) 34

(4) 42

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

31	12031	<p>From a point, Ram started walking towards east and walked 30 meter. He then turned right and walked 20 meter. Then, he again turned right and walked 42 meter. Finally, he again turned right and walked 15 meter to reach his destination. What is the aerial distance between his destination and the starting point?</p> <p>(1) 13 meter (2) 7 meter (3) 30 meter (4) 5 meter</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

32	12032	<p>A man is facing east. He turns 60 degrees in the clockwise direction and then another 180 degrees in the same direction. He then turns 210 degrees in the anticlockwise direction. Which direction is he facing now?</p> <p>(1) South East (2) South West (3) West (4) South</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

33	12033		3.0	1.00
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In School A and School B, 20% and 25% of the students participate in sports, respectively. If School B has 60% more students than School A, then the number of students participating in sports in School A is

- (1) $\frac{1}{4}$ the number participating in sports in School B
- (2) $\frac{1}{2}$ the number participating in sports in School B
- (3) $\frac{1}{16}$ the number participating in sports in School B
- (4) $\frac{1}{8}$ the number participating in sports in School B

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

34	12034	<p>Which one of the following is the lowest integer that is divisible by each of the integers 1 through 8, both inclusive?</p> <ul style="list-style-type: none"> (1) 210 (2) 420 (3) 840 (4) 2520 <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

35	12035	<p>A tap X fills a tank in 5 hours. Another tap Y fills the same tank in 3 hours. If X starts filling the empty tank and tap Y joins after 1 hour, then how much time will it take for the tank to be completely filled starting from the time when the tap X started filling it?</p> <ul style="list-style-type: none"> (1) 90 minutes (2) 120 minutes (3) 100 minutes (4) 150 minutes <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

36	12036	<p>If day 1 of a leap year is a Sunday, the last day of that year will be</p> <p>(1) Monday (2) Tuesday (3) Sunday (4) Saturday</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

37	12037	<p>A glass jar contains 1 red, 3 green, 2 blue and 4 yellow marbles. If a single marble is chosen at random from the jar, what is the probability that it is yellow or green?</p> <p>(1) 3/10 (2) 4/10 (3) 7/10 (4) 1/10</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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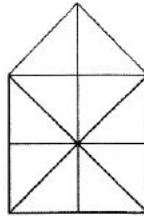
Objective Question

38	12038	<p>The product of two numbers is 24 times the difference of these two numbers. If the sum of these numbers is 14, then the larger number is</p> <p>(1) 6 (2) 8 (3) 7 (4) 9</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

39	12039		3.0	1.00
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Identify the number of triangles in the following figure



- (1) 20
- (3) 22

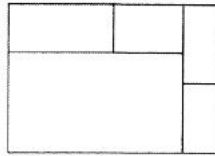
- (2) 21
- (4) 25

- A1 : 1
- A2 : 2
- A3 : 3
- A4 : 4

Objective Question

40 12040

Identify the total number of rectangles in the given figure



- (1) 6
- (3) 10

- (2) 8
- (4) 9

- A1 : 1
- A2 : 2
- A3 : 3
- A4 : 4

3.0 1.00

Objective Question

41 12041

Find the odd one out of the following

- (1) Bat-Wings
- (3) Mouse-Teeth
- (2) Cat-Paws
- (4) Fish-Fin

- A1 : 1
- A2 : 2
- A3 : 3

3.0 1.00

		A4 : 4		
Objective Question				
42	12042	<p>Identify the next number in the following series</p> <p>8, 3, 16, 9, 32, 27, 64,...</p> <p>(1) 45 (2) 81 (3) 72 (4) 50</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
43	12043	<p>If the length of the sides of an equilateral triangle is doubled then its area increases by</p> <p>(1) 100 percent (2) 200 percent (3) 300 percent (4) 400 percent</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
44	12044	<p>In a class of 60 students, 30 students have taken Physics; 30 Chemistry and 30 Biology. There are 10 students each who have taken a combo of 2 subjects i.e. Phy-Chem, Phy-Bio and Chem-Bio. The number of students who have taken all 3 subjects is</p> <p>(1) Zero (2) 10 (3) 5 (4) 2</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
45	12045		3.0	1.00

How many unique 15-mer peptides are possible using 20 natural amino acids?

- (1) 15 (2) 20×15
 (3) 15^{20} (4) 20^{15}

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

46	12046	<p>The sum of 10 consecutive natural numbers is 605. What will be the value of the smallest of these numbers?</p> <p>(1) 54 (2) 55 (3) 56 (4) 57</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

47	12047	<p>A trader allows successive discounts of 30% and 15% on selling price of an article. If he gets Rs. 476 for the article, its marked price is</p> <p>(1) Rs. 700 (2) Rs. 800 (3) Rs. 900 (4) Rs. 1000</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

48	12048	<p>A cylindrical vessel of diameters 8 cm is partially filled with water. What will be the rise in the level of water in the cylindrical vessel when a solid ball of radius 3cm is completely immersed in water?</p> <p>(1) $\frac{2}{9}$ cm (2) $\frac{4}{9}$ cm (3) $\frac{9}{4}$ cm (4) $\frac{9}{2}$ cm</p> <p>A1 : 1</p>	3.0	1.00
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		A4 : 4		
Objective Question				
52	12052	<p>Given below are two statements: One is labelled as Assertion A and other is labelled as Reason R.</p> <p>Assertion (A) : All expression vectors are also cloning vectors.</p> <p>Reason (R) : Expression vectors contain the features of the cloning vectors.</p> <p>In light of the above statements, choose the correct answer from the options given below</p> <p>(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)</p> <p>(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)</p> <p>(3) (A) is correct but (R) is not correct</p> <p>(4) (A) is not correct but (R) is correct</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
53	12053	<p>An athlete participating in an early morning marathon before breakfast is likely to derive most of the energy for muscles from</p> <p>(1) Glucose (2) Fats</p> <p>(3) Ketone bodies (4) Proteins</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
54	12054	<p>Which one of the following techniques will you use to resolve proteins ONLY on the basis of their molecular weight?</p> <p>(1) Native-PAGE (2) SDS-PAGE</p> <p>(3) Agarose Gel electrophoresis (4) 2D-Gel electrophoresis</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p>	3.0	1.00

		A4 : 4		
Objective Question				
55	12055	<p>Given below are two statements: One is labelled as Assertion (A) and other is labelled as Reason (R)</p> <p>Assertion (A): Spectrophotometry is a technique used for quantitative estimation of biomolecules in a solution.</p> <p>Reason (R): Spectrophotometry is based on the Bragg's Law.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)</p> <p>(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)</p> <p>(3) (A) is correct but (R) is not correct</p> <p>(4) (A) is not correct but (R) is correct</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
56	12056	<p>Which one of the following techniques is used for detecting protein-protein interactions <i>in vivo</i>?</p> <p>(1) Surface Plasmon Resonance</p> <p>(2) ELISA</p> <p>(3) Yeast Two Hybrid Assay</p> <p>(4) Yeast One Hybrid Assay</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
Objective Question				
57	12057		3.0	1.00

What is the purpose of using quantitative real time PCR (qRT-PCR)?

