

Question Paper Name: BIOTECHNOLOGY BIT 30th May 2019 Shift 1 Set1
Subject Name: BIOTECHNOLOGY BIT
Creation Date: 2019-05-30 13:50:42
Duration: 180
Total Marks: 100
Display Marks: Yes
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes

BIOTECHNOLOGY BIT

Group Number : 1
Group Id : 128206188
Group Maximum Duration : 0
Group Minimum Duration : 120
Revisit allowed for view? : No
Revisit allowed for edit? : No
Break time: 0
Group Marks: 100

PART A

Section Id : 128206315
Section Number : 1
Section type : Online
Mandatory or Optional: Mandatory
Number of Questions: 30
Number of Questions to be attempted: 30
Section Marks: 30
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 128206510
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 12820611016 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following is true about the linear velocity of Earth around the sun? (For northern hemisphere).

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- (a) Larger in summer, smaller in winter
- (b) Larger in winter, smaller in summer
- (c) Equal across the whole year
- (d) Equal across the whole year, except in winter and summer solstices

Options :

12820643527. A

12820643528. B

12820643529. C

12820643530. D

Question Number : 2 Question Id : 12820611017 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the following:

Measurements

(A) Lifetime of the proton

(B) Age of the Universe

(C) Time for sound to travel 0.35 m

(D) Time for light to travel 0.3 m

Time intervals (in seconds)

(i) 1×10^{-3}

(ii) 3×10^{40}

(iii) 1×10^{-9}

(iv) 5×10^{17}

(a) (A)-(iii), (B)-(i), (C)-(iv), (D)-(ii)

(b) (A)-(i), (B)-(iii), (C)-(ii), (D)-(iv)

(c) (A)-(ii), (B)-(iv), (C)-(i), (D)-(iii)

(d) (A)-(iv), (B)-(ii), (C)-(iii), (D)-(i)

Options :

12820643531. A

12820643532. B

12820643533. C

12820643534. D

Question Number : 3 Question Id : 12820611018 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A pumpkin (1 kg) and a watermelon (2 kg) are lying on the floor. Considering the position of pumpkin as the origin of a coordinate system, watermelon lies at a point (2.0, 1.0) m. At $t=0$, two forces $\vec{F}_p = (3.0\hat{i} + 4.0\hat{j})$ and $\vec{F}_w = (-4.0\hat{i} - 3.0\hat{j})$ start acting on pumpkin and watermelon respectively. With respect to the position at $t = 0$ s, what is the displacement of the centre of the mass of pumpkin-watermelon system at time $t = 3.0$ s (in unit-vector notation).

- (a) $(1.5 \text{ m})\hat{i} - (1.5 \text{ m})\hat{j}$
- (b) $(-3.0 \text{ m})\hat{i} + (3.0 \text{ m})\hat{j}$
- (c) $(3.0 \text{ m})\hat{i} - (3.0 \text{ m})\hat{j}$
- (d) $(-1.5 \text{ m})\hat{i} + (1.5 \text{ m})\hat{j}$

Options :

- 12820643535. A
- 12820643536. B
- 12820643537. C
- 12820643538. D

Question Number : 4 Question Id : 12820611019 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A magnetic field around the chest (that is generated due to small currents in the heart) of a person is measured to be $4 \mu\text{ Gauss}$. Assuming the entire current is generated due to a long straight wire inside the heart and the surface of the chest to be at a distance of 4 cm from that hypothetical wire, calculate the heart current.

$$[\mu_0 = 4\pi \times 10^{-7} \text{ T.m/A, } 1 \text{ Gauss} = 10^{-4} \text{ T}]$$

- (a) $80 \mu\text{A}$
- (b) $40 \mu\text{A}$
- (c) $125.6 \mu\text{A}$
- (d) $62.8 \mu\text{A}$

Options :

- 12820643539. A
- 12820643540. B
- 12820643541. C
- 12820643542. D

Question Number : 5 Question Id : 12820611020 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Considering the fact that the eardrum membrane has to vibrate with the same frequency as of the incident sound wave, if the highest pitch a human can hear is of $50\text{ }\mu\text{s}$, what will be the corresponding angular frequency of the vibrating eardrum?