- (1) Quantify gene expression levels based on DNA content
- (2) Quantify gene expression levels based on RNA transcripts
- (3) Identification of transcription start site
- (4) Sequence DNA fragments to determine their identity

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

58	12058	<p>Which one of the following methods is based on the binding of Coomassie Brilliant Blue to proteins to determine the protein concentration?</p> <ol style="list-style-type: none"> (1) Lowry method (2) BCA method (3) Bradford method (4) Kjeldahl method <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

59	12059	<p>Match the items in List I with items in List II :</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>List I</p> <p>(A) Surface Plasmon Resonance</p> <p>(B) Iso-electric Focusing</p> <p>(C) Single-strand Conformation Polymorphism</p> <p>(D) Denaturing Gradient Gel Electrophoresis</p> </td> <td style="width: 50%; vertical-align: top;"> <p>List II</p> <p>(I) Conformation difference of DNA</p> <p>(II) Melting temperature of DNA strands</p> <p>(III) Resolving protein mixtures</p> <p>(IV) Protein-protein interaction</p> </td> </tr> </table> <p>Choose the correct answer from the options given below :</p> <ol style="list-style-type: none"> (1) (A)-(IV), (B)-(III), (C)-(I), (D)-(II) (2) (A)-(I), (B)-(III), (C)-(II), (D)-(IV) (3) (A)-(IV), (B)-(II), (C)-(III), (D)-(I) (4) (A)-(II), (B)-(III), (C)-(I), (D)-(IV) <p>A1 : 1</p> <p>A2 : 2</p>	<p>List I</p> <p>(A) Surface Plasmon Resonance</p> <p>(B) Iso-electric Focusing</p> <p>(C) Single-strand Conformation Polymorphism</p> <p>(D) Denaturing Gradient Gel Electrophoresis</p>	<p>List II</p> <p>(I) Conformation difference of DNA</p> <p>(II) Melting temperature of DNA strands</p> <p>(III) Resolving protein mixtures</p> <p>(IV) Protein-protein interaction</p>	3.0	1.00
<p>List I</p> <p>(A) Surface Plasmon Resonance</p> <p>(B) Iso-electric Focusing</p> <p>(C) Single-strand Conformation Polymorphism</p> <p>(D) Denaturing Gradient Gel Electrophoresis</p>	<p>List II</p> <p>(I) Conformation difference of DNA</p> <p>(II) Melting temperature of DNA strands</p> <p>(III) Resolving protein mixtures</p> <p>(IV) Protein-protein interaction</p>					

		A3 : 3		
		A4 : 4		

Objective Question

60	12060	<p>How much calcium chloride is required to make 40 mL of 0.02 M solution? Assume molecular weight of calcium chloride is 219.</p> <p>(1) 17.52 gm (2) 1.752 mg (3) 0.1752 gm (4) 0.1752 mg</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

61	12061	<p>Given below are two statements :</p> <p>Statement I : The Michaelis constant (K_m) characterizes the affinity of an enzyme to its substrate.</p> <p>Statement II : Higher the value of the Michaelis constant (K_m), stronger is the binding of the enzyme to the substrate.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct (2) Both Statement I and Statement II are incorrect (3) Statement I is correct but Statement II is incorrect (4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

62	12062		3.0	1.00
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		<p>In a Chemostat, which one of the following would increase the exit cell concentration?</p> <ul style="list-style-type: none">(1) Increase in dilution rate(2) Increase in inlet substrate concentration(3) Increase in inoculum dilution(4) Increase in impeller size <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

63	12063	<p>Which one of the following uses a photocell to measure the cell density of a culture to regulate the flow of culture media?</p> <ul style="list-style-type: none">(1) Chemostat(2) Turbidostat(3) Hemostat(4) Cryostat <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

64	12064	<p>In a bioprocess mainly producing cell biomass, if the microbial cell yield has halved, what would be the rate of substrate consumption to maintain the same rate of cell mass production?</p> <ul style="list-style-type: none">(1) It would be doubled(2) It would also be halved(3) It would remain unchanged(4) It would increase four fold <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

65	12065		3.0	1.00
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		<p>The first commercially produced plant secondary metabolite using plant suspension culture in bioreactor was</p> <p>(1) Shikonin (2) Colchicine (3) Riboflavin (4) Cytokinin</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>		
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Objective Question

66	12066	<p>Two proteins have approximately the same molecular weight and isoelectric point. The best way to resolve them would be using</p> <p>(1) Reverse phase chromatography (2) Thin layer chromatography (3) Gel filtration (4) Isoelectric focusing</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

67	12067	<p>Sugarcane molasses containing 50% sucrose, 1% invert sugars, 18% water and 31% other solids is mixed with corn steep liquor containing 2.5% invert sugars, 50% water and 47.5% other solids to produce a diluted sugar mixture containing 2% invert sugars. 125 kg corn steep liquor and 45 kg molasses are fed into the mixing tank. How much water should be added to the mixing tank to produce the desired diluted sugar mixture?</p> <p>(1) 6.25 kg (2) 10.05 kg (3) 7.20 kg (4) 8.75 kg</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

68	12068		3.0	1.00
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		<p>A bacterial culture, with the molecular formula - $C_{4.4} H_{7.3} O_{1.2} N_{0.86}$ is cultivated under aerobic conditions with hexadecane ($C_{16}H_{34}$) as substrate. The growth can be described by equation:</p> <p>$C_{16}H_{34} + 16.28O_2 + 1.42NH_3 \rightarrow 1.65C_{4.4}H_{7.3}O_{1.2}N_{0.86} + 8.74CO_2 + 13.11H_2O$. Assuming 100% conversion, the yield of cell mass from hexadecane will be</p> <p>(1) 0.45 g.g⁻¹ (2) 0.66 g.g⁻¹ (3) 0.55 g.g⁻¹ (4) 0.50 g.g⁻¹</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>		
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Objective Question

69	12069	<p>For an enzyme following Michaelis-Menten kinetics, the catalytic efficiency of the enzyme is measured by</p> <p>(1) k_{cat}/K_m (2) V_{max} (3) K_m (4) k_{cat}</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

70	12070	<p>An airlift bioreactor uses</p> <p>(1) an impeller for mixing the contents (2) air bubbles for mixing the contents (3) a sparger for mixing the contents (4) differential densities for mixing purposes</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

71	12071		3.0	1.00
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In alcoholic fermentation, CO₂ is evolved during

- (1) decarboxylation of pyruvic acid only
- (2) formation of acetaldehyde only
- (3) both decarboxylation of pyruvic acid and formation of acetaldehyde
- (4) oxidation of acetaldehyde

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

72	12072	<p>During the life cycle of microbes, at which stage do they produce primary metabolites?</p> <ol style="list-style-type: none"> (1) Lag Phase (2) Exponential Phase (3) Stationary Phase (4) Death Phase <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

73	12073	<p>Under high concentration of glucose, ethanol production by yeast cells, instead of increasing cell mass via TCA cycle is described as</p> <ol style="list-style-type: none"> (1) Warburg effect (2) Simpson's effect (3) Crabtree effect (4) Raman effect <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

74	12074		3.0	1.00
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A strain of *E. coli* is cultured in a 15 m³ mechanically stirred bioreactor. Under the operating conditions, the value of $k_L a$ is 0.17 s⁻¹. Oxygen solubility in the broth is 8×10^{-3} kgm⁻³. If the specific rate of O₂ uptake is 12.5 mmoles.g⁻¹.h⁻¹, what is the maximum possible cell concentration?