- (a) 1.26×10^5 radian/s
- (b) 2.52×10^5 radian/s
- (c) 3.96×10^5 radian/s
- (d) 1.97×10^5 radian/s

Options :

- 12820643543. A
- 12820643544. B
- 12820643545. C
- 12820643546. D

Question Number : 6 Question Id : 12820611021 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A researcher intends to study the structure of a virus using a microscope. Considering the fact that a wave having less energy will cause less damage to the virus under investigation, to study the structure of a virus of size 50 nm , the researcher should use which of the following?

[Mass of electron: $9.11 \times 10^{-31}\text{ kg}$, $h = 6.63 \times 10^{-34}\text{ J.s}$, $hc = 1.24 \times 10^{-6}\text{ eV.m}$]

- (a) Electrons of 5 nm wavelength
- (b) Electrons of 10 nm wavelength
- (c) Electro-magnetic waves of 10 nm wavelength
- (d) Electro-magnetic waves of 5 nm wavelength

Options :

- 12820643547. A
- 12820643548. B
- 12820643549. C
- 12820643550. D

Question Number : 7 Question Id : 12820611022 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The growth of a population of mycobacterium is being observed under ideal laboratory conditions (*i.e.* their population is increasing exponentially). It is found that this population consists of $1,000$ bacteria at the end of 2 hours and $8,000$ bacteria at the end of 5 hours. Calculate the number of bacteria present in the population at the beginning of this experiment.

- (a) 125
- (b) 250
- (c) 500
- (d) 750

Options :

- 12820643551. A
- 12820643552. B
- 12820643553. C
- 12820643554. D

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Question Number : 8 Question Id : 12820611023 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a reliable detection of a cancerous tumor, it should consist of approximately 10^{12} cells. If one cell becomes cancerous on a particular day and the doubling time of the cell is 4 days, after how many days this tumor may be detected?

- (a) 320
- (b) 80
- (c) 160
- (d) 40

Options :

- 12820643555. A
- 12820643556. B
- 12820643557. C
- 12820643558. D

Question Number : 9 Question Id : 12820611024 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Rice is boiled in a pressure cooker. If it gets cooled from 95°C to 85°C in 1 minute time, in how much time will it cool from 73°C to 67°C ? [Consider the room temperature to be 30°C]

- (a) 54 sec
- (b) 42 sec
- (c) 30 sec
- (d) 10 sec

Options :

- 12820643559. A
- 12820643560. B
- 12820643561. C
- 12820643562. D

Question Number : 10 Question Id : 12820611025 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the hydroxyl ion (OH^-) concentration in a dilute aqueous solution is 10^{-6} gm ion / litre, the pH of the solution will be

- (a) 5.0
- (b) 6.0
- (c) 7.0
- (d) 8.0

Options :

- 12820643563. A

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12820643564. B
12820643565. C
12820643566. D

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Question Number : 11 Question Id : 12820611026 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many optical isomers does isoleucine have?

- (a) 2
- (b) 4
- (c) 8
- (d) 16

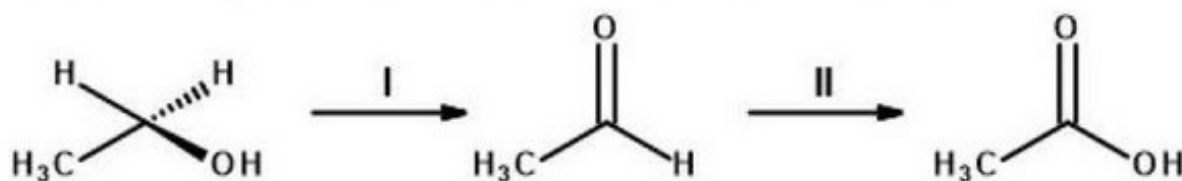
Options :

12820643567. A
12820643568. B
12820643569. C
12820643570. D

Question Number : 12 Question Id : 12820611027 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the following reaction, reaction I is.....and reaction II is.....



- (a) oxidation, reduction
- (b) oxidation, oxidation
- (c) reduction, reduction
- (d) reduction, oxidation

Options :

12820643571. A
12820643572. B
12820643573. C
12820643574. D

Question Number : 13 Question Id : 12820611028 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An aqueous solution of sodium chloride shall boil at

- (a) 99.9 °C
- (b) > 100 °C
- (c) < 100 °C
- (d) 100 °C

Options :

12820643575. A
12820643576. B

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12820643577. C

12820643578. D

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Question Number : 14 Question Id : 12820611029 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statement is true for alcohols

- (a) It is a weak Brønsted base and weak Brønsted acid
- (b) It is a strong Brønsted base but a weak Brønsted acid
- (c) It is a weak Brønsted base but a strong Brønsted acid
- (d) It is a strong Brønsted base and strong Brønsted acid

Options :

12820643579. A

12820643580. B

12820643581. C

12820643582. D

Question Number : 15 Question Id : 12820611030 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When an electron withdrawing group (EWG) is in the para-position of phenol, the phenol becomes more acidic. This is because

- (a) the EWG destabilizes phenoxide through resonance effect
- (b) the EWG stabilizes phenoxide through resonance effect
- (c) the EWG stabilizes phenoxide through inductive effect only
- (d) the EWG stabilizes phenoxide through delocalization and through inductive effect

Options :

12820643583. A

12820643584. B

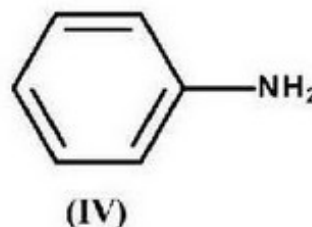
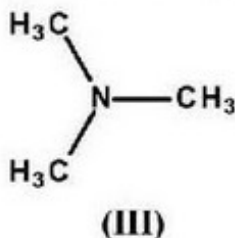
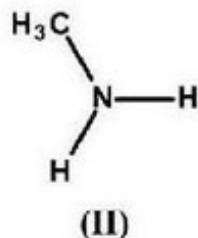
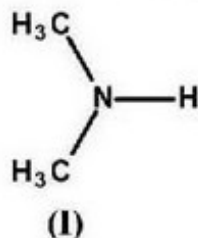
12820643585. C

12820643586. D

Question Number : 16 Question Id : 12820611031 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Arrange the following compounds according to decreasing order of basic strength



- (a) II > I > III > IV
- (b) I > II > III > IV
- (c) III > I > II > IV
- (d) III > II > I > IV

Options :

12820643587. A

12820643588. B

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12820643589. C

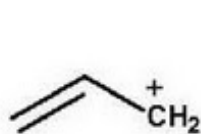
12820643590. D

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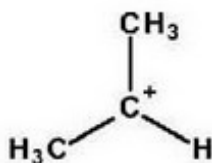
Question Number : 17 Question Id : 12820611032 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

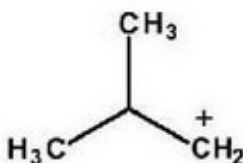
Arrange the following intermediates according to increasing order of stability



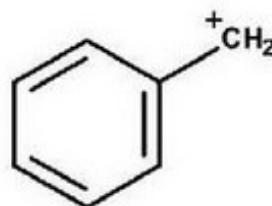
(I)



(II)



(III)



(IV)

- (a) II < III < I < IV
(b) III < I < II < IV
(c) III < II < I < IV
(d) II < I < III < IV

Options :

12820643591. A

12820643592. B

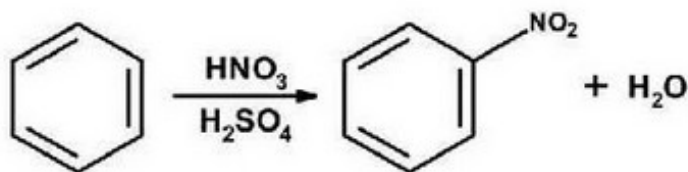
12820643593. C

12820643594. D

Question Number : 18 Question Id : 12820611033 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the following transformation the role of H_2SO_4 is



- (a) To remove water
(b) To generate nitronium ion ($^+\text{NO}_2$)
(c) To oxidise benzene
(d) To protonate benzene

Options :

12820643595. A

12820643596. B

12820643597. C

12820643598. D

Question Number : 19 Question Id : 12820611034 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Walking at $\frac{3}{5}^{th}$ of his usual pace, a man reaches his office 30 minutes late. Find his usual time to reach office.