- (1) 12 g.l⁻¹ (2) 15 g.l⁻¹
 (3) 8.5 g.l⁻¹ (4) 6.8 g.l⁻¹

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

75	12075	<p>A bioreactor of volume 1 m³ is operated continuously under steady state with inlet substrate concentration of 10 Kg.m³. The organism being cultivated has $\mu_m = 0.30$ h⁻¹ and saturation constant (K_s) = 0.5 g.l⁻¹. The feed flow rate required to achieve 90% conversion of the substrate will be</p> <p>(1) 0.2 m³.h⁻¹ (2) 2.0 m.h⁻¹ (3) 1.0 m³.h⁻¹ (4) 0.3 m³.h⁻¹</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

76	12076	<p>Which one of the following statements is correct?</p> <p>(1) The genome size and the number of genes are directly proportional for all species (2) The genome size and the number of genes are directly proportional only among eukaryotes (3) The genome size and the number of genes are directly proportional only among prokaryotes (4) The genome size is not directly proportional to the number of genes across species</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

77	12077	<p>What is the mutation rate per generation for humans?</p> <p>(1) 1.3×10^{-36} per base pair (2) 1.3×10^{-4} per million base pair</p> <p>(3) 1.3×10^{-8} per base pair (4) 1.3×10^{-6} per base pair</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

78	12078	<p>In nature, 20 different amino acids can be coded by 4 different nucleotides (A, T, G & C). Suppose the number of available nucleotides increases to 6 (A, T, G, C, X & Y), for the genetic code to be made up of codons having equal number of nucleotides, what would be the minimum number of nucleotides required for each codon?</p> <p>(1) Three (2) Five</p> <p>(3) Two (4) Four</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

79	12079	<p>Match the items in List I with the items in List II</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>List I (Database)</p> <p>(A) 1000 Genomes</p> <p>(B) GenBank</p> <p>(C) OMIM</p> <p>(D) UK Biobank</p> </td> <td style="width: 50%; vertical-align: top;"> <p>List II (Description)</p> <p>(I) Genes and Disease (Phenotype) database</p> <p>(II) Catalogue of genomic variants</p> <p>(III) Biomedical resource with genetic, environmental and clinical data</p> <p>(IV) Nucleic Acid sequence database</p> </td> </tr> </table> <p>Choose the correct answer from the options given below:</p> <p>(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)</p> <p>(2) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)</p> <p>(3) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)</p> <p>(4) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)</p> <p>A1 : 1</p>	<p>List I (Database)</p> <p>(A) 1000 Genomes</p> <p>(B) GenBank</p> <p>(C) OMIM</p> <p>(D) UK Biobank</p>	<p>List II (Description)</p> <p>(I) Genes and Disease (Phenotype) database</p> <p>(II) Catalogue of genomic variants</p> <p>(III) Biomedical resource with genetic, environmental and clinical data</p> <p>(IV) Nucleic Acid sequence database</p>	3.0	1.00
<p>List I (Database)</p> <p>(A) 1000 Genomes</p> <p>(B) GenBank</p> <p>(C) OMIM</p> <p>(D) UK Biobank</p>	<p>List II (Description)</p> <p>(I) Genes and Disease (Phenotype) database</p> <p>(II) Catalogue of genomic variants</p> <p>(III) Biomedical resource with genetic, environmental and clinical data</p> <p>(IV) Nucleic Acid sequence database</p>					

A2 : 2

A3 : 3

A4 : 4

Objective Question

80	12080	<p>The following sequence of DNA seems to form a structure.</p> <p>5' ATCCGTGAATTACGGAT 3'</p> <p>When the third base is changed from C to G the DNA loses its structure. However if in the background of this change, the 15th base (which is the 3rd last one) is changed from G to C, the DNA regains back its structure. The most plausible reason for these observations is</p> <ol style="list-style-type: none"> (1) The 3rd base and 15th base are paired in a stem like structure (2) The 3rd and the 15th base are part of a loop like structure (3) The 3rd and 15th bases have steric clashes. (4) The 3rd base pairs with the 5th base and the 15th base pairs with the 13th one <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

81	12081	<p>Given below are two statements :</p> <p>Statement I : Unfolded protein response occurs when cells are stressed.</p> <p>Statement II : Unfolded protein response is a hallmark response by the nucleus to protect the genome.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <ol style="list-style-type: none"> (1) Both Statement I and Statement II are correct (2) Both Statement I and Statement II are incorrect (3) Statement I is correct but Statement II is incorrect (4) Statement I is incorrect but Statement II is correct <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

82	12082	<p>While analyzing a multiple sequence alignment of homologous protease sequences, the following was observed:</p> <p>The 14th position was variable but always encoded by a hydrophobic amino acid.</p> <p>The 17th position was conserved and was Serine in all the sequences.</p> <p>The 29th position was variable but always encoded by an Aspartate or a Glutamate.</p> <p>The 50th position was conserved and always encoded by a Phenylalanine.</p> <p>Which statements do you think are consistent with the above observations?</p> <p>(A) Residue 14th is a buried amino acid.</p> <p>(B) 17th position may be part of the active site of the protein.</p> <p>(C) 29th residue is a buried amino acid.</p> <p>(D) 50th position is an exposed amino acid.</p> <p>Choose the correct answer from the options given below:</p> <p>(1) (A) and (B) only (2) (B) and (C) only</p> <p>(3) (A) and (D) only (4) (B) and (D) only</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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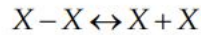
Objective Question

83	12083	<p>The ΔG of unfolding reaction of a monomeric protein</p> <p>Folded \leftrightarrow Unfolded</p> <p>Varies with the concentration of Guanidine Hydrochloride [GdnHCl] with the following relationship</p> $\Delta G = m \times [\text{GdnHCl}] + 10\text{kCal/mol}$ <p>Where, $m = -2 \text{ kCalMol}^{-1}\text{M}^{-1}$.</p> <p>What is the [GdnHCl] at which half of the protein is unfolded?</p> <p>(1) 0 M (2) 2 M</p> <p>(3) 5 M (4) 10 M</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

84	12084		3.0	1.00
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A protein X forms dimer.



The K_D of the reaction is $1 \mu\text{M}$.

At $1 \mu\text{M}$ concentration of the monomer X, what is the concentration of dimer of X.