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- a) 30 minutes
- b) 45 minutes
- c) 60 minutes
- d) 90 minutes

Options :

12820643599. A

12820643600. B

12820643601. C

12820643602. D

Question Number : 20 Question Id : 12820611035 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 25 m long ladder is placed against a vertical wall inside a room such that the foot of the ladder is 7 m from the foot of the wall. If the top of the ladder slides down 4 m downwards, then the foot of the ladder will slide by

- a) 8 m
- b) 3 m
- c) 15 m
- d) 16 m

Options :

12820643603. A

12820643604. B

12820643605. C

12820643606. D

Question Number : 21 Question Id : 12820611036 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a cricket tournament, there were 78 matches played. Every two teams played one match with each other. The number of teams that participated in the tournament were

- a) 13
- b) 15
- c) 17
- d) 19

Options :

12820643607. A

12820643608. B

12820643609. C

12820643610. D

Question Number : 22 Question Id : 12820611037 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Solve the following equation for values of x:

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$$

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- a) $x = -a, -b$.
- b) $x = (a+b), (a-b)$
- c) $x = -(a+b), (a-b)$
- d) $x = a, b$

Options :

- 12820643611. A
- 12820643612. B
- 12820643613. C
- 12820643614. D

Question Number : 23 Question Id : 12820611038 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the area bounded by the curve $y = \cos x$ between $x = -\pi/2$ to $x = 3\pi/2$?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Options :

- 12820643615. A
- 12820643616. B
- 12820643617. C
- 12820643618. D

Question Number : 24 Question Id : 12820611039 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The maximum value of $3\sin x + 4\cos x$ is

- (a) -5
- (b) 5.5
- (c) 3
- (d) 5

Options :

- 12820643619. A
- 12820643620. B
- 12820643621. C
- 12820643622. D

Question Number : 25 Question Id : 12820611040 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Most of the glucose that is filtered through the glomerulus undergoes reabsorption in the

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- (a) Distal tubule
- (b) Collecting duct
- (c) Proximal tubule
- (d) Ascending limb of the loop of Henle

Options :

- 12820643623. A
- 12820643624. B
- 12820643625. C
- 12820643626. D

Question Number : 26 Question Id : 12820611041 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The phylum arthropoda is characterized by the presence of

- (a) chitinous exoskeleton, external segmentation and paired jointed appendages
- (b) chitinous exoskeleton, external segmentation and paired appendages
- (c) chitinous exoskeleton and antennae
- (d) chitinous exoskeleton, antennae and compound eyes

Options :

- 12820643627. A
- 12820643628. B
- 12820643629. C
- 12820643630. D

Question Number : 27 Question Id : 12820611042 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

O₂ is likely to diffuse across the cell membrane more rapidly than Na⁺ because it is:

- (a) Smaller
- (b) Hydrophilic
- (c) Charged
- (d) Nonpolar

Options :

- 12820643631. A
- 12820643632. B
- 12820643633. C
- 12820643634. D

Question Number : 28 Question Id : 12820611043 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a ligand-enzyme interaction study, it was observed that the ligand concentration was 9 times the dissociation constant, K_d . The percentage of the enzyme in the complex form will be

- (a) 10%
- (b) 90%
- (c) 99%
- (d) 100%

Options :

- 12820643635. A
- 12820643636. B
- 12820643637. C
- 12820643638. D

Question Number : 29 Question Id : 12820611044 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The recent Nobel prize in medicine 2018 was awarded to James Allison of the University of Texas, and Tasuku Honjo of Kyoto University, in Japan. The prize was awarded for a new type of cancer treatment which targeted:

- (a) Telomeres
- (b) Receptor kinase
- (c) Immune checkpoint
- (d) Tumor antigen

Options :

- 12820643639. A
- 12820643640. B
- 12820643641. C
- 12820643642. D

Question Number : 30 Question Id : 12820611045 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A bacterial culture growing exponentially increases 10 fold in 10 hours. The doubling time of the bacteria is approximately

- (a) 1 hour
- (b) 2 hours
- (c) 3 hours
- (d) 4 hours

Options :

- 12820643643. A
- 12820643644. B
- 12820643645. C
- 12820643646. D

PART B

Section Id :

Section Number :

128206316

2

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Section type :	Online	
Mandatory or Optional:	Mandatory	https://pathfinderacademy.in/
Number of Questions:	100	
Number of Questions to be attempted:	70	
Section Marks:	70	
Display Number Panel:	Yes	
Group All Questions:	No	

Sub-Section Number:	1
Sub-Section Id:	128206511
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 12820611046 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the function

$$f(x) = x^3 \sin\left(\frac{1}{x}\right), x \neq 0, f(0) = 0.$$

Which one of the following assertions is true?

- (a) f is differentiable at 0.
- (b) f is continuous at 0 but not differentiable at 0.
- (c) f is an one-one function.
- (d) f has finitely many real roots.

Options :

- 12820643647. A
- 12820643648. B
- 12820643649. C
- 12820643650. D

Question Number : 32 Question Id : 12820611047 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a polynomial with x as independent variable, which of the following assertions is always true?