- (1) $0.5 \mu\text{M}$ (2) $1 \mu\text{M}$
 (3) $0.25 \mu\text{M}$ (4) $0.75 \mu\text{M}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

85	12085	<p>Sometimes phi and psi angles can be used to construct the 3D structure of a protein. Which one of the following statements are true with respect to this process?</p> <p>(A) The omega angle is required to model the final 3D structure. (B) phi and psi are not sufficient to model the 3D positions of the side chain atoms. (C) The allowed regions of Ramachandran Map is sufficient to model the 3D structure <i>ab initio</i> (D) phi and psi are sufficient to fix all main chain atoms except for Glycine which is achiral.</p> <p>Choose the correct answer from the options given below :</p> <p>(1) (A) and (B) only (2) (B) and (C) only (3) (B) and (D) only (4) (C) and (D) only</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

86	12086	<p>Which one of the following forward primer(s) will you use to amplify the DNA sequence given below?</p> <p style="text-align: center;">5' ATGCAATCGATGCCGATC 3' 3' TACGTTAGCTACGGCTAG 5'</p> <p>(1) 5'ATGCA 3' (2) 5' TACGT 3' (3) 5' ACTAGC 3' (4) 5' GATCG 3'</p>	3.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question				
87	12087	<p>Approximately how many helical turns are generally present in a 4800 bp long, non-supercoiled B-DNA?</p> <p>(1) 48 (2) 480 (3) 4800 (4) 400</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
88	12088	<p>Which one of the following is formed when the cytosine base is deaminated?</p> <p>(1) Uracil (2) Guanine (3) Adenine (4) Thymidine</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
89	12089		3.0	1.00

After solving a protein structure by X-ray crystallography you found that a few residues are in the disallowed region of the Ramachandran Map. Which one of the following are plausible explanations for this observation?

- (A) There may be errors in the structure of these residues
- (B) There may be side-chain interactions in those residues that off-set the disallowed cost
- (C) The protein may have a lot of Proline residues
- (D) The protein may not be in a proper folded state when it was crystallized

Choose the correct answer from the options given below:

- (1) (A) and (B) Only
- (2) (B) and (C) Only
- (3) (A) and (D) Only
- (4) (C) and (D) Only

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

90	12090	<p>Real time PCR was done with the two patient samples, A and B, to detect SARS-CoV-2 virus. The Ct value obtained in patient sample A was higher than that obtained in patient sample B. The inference to be drawn from this observation is that the</p> <ul style="list-style-type: none"> (1) patient A has a higher viral load than patient B (2) patient B has higher viral load than patient A (3) strain infecting Patient A is more virulent than that in Patient B (4) viral load cannot be determined by the Ct value <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

91	12091	<p>RNAi was discovered in</p> <ul style="list-style-type: none"> (1) <i>Drosophila melanogaster</i> (2) <i>Caenorhabditis elegans</i> (3) <i>Escherichia coli</i> (4) <i>Saccharomyces cerevisiae</i> <p>A1 : 1</p> <p>A2 : 2</p>	3.0	1.00
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A4 : 4

Objective Question

95	12095	<p>Which one of the following is NOT primarily a microtubule-based structure?</p> <p>(1) Centriole (2) Centrosome</p> <p>(3) Basal Body (4) Filopodia</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

96	12096	<p>There are twenty amino acids. How many different polypeptide chains of 'N' number of amino acids are possible?</p> <p>(1) N^4 (2) 4^N</p> <p>(3) N^{20} (4) 20^N</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

97	12097	<p>Which one of the following organisms requires a Biosafety level 3 facility for culture and manipulation as per extant biosafety regulations?</p> <p>(1) <i>Leishmania donovani</i> (2) <i>Streptococcus pneumoniae</i></p> <p>(3) <i>Plasmodium falciparum</i> (4) <i>Candida albicans</i></p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

98	12098		3.0	1.00
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		<p>The process by which the genetic material can be transferred from one bacterium to another by a virus is known as</p> <p>(1) Transformation (2) Conjugation (3) Transduction (4) Transfection</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>		
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Objective Question				
99	12099	<p>In a newly discovered type of genetic material (with similar properties to our own DNA) there were four nucleotides, L, M, N and O. L and M were complementary and paired with one hydrogen bond between them and N and O were complementary and paired with 2 hydrogen bonds between them. Given this, which one of following sequences would have the highest melting temperature in their double-stranded form?</p> <p>(1) LMMLLLMLON (2) LLLMMMMLML (3) ONONNMLMLL (4) NNOONONOML</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
100	12100	<p>DNA polymerase 1 from <i>Escherichia coli</i> lacks which one of the following enzyme activities?</p> <p>(1) 5' to 3' exonuclease activity (2) 3' to 5' exonuclease activity (3) 5' to 3' DNA-dependent DNA polymerase activity (4) 5' to 3' RNA-dependent DNA polymerase activity</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00

Objective Question				
101	12101		3.0	1.00

Transmission of organisms from mother to fetus or new born child is known as Vertical transmission of infection. Which one of the following is most likely to transmit vertically?

- (1) *Clostridium tetani* (2) *Chlamydia trachomatis*
(3) *Shigella dysenteriae* (4) *Streptococcus pneumoniae*

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

102	12102	Which one of the following combinations of the drugs acts to inhibit the same metabolic pathway? (1) Sulfonamide and Trimethoprim (2) Amphotericin and Flucytosine (3) Isoniazid and Rifampicin (4) Penicillin G and Gentamicin A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

103	12103	Which one of the following statements is NOT correct about human immunodeficiency virus (HIV)? (1) HIV is an enveloped RNA virus (2) Acyclovir inhibits HIV replication (3) A DNA copy of the HIV genome may integrate into host cell DNA (4) The virion contains an RNA-dependent DNA polymerase A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

104	12104		3.0	1.00
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India has major burden of tuberculosis (TB) which is caused by *Mycobacterium tuberculosis*. Efforts are on to eliminate TB by 2025 and effective prophylaxis against the disease can be achieved with the BCG vaccine, which has been developed from

- (1) *Mycobacterium tuberculosis* (2) *Mycobacterium avium*
 (3) *Mycobacterium bovis* (4) *Mycobacterium smegmatis*

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

105	12105	<p>Flow cytometry is an analytical technique that quantifies the frequencies of cells binding to fluorescent antibodies and scattering light in characteristic ways. When a flow cytometer is used to sort cell subpopulations on the basis of fluorescence and light scattering it is referred to as Fluorescence Activated Cell Sorting (FACS). Which one of the following statement is NOT correct regarding FACS?</p> <p>(1) Every time a cell passes in front of the laser beam, light is scattered, and this scattering of the laser signal is recorded</p> <p>(2) The more forward light scatter, the larger the cell, and so the amount of light scattered in the forward direction can be used as a rough measure of the range of sizes of the cells in the stream</p> <p>(3) The amount of side scattered light offers an indication of the extent of size of the scattering cells</p> <p>(4) Cells in suspension are hydrodynamically focused into a narrow stream by being introduced inside a rapidly moving column of sheath fluid</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

106	12106	<p>While running in the 200 meter race in National Games, the required ATP generation in the athlete is primarily facilitated by:</p> <p>(1) Contraction of Actin and myosin proteins</p> <p>(2) Hydrolysis of stored ATP polymer</p> <p>(3) Creatine phosphate in the muscle</p> <p>(4) Ketone bodies in the muscles</p> <p>A1 : 1</p> <p>A2 : 2</p>	3.0	1.00
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		A3 : 3		
		A4 : 4		

Objective Question

107	12107	<p>A slide of macrophages was stained by immunofluorescence using a monoclonal antibody for the TAP1/TAP2 complex. Which one of the following intracellular compartments would exhibit positive staining with this antibody?</p> <p>(1) Mitochondria (2) Endoplasmic Reticulum (3) Golgi apparatus (4) Nucleus</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

108	12108	<p>Given below are two statements :</p> <p>Statement I : Agglutination is a simple, inexpensive, rapid and highly specific immunological test that is widely performed in diagnostic laboratories. For example, it is often used for human blood typing based on the presence of specific antigens on the surface of red blood cells, which vary among individuals.</p> <p>Statement II : Agglutination is routinely used in clinical laboratories for determining HIV-infected CD4⁺ cells.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct (2) Both Statement I and Statement II are incorrect (3) Statement I is correct but Statement II is incorrect (4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

109	12109		3.0	1.00
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The vaccine for cervical cancer is composed of

- (1) Human Papilloma Virus-like-particles (VLPs)
- (2) Inactivated Human Papilloma Virus
- (3) Live attenuated Human Papilloma Virus
- (4) Recombinant adenovirus

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

110	I2110	<p>Match the items in List I with the items in List II :</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>List I</p> <ul style="list-style-type: none"> (A) Cystic Fibrosis (B) Lesch-Nyhan syndrome (C) Severe combined immunodeficiency (D) Spinal muscle atrophy </td> <td style="width: 50%; vertical-align: top;"> <p>List II</p> <ul style="list-style-type: none"> (I) Hypoxanthine-guanine phosphoribosyl transferase (II) CFTR (III) SMN1/2 (IV) Adenosine Deaminase </td> </tr> </table> <p>Choose the correct answer from the options given below :</p> <ul style="list-style-type: none"> (1) (A)-(IV), (B)-(I), (C)-(III), (D)-(II) (2) (A)-(II), (B)-(III), (C)-(I), (D)-(IV) (3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II) (4) (A)-(II), (B)-(I), (C)-(IV), (D)-(III) <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	<p>List I</p> <ul style="list-style-type: none"> (A) Cystic Fibrosis (B) Lesch-Nyhan syndrome (C) Severe combined immunodeficiency (D) Spinal muscle atrophy 	<p>List II</p> <ul style="list-style-type: none"> (I) Hypoxanthine-guanine phosphoribosyl transferase (II) CFTR (III) SMN1/2 (IV) Adenosine Deaminase 	3.0	1.00
<p>List I</p> <ul style="list-style-type: none"> (A) Cystic Fibrosis (B) Lesch-Nyhan syndrome (C) Severe combined immunodeficiency (D) Spinal muscle atrophy 	<p>List II</p> <ul style="list-style-type: none"> (I) Hypoxanthine-guanine phosphoribosyl transferase (II) CFTR (III) SMN1/2 (IV) Adenosine Deaminase 					

Objective Question

111	I2111	<p>Which one of the following antibiotic specifically inhibits RNA synthesis?</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> (1) Isoniazid (3) Rifampicin </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> (2) Penicillin (4) Streptomycin </td> </tr> </table> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p>	<ul style="list-style-type: none"> (1) Isoniazid (3) Rifampicin 	<ul style="list-style-type: none"> (2) Penicillin (4) Streptomycin 	3.0	1.00
<ul style="list-style-type: none"> (1) Isoniazid (3) Rifampicin 	<ul style="list-style-type: none"> (2) Penicillin (4) Streptomycin 					

A4 : 4

Objective Question

112	12112	<p>Given below are two statements :</p> <p>Statement I : If one parent carries the defective Huntington disease gene, his or her offspring have a 100% chance of inheriting the disease</p> <p>Statement II : Huntington disease is an autosomal dominant genetic disorder</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct</p> <p>(2) Both Statement I and Statement II are incorrect</p> <p>(3) Statement I is correct but Statement II is incorrect</p> <p>(4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

113	12113	<p>Functional magnetic resonance imaging (fMRI) is one of the most powerful methods for examining brain function. This method is based on the changes in the magnetic properties of</p> <p>(1) neurotransmitters (2) neurons</p> <p>(3) myelin (4) hemoglobin</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

114	12114	<p>Which one of the following diseases is due to severe deficiency of proteins in diet?</p> <p>(1) Kwashiorkor (2) Tay-Sach's disease</p> <p>(3) Scurvy (4) Myasthenia gravis</p> <p>A1 : 1</p>	3.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

118	12118	Which one of the following disorders leads to hallucinations? (1) Anxiety (2) Schizophrenia (3) Alzheimer's (4) Epilepsy	3.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

119	12119	In absolute refractory period of neurons (1) Na ⁺ channels are open (2) Na ⁺ channels are closed (3) K ⁺ channels are open (4) K ⁺ channels are closed	3.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

120	12120	Phagocytosis in the central nervous system involves (1) recovering excess Ca ²⁺ from synapse (2) specialized ability of some neurons to divide (3) bridging the blood brain barrier (4) clearing of dead cells	3.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

121	I2121	<p>What attribute do DREB transcription factors impart to higher plants?</p> <p>(1) Insect resistance (2) Pathogen resistance</p> <p>(3) Drought resistance (4) Virus resistance</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

122	I2122	<p>Quantitative Trait Loci (QTL) can be mapped using</p> <p>(1) Transgenic approach (2) SSR markers</p> <p>(3) Gene editing (4) Tissue culture</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

123	I2123	<p>Given below are two statements :</p> <p>Statement I : Heterologous expression of prokaryotic genes in plants can be used to render resistance against insects.</p> <p>Statement II : Expression of <i>BtCry1Ac</i> gene in cotton improves resistance against aphids.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct</p> <p>(2) Both Statement I and Statement II are incorrect</p> <p>(3) Statement I is correct but Statement II is incorrect</p> <p>(4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1</p> <p>A2 : 2</p>	3.0	1.00
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		A3 : 3		
		A4 : 4		

Objective Question

124	12124	<p>Targeted gene disruption CANNOT be achieved by</p> <p>(1) Cre/Lox system (2) CRISPR system</p> <p>(3) Zinc-Finger nucleases (4) T-DNA integration</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

125	12125	<p>Centimorgan (cM) is defined as the genetic distance between two loci with a statistically corrected recombination frequency of</p> <p>(1) 10% (2) 0.1%</p> <p>(3) 1% (4) 0.01%</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

126	12126	<p>Upon entering the cells, Cauliflower Mosaic Virus (CaMV) accumulates in inclusion bodies in which part of the cells?</p> <p>(1) Nucleus (2) Chloroplast</p> <p>(3) Cytoplasm (4) Mitochondria</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

127	12127		3.0	1.00
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		<p>Which one of the following genes provide herbicide tolerance?</p> <p>(1) Neomycin phosphotransferase (2) Phosphinothricin acetyltransferase (3) Hygromycin phosphotransferase (4) Gentamycin acetyltransferase</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

128	12128	<p>During cell cycle, genome replication occurs in</p> <p>(1) M Phase (2) G1 phase (3) G2 phase (4) S phase</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

129	12129	<p>Plant transformation method that uses tungsten or gold particle coated with DNA accelerated at a high velocity is called:</p> <p>(1) Agrobacterium mediated particle delivery method (2) Particle bombardment method (3) High velocity gene delivery method (4) Accelerated gene delivery method</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