- (a) A polynomial of odd degree has a global maximum or a global minimum.
- (b) A polynomial of even degree has no global maximum or global minimum.
- (c) The graph of a polynomial of even degree always cuts the x -axis.
- (d) The graph of a polynomial of odd degree always cuts the x -axis.

Options :

- 12820643651. A
- 12820643652. B
- 12820643653. C
- 12820643654. D

Question Number : 33 Question Id : 12820611048 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function $y = e^{-5x}$ is a solution of which of the following differential equations?

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- (a) $\frac{d^2y}{dx^2} + \frac{dy}{dx} + 10y = 0$
- (b) $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} - 5y = 0$
- (c) $\frac{d^2y}{dx^2} - \frac{dy}{dx} + 5y = 0$
- (d) $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 5y = 0$

Options :

- 12820643655. A
- 12820643656. B
- 12820643657. C
- 12820643658. D

Question Number : 34 Question Id : 12820611049 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A car owner buys petrol at Rs. 75, 80 and 85 per litre for three successive years. What approximately is the average cost per litre of petrol if he spends Rs. 5000 each year?

- (a) 78.21
- (b) 79.79
- (c) 81.40
- (d) 82.22

Options :

- 12820643659. A
- 12820643660. B
- 12820643661. C
- 12820643662. D

Question Number : 35 Question Id : 12820611050 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the sum of n terms of a sequence is given by the expression

$$S_n = 3n^2 - 4n$$

then what is the n^{th} term of the sequence?

- (a) $3n - 1$
- (b) $2n - 1$
- (c) $6n - 7$
- (d) $6n - 5$

Options :

- 12820643663. A
- 12820643664. B
- 12820643665. C
- 12820643666. D

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Question Number : 36 Question Id : 12820611051 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $a \cos \theta - b \sin \theta = c$, then what is the value of $a \sin \theta + b \cos \theta$?

- (a) $\pm \sqrt{a^2 + b^2 - c^2}$
- (b) $\pm \sqrt{a^2 + b^2 + c^2}$
- (c) $\pm \sqrt{a + b + c}$
- (d) $\pm \sqrt{a + b - c}$

Options :

- 12820643667. A
- 12820643668. B
- 12820643669. C
- 12820643670. D

Question Number : 37 Question Id : 12820611052 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation of the straight line that passes through the point of intersection of the lines $y = 3x - 1$ and $x - 2y + 3 = 0$ and is also parallel to the line $3x - 2y + 7 = 0$ is given by

- (a) $3x - 2y + 2 = 0$.
- (b) $3x - 2y - 1 = 0$.
- (c) $3x - 2y + 3 = 0$.
- (d) $3x - 2y + 1 = 0$.

Options :

- 12820643671. A
- 12820643672. B
- 12820643673. C
- 12820643674. D

Question Number : 38 Question Id : 12820611053 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is necessarily true?

- (a) Every relation is onto.
- (b) Every function is a reflexive relation.
- (c) Only one function is an equivalence relation.
- (d) No function is an equivalence relation.

Options :

- 12820643675. A
- 12820643676. B
- 12820643677. C
- 12820643678. D

Question Number : 39 Question Id : 12820611054 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a DNA pentamer is composed by randomly selecting all the four nucleotides A,T,G and C with equal likelihood, what is the probability of finding the sequence 5'-TATAA-3' by a random chance?

- (a) 0.00097
- (b) 0.10242
- (c) 0.06256
- (d) 0.01563

Options :

12820643679. A

12820643680. B

12820643681. C

12820643682. D

Question Number : 40 Question Id : 12820611055 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the matrix $A = \begin{bmatrix} 4 & 2 & 3 \\ 0 & 2k - 1 & 1 \\ 0 & 0 & k \end{bmatrix}$. For what values of k is the matrix A singular?

- (a) $k = 2, 4$.
- (b) $k = \frac{1}{2}, 0$.
- (c) $k = 0, 1$.
- (d) $k = \frac{1}{2}, \frac{1}{4}$.