130	12130	<p>Which one of the following chemicals enhances <i>vir</i> gene expression in Agrobacterium?</p> <p>(1) Dextran (2) Acetosyringone (3) Acetyl carboxylic acid (4) Acetyl salicylic acid</p> <p>A1 : 1</p>	3.0	1.00
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		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question				
131	12131	<p>In monocot seedlings the highest concentration of auxin is found in the</p> <p>(1) Stem (2) Bud</p> <p>(3) Coleoptile (4) Trichome</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00

Objective Question				
132	12132	<p>In plants, which stage of somatic embryo development requires ABA in culture medium?</p> <p>(1) Formation of embryogenic cells (2) Globular embryogenesis</p> <p>(3) Torpedo stage (4) Maturing embryo</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00

Objective Question				
133	12133	<p>A classical plant breeder wants to develop a disease resistant variety. What is the first step?</p> <p>(1) Development of Recombinant Inbred Lines (RILs)</p> <p>(2) Selection of a naturally resistant landrace</p> <p>(3) Hybridization of contrasting parents</p> <p>(4) Production of Near Isogenic Lines (NILs)</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00

Objective Question

134	12134	<p>Which class of enzymes catalyzes the formation of oxalo-acetic acid from phosphoenol pyruvic acid in the chloroplasts of mesophyll cells?</p> <p>(1) Dehydrogenases (2) Carboxylases (3) Decarboxylases (4) Isomerases</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

135	12135	<p>Given below are two statements : One is labelled as Assertion A and the other is labelled as Reason R :</p> <p>Assertion (A) : The major factors influencing the water potential in plants are solute concentration, pressure and gravity.</p> <p>Reason (R) : Turgor pressure in xylem vessel is responsible for generating the water potential.</p> <p>In light of the above statements, choose the <i>most appropriate</i> answer from the options given below :</p> <p>(1) Both (A) and (R) are correct and (R) is the correct explanation of (A) (2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A) (3) (A) is correct but (R) is not correct (4) (A) is not correct but (R) is correct</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

136	12136	<p>Which one of the following is the correct sequence of electron transfer in the thylakoid membrane during light cycle of photosynthesis?</p> <p>(1) P680 – Cytochrome b_6f – PC – PQ – P700 (2) P680 – PQ – Cytochrome b_6f – PC – P700 (3) P680 – Cytochrome b_6f – PQ – PC – P700 (4) P680 – PC – Cytochrome b_6f – PQ – P700</p>	3.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

137	I2137	<p>Vinblastine and vincristine, the potent anticancer metabolites present in <i>Catharanthus roseus</i>, accumulate in which one of the following?</p> <p>(1) Middle Lamella (2) Primary cell walls (3) Schlerenchyma (4) Idioblasts</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

138	I2138	<p>Which one of the following is the immediate effect of ABA-dependent stomatal closure in plants?</p> <p>(1) Enhanced transpiration and enhanced photosynthesis (2) Reduced transpiration and enhanced photosynthesis (3) Enhanced transpiration and reduced photosynthesis (4) Reduced transpiration and reduced photosynthesis</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

139	I2139	<p>The ABC model of flower development determines organ arrangement in the sequence sepal, petal, stamen and carpel. Due to the loss of Class A gene functions, the observed phenotype will be</p> <p>(1) Sepal, Sepal, Carpel, Carpel (2) Stamen, Carpel, Carpel, Carpel (3) Sepal, Petal, Petal, Sepal (4) Carpel, Stamen, Stamen, Carpel</p> <p>A1 : 1 A2 : 2</p>	3.0	1.00
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A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

143	12143	<p>Given below are two statements :</p> <p>Statement I : Both aspirin and paracetamol belong to non-narcotic analgesics.</p> <p>Statement II : The synthesis of prostaglandins, which stimulate inflammation in the tissue causing pain, is inhibited by aspirin.</p> <p>In light of the above statements, choose the correct answer from the options below :</p> <p>(1) Both Statement I and Statement II are correct</p> <p>(2) Both Statement I and Statement II are incorrect</p> <p>(3) Statement I is correct but Statement II is incorrect</p> <p>(4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

144	12144	<p>Given below are two statements :</p> <p>Statement I : The manufacturing process of SARS-CoV-2 mRNA vaccine requires synthesis of mRNA from DNA using <i>in vitro</i> transcription.</p> <p>Statement II : The naked mRNA is administered intramuscularly to the vaccine recipients to generate a protective immune response.</p> <p>In light of the above statements, choose the correct answer from the options given below :</p> <p>(1) Both Statement I and Statement II are correct</p> <p>(2) Both Statement I and Statement II are incorrect</p> <p>(3) Statement I is correct but Statement II is incorrect</p> <p>(4) Statement I is incorrect but Statement II is correct</p> <p>A1 : 1</p>	3.0	1.00
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A2 : 2

A3 : 3

A4 : 4

Objective Question

145	12145	<p><i>Saccharomyces cerevisiae</i> was grown in batch fermentation mode to produce ethanol. The rate of ethanol production in the exponential phase was 2 g/L/h, which decreased to 1 g/L/h after sometime. Which of these is least likely to be responsible for this?</p> <p>(1) Nutrient depletion (2) Mineral salt depletion (3) Oxygen depletion (4) Accumulation of waste</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

146	12146	<p>The aspect ratio (based on height & diameter) of a tower reactor is</p> <p>(1) 6/1 – 10/1 (2) 2/1 – 3/1 (3) 2/1 – 4/1 (4) 1 – 1/2</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

147	12147	<p>The average molecular weight of a nucleotide base in oligonucleotides is 330. What would be the amount required to prepare 100 μL of 1 μM solution of a 20 bp long single-stranded DNA?</p> <p>(1) 660 μg (2) 66 μg (3) 6.6 μg (4) 0.66 μg</p> <p>A1 : 1 A2 : 2 A3 : 3</p>	3.0	1.00
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You have mixed 100 ml of 0.5 M solution of glucose and 200 ml of 0.5 M solution of glucose. The resultant solution will contain

- (1) 0.25 M glucose (2) 0.5 M glucose
(3) 0.33 M glucose (4) 0.25 M maltose

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

155	I2155	<p>The penicillin extraction process involves the following steps:</p> <p>A. Extraction from the organic solvent into an aqueous buffer B. Extraction from the aqueous buffer into an organic solvent C. Extraction of penicillin from the filtered broth into organic solvent D. Extraction of solvent to obtain penicillin salt</p> <p>Choose the correct sequence of steps from the options given below :</p> <p>(1) B → A → C → D (2) C → A → B → D (3) D → A → B → C (4) A → B → C → D</p>	3.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

156	I2156	<p>Suppose that an obligate anaerobe suffered a mutation that resulted in the loss of triose phosphate isomerase activity. What will be the net ATP yield under anaerobic condition?</p> <p>(1) 0 (2) 1 (3) 2 (4) 4</p>	3.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

157	I2157		3.0	1.00
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Which of the following processes can be utilized for sterilization of medium with heat-sensitive components?

- (1) Short sterilization (2) Batch sterilization
(3) Dry sterilization (4) Microfiltration

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

158	12158	<p><i>Bacillus polymyxa</i> strain was cultivated under anaerobic condition in a media containing 10 g/L glucose as the sole carbon source. The glucose was completely utilized in 10 h producing 2, 3-Butanediol with productivity of 5 g/L/h. What is the yield of 2, 3-Butanediol produced per gram of glucose consumed (g/g)?</p> <p>(1) 5 (2) 10 (3) 50 (4) 100</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

159	12159	<p>If the partitioning coefficient (K) of a solute is 20 when it is extracted by an organic solvent from culture medium, what is the amount of solvent required per litre of culture medium to extract 90% of the solute in a single equilibrium stage?</p> <p>(1) 0.45 litre (2) 4.5 litre (3) 0.045 litre (4) 45 litre</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

160	12160		3.0	1.00
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		<p>With respect to Good Manufacturing Practices and Process Safety, HACCP stands for</p> <ul style="list-style-type: none"> (1) Help and Awareness in Critical Care Processes (2) Human Awareness in Commercial Critical Processes (3) Hazard Analysis and Critical Care Point (4) Hazard Analysis and Critical Control Point <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

161	12161	<p>Which of the following ISO standards is designed for Food Safety Management?</p> <ul style="list-style-type: none"> (1) ISO 9000 series (2) ISO 14000 series (3) ISO 18000 series (4) ISO 22000 series <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

162	12162	<p>Which of the following methods is used for rapid and accurate detection of toxic organisms in food?</p> <ul style="list-style-type: none"> (1) Staining (2) ATP estimation (3) PCR (4) MPN counting <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

163	12163		3.0	1.00
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		<p>An investigation of an outbreak of food poisoning following consumption of cultivated mussels showed the presence of a glutamate antagonist known as domoic acid in the body of the affected persons. What is the source of the domoic acid?</p> <p>(1) <i>Escherichia coli</i> contamination</p> <p>(2) <i>Gambierdiscus toxicus</i> contamination</p> <p>(3) <i>Nitzschia pungens</i> contamination</p> <p>(4) <i>Salmonella</i> species contamination</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

164	12164	<p>Which among the following bacteria is the most heat tolerant?</p> <p>(1) <i>Clostridium botulinum</i> type E (2) <i>Bacillus coagulans</i></p> <p>(3) <i>Clostridium pasteurianum</i> (4) <i>Bacillus polymyza</i></p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

165	12165	<p>The recent advancements in computing that has exponentially enhanced computing power for bioinformatics include</p> <p>(1) Logical and High Performance Computing</p> <p>(2) BIT and Graphic Processing Units aided Computing</p> <p>(3) Graphic Processing Units and High Performance Computing</p> <p>(4) High Performance Serial Computing</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

166	12166		3.0	1.00
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The researchers are looking for a possible DNA-binding groove in a protein structure. It is most likely to be a

- (1) Negatively charged region (2) Positively charged region
 (3) Hydrophobic region (4) Unstructured region

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

167	12167	<p>Which one of the following CANNOT be used to determine the atomic structure of proteins?</p> <p>(1) Cryo Electron Microscopy (2) Nuclear Magnetic Resonance Spectroscopy (3) X-ray Crystallography (4) Atomic Absorption Spectroscopy</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

168	12168	<p>Which one of the following represents the structure of silk protein fibroin?</p> <p>(1) Antiparallel β-sheets (2) α-helical filament (3) Mixture of α-helices and β-sheets (4) Parallel β-sheets</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

169	12169	<p>Which one of the following amino acid residue pairs can disrupt α-helices?</p> <p>(1) Glutamine and Proline (2) Lysine and Arginine (3) Glycine and Proline (4) Alanine and Leucine</p>	3.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

170	12170	Organic solvent acetone denatures proteins by (1) Disrupting hydrophobic core (2) Altering net charge of protein (3) Breaking covalent bonds (4) Disrupting inherent symmetry A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

171	12171	The Levinthal paradox is related to (1) Enzyme kinetics (2) Metabolic pathways (3) Protein folding (4) Protein transport A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

172	12172	Which one of the following does NOT assist protein folding? (1) GroEL/GroES (2) DnaJ/DnaK (3) Protein disulfide Isomerase (4) Topoisomerase A1 : 1 A2 : 2 A3 : 3 A4 : 4	3.0	1.00
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Objective Question

173	12173	<p>The amino acid glycine is always present in</p> <p>(1) Type 1 β-turn (2) Type 2 β-turn</p> <p>(3) α-helix (4) Random coil</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

174	12174	<p>In α-helices, hydrogen bonds are formed in the polypeptide backbone between the $-C=O$ group of the first amino acid and the</p> <p>(1) $-NH$ group of the fifth amino acid (2) $-NH$ group of the fourth amino acid</p> <p>(3) $-C=O$ group of the fifth amino acid (4) $-C=O$ group of the fourth amino acid</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

175	12175	<p>The number of base pairs present per helical turn in B-DNA is</p> <p>(1) 12 (2) 14.8</p> <p>(3) 10.5 (4) 16</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

176	12176	<p>Molecular Dynamics does NOT involve calculations of</p> <p>(1) Interatomic charges (2) Force constants for bonded atoms</p> <p>(3) Quantum mechanics (4) Lennard-Jones potential</p> <p>A1 : 1</p> <p>A2 : 2</p>	3.0	1.00
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		A3 : 3		
		A4 : 4		

Objective Question

177	12177	<p>Alphafold is a protein folding algorithm based on</p> <p>(1) <i>ab initio</i> methods (2) statistical linear regression</p> <p>(3) threading (4) machine learning</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

178	12178	<p>For phylogenetic analysis, which of the following is correct?</p> <p>(1) BLAST alignments are necessary for performing phylogenetic analysis</p> <p>(2) The multiple sequence alignments should ideally be trimmed to edit out the non-aligning regions before phylogenetic analysis</p> <p>(3) Phylogenetic analysis is not effective for highly similar protein sequences</p> <p>(4) Phylogenetic analysis can only be done for proteins from organisms within the same phyla</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

179	12179	<p>The following BLAST statistic does NOT change for same pair-wise alignments with different query databases;</p> <p>(1) E-value (2) BIT-score</p> <p>(3) E-value and BIT-score (4) E-value and identity</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

180	12180	<p>Which one of the following statements is correct?</p> <p>(1) T-COFFEE is a multiple sequence alignment tool</p> <p>(2) In a multiple sequence alignment, single columns in the alignments can be insertions</p> <p>(3) Phylogenetic algorithms do not need multiple sequence alignments before drawing phylogeny</p> <p>(4) BLAST is the most accurate multiple sequence alignment algorithm</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

181	12181	<p>Which one of the following is an example of a global alignment algorithm?</p> <p>(1) Smith-Waterman (2) Needleman-Wunsch</p> <p>(3) BLAST (4) PSI-BLAST</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

182	12182	<p>Which one of the following statements is correct?</p> <p>(1) Artificial Intelligence is a type of Machine Learning</p> <p>(2) Machine Learning is a type of Deep Learning</p> <p>(3) Neural Networks are a type of Machine Learning</p> <p>(4) Machine Learning is a type of Artificial Neural Networks</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

183	12183	<p>The researchers are interested in solving the structure of a given protein through X-ray diffraction crystallography. Which one of the following types of proteins is likely to be more difficult to crystallize?</p> <p>(1) Protein with positively charged residues on the surface</p> <p>(2) Protein with hydrophobic patches on the surface</p> <p>(3) Protein with intrinsically disordered regions</p> <p>(4) Protein with no post-translational modifications</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