Options :

12820643683. A

12820643684. B

12820643685. C

12820643686. D

Question Number : 41 Question Id : 12820611056 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A parachuter of weight 64 kg jumps from a plane at a height of 400 m and is coming downwards with an acceleration of 2 m/s^2 . If the parachute weighs 6 kg, calculate the downward force exerted by the person on the parachute. [$g=10 \text{ m/s}^2$]

- (a) 240 N
- (b) 48 N
- (c) 512 N
- (d) 560 N

Options :

12820643687. A

12820643688. B

12820643689. C

Question Number : 42 Question Id : 12820611057 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two stones of masses m_1 and m_2 are being dropped from a height of 100 meter one after the other. Consider the first stone ($m_1 = m$) is dropped at $t=0$ and the second stone ($m_2 = 2m$) is dropped at $t = 100$ ms. Calculate the location of centre of mass of this combined system consisting of these two stones from the release point after time $t=200$ ms?

- (a) 0.05 meter
- (b) 0.1 meter
- (c) 0.15 meter
- (d) 0.2 meter

Options :

- 12820643691. A
- 12820643692. B
- 12820643693. C
- 12820643694. D

Question Number : 43 Question Id : 12820611058 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider a planet having radius 90% to that of the earth and mass 81% to that of the earth. If a rock weighs 80 N on earth, what would it weigh at the surface of this planet?

- (a) 40 N
- (b) 80 N
- (c) 60 N
- (d) 160 N

Options :

- 12820643695. A
- 12820643696. B
- 12820643697. C
- 12820643698. D

Question Number : 44 Question Id : 12820611059 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two electrons fall from a height of 2 cm in a uniform electric field. First electron (e_1) experiences a field of $1.5 \times 10^4 \text{ NC}^{-1}$ whereas the second electron (e_2) experiences a field of $6 \times 10^4 \text{ NC}^{-1}$. If times taken by these two electrons are t_{e_1} and t_{e_2} respectively, calculate the ratio of these two time durations (t_{e_1}/t_{e_2}). [Assume this is gravitation-less free fall system.]

- (a) $\frac{1}{2}$
- (b) 1
- (c) 2
- (d) $\frac{1}{4}$

Options :

- 12820643699. A
- 12820643700. B
- 12820643701. C
- 12820643702. D

Question Number : 45 Question Id : 12820611060 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a double slit experiment, if the two slits are placed $500 \mu\text{m}$ apart and the screen is kept 500 cm away, calculate the fringe separation when a red light of 640 nm is used?

- (a) $640 \mu\text{m}$
- (b) 0.064 mm
- (c) 0.6 cm
- (d) $6 \times 10^{-6} \text{ m}$

Options :

- 12820643703. A
- 12820643704. B
- 12820643705. C
- 12820643706. D

Question Number : 46 Question Id : 12820611061 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Calculate the minimum limit of resolution that can be achieved using a visible light in optical microscopy? [N.A. of the objective is 1.5]

- (a) 160 nm
- (b) $0.004 \mu\text{m}$
- (c) $160 \mu\text{m}$
- (d) 1.6 cm

Options :

- 12820643707. A
- 12820643708. B
- 12820643709. C
- 12820643710. D

Correct Marks : 1 Wrong Marks : 0

A $10\ \mu\text{F}$ capacitor is connected to a $10\ \text{V}$ battery and charged fully. In another case, a weight of $10\ \text{kg}$ is taken to the height of $200\ \text{m}$. If the energy stored in capacitor is E_1 and the potential energy of the weight is E_2 , then which of the following statement is correct? [$g = 10\ \text{m/s}^2$]

(a) $E_1 = \frac{1}{2} \times 10^2 E_2$

(b) $E_1 = \frac{1}{2} \times 10^8 E_2$

(c) $E_1 = \frac{1}{2} \times 10^{-2} E_2$

(d) $E_1 = \frac{1}{2} \times 10^{-8} E_2$

Options :

12820643711. A

12820643712. B

12820643713. C

12820643714. D

Correct Marks : 1 Wrong Marks : 0

For a resistive thermometer, if the wire shows a resistance of $3\ \Omega$ at ice point and $3.4\ \Omega$ at the steam point then the temperature of an oil bath having resistance of $3.9\ \Omega$ will be given by,

(a) $900\ ^\circ\text{C}$

(b) $400\ ^\circ\text{C}$

(c) $225\ ^\circ\text{C}$

(d) $125\ ^\circ\text{C}$

Options :

12820643715. A

12820643716. B

12820643717. C

12820643718. D

Correct Marks : 1 Wrong Marks : 0

A metal block of mass 2 kg is fastened to a spring on a frictionless surface that has a spring constant 100 Nm^{-1} . If the block is pulled to a distance of 10 cm