184	12184	<p>BLAST is popular tool to search for sequences similar to a given sequence (query) against a given database, and it often sorts resulting matches according to the e-value. Which one of the following statements is INCORRECT with respect to this e-value?</p> <p>(1) Its value depends on the length of the query sequence</p> <p>(2) Its value depends on the size of the database</p> <p>(3) It reduces exponentially as the pairwise alignment score increases</p> <p>(4) If the e-value approaches zero, the probability that the alignment occurred by chance is greater</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

185	12185	<p>Johne's disease in ruminants is caused by</p> <p>(1) <i>Mycobacterium bovis</i></p> <p>(2) <i>Mycobacterium tuberculosis</i></p> <p>(3) <i>Mycobacterium avium paratuberculosis</i></p> <p>(4) <i>Mycobacterium orygis</i></p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

186	12186	<p>Prolactin, the hormone that controls milk production is secreted by</p> <p>(1) Anterior pituitary gland (2) Mammary gland</p> <p>(3) Thyroid (4) Ovary</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

187	12187	<p>One health approach to address the challenge of Anti-microbial resistance involves addressing</p> <p>(1) one disease at a time (2) metabolic disorder</p> <p>(3) nosocomial infections (4) zoonotic infections</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

188	12188	<p>Somatic cell cloning involves transfer of</p> <p>(1) nucleus from ovum to somatic cell</p> <p>(2) nucleus from somatic cell to ovum</p> <p>(3) cytoplasm from somatic cell to ovum</p> <p>(4) mitochondria from somatic cell to ovum</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

189	12189		3.0	1.00
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		<p>Sperm production is regulated by which one of the following cells of the seminiferous tubules</p> <p>(1) Basal lamina propria (2) Leydig cells</p> <p>(3) Beta cells (4) Sertoli cells</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>		
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Objective Question

190	12190	<p>Ozone depletion is caused by increase in the level of</p> <p>(1) H₂O Vapors (2) Oxygen (O₂)</p> <p>(3) Chlorofluorocarbon (CFC) (4) Carbon mono-oxide (CO)</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

191	12191	<p>The efficiency of an organic sludge composting method can be improved by various physicochemical options. Which one of the following is NOT a recommended option for the same?</p> <p>(1) Mixing</p> <p>(2) Forcing air through the biomass</p> <p>(3) Shredding the material to enhance the surface area</p> <p>(4) Adding water to the biomass to increase the water activity (a_w) > 1</p> <p>A1 : 1</p> <p>A2 : 2</p> <p>A3 : 3</p> <p>A4 : 4</p>	3.0	1.00
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Objective Question

192	12192		3.0	1.00
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A bacterium useful in bioleaching of low-grade mineral ores is

- (1) *Bacillus megaterium* (2) *Thiobacillus ferrooxidans*
 (3) *Thermus aquaticus* (4) *Rhodopseudomonas capsulatus*

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

193	I2193	<p>Which of the following is NOT a ground water remediation technology?</p> <p>(1) Pump-and-Treat systems (2) Soil Vapour Extraction (3) Permeable Reactive Barriers (4) Sludge Treatment</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

194	I2194	<p>Find the theoretical oxygen demand to completely oxidize 1.67×10^{-3} M glucose solution ($C_6H_{12}O_6$) to CO_2 and H_2O.</p> <p>(1) 321 mg/L O_2 (2) 642 mg/L O_2 (3) 162 mg/L O_2 (4) 321 g/L O_2</p> <p>A1 : 1 A2 : 2 A3 : 3 A4 : 4</p>	3.0	1.00
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Objective Question

195	I2195	<p>What mass of CO_2 would be produced if 100 gm of butane (C_4H_{10}) is completely oxidized to CO_2 and H_2O?</p> <p>(1) 606 gm (2) 303 mg (3) 303 gm (4) 303 kg</p> <p>A1 : 1</p>	3.0	1.00
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		Collagen is a source of		
		(1) Gelatin	(2) Agar	
		(3) Glucosamine	(4) Carbohydrate	
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

200	12200	Which of the following bioactive metabolites can be isolated from sea cucumbers?	3.0	1.00
		(1) Acrydine	(2) Quinone	
		(3) Saponine	(4) Saffranin	
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

NATIONAL TESTING AGENCY
BIOTECHNOLOGY ELIGIBILITY TEST (2024)

EXAM DATE 20.04.2024

SHIFT II

Question ID	Correct Answer	Question ID	Correct Answer	Question ID	Correct Answer
12001	3	12035	4	12069	1
12002	3	12036	1	12070	2,4
12003	3	12037	3	12071	3
12004	3	12038	2	12072	2
12005	2	12039	2	12073	3
12006	1	12040	4	12074	1
12007	4	12041	3	12075	1
12008	4	12042	2	12076	4
12009	3	12043	3	12077	3
12010	1	12044	1	12078	3
12011	2	12045	4	12079	2
12012	3	12046	3	12080	1
12013	1	12047	2	12081	3
12014	1	12048	3	12082	1
12015	4	12049	2	12083	3
12016	1	12050	2	12084	2,3
12017	2	12051	2	12085	1
12018	2	12052	1	12086	1
12019	3	12053	2	12087	2
12020	2	12054	2	12088	1
12021	3	12055	3	12089	1
12022	4	12056	3	12090	2
12023	4	12057	2	12091	2
12024	4	12058	3	12092	3
12025	1	12059	1	12093	1
12026	3	12060	3	12094	1
12027	1	12061	3	12095	4
12028	4	12062	2	12096	4
12029	2	12063	2	12097	2
12030	3	12064	1	12098	3
12031	1	12065	1	12099	4

12032	1	12066	1	12100	4
12033	2	12067	4	12101	2
12034	3	12068	2	12102	1

Question ID	Correct Answer	Question ID	Correct Answer	Question ID	Correct Answer
12103	2	12137	4	12171	3
12104	3	12138	4	12172	4
12105	3	12139	4	12173	2
12106	3	12140	3	12174	1
12107	2	12141	3	12175	3
12108	3	12142	4	12176	3
12109	1	12143	1	12177	4
12110	4	12144	3	12178	2
12111	3	12145	3	12179	2
12112	4	12146	1	12180	1
12113	4	12147	4	12181	2
12114	1	12148	3	12182	3
12115	2	12149	2	12183	3
12116	2	12150	2	12184	4
12117	3	12151	3	12185	3
12118	2	12152	2	12186	1
12119	1	12153	1	12187	4
12120	4	12154	2	12188	2
12121	3	12155	2	12189	4
12122	2	12156	1	12190	3
12123	3	12157	4	12191	4
12124	4	12158	1	12192	2
12125	3	12159	1	12193	4
12126	3	12160	4	12194	1
12127	2	12161	4	12195	3
12128	4	12162	3	12196	3
12129	2	12163	3	12197	4
12130	2	12164	2	12198	3
12131	3	12165	3	12199	1
12132	4	12166	2	12200	3
12133	2	12167	4		
12134	2	12168	1		

12135

3

12169

3

12136

2

12170

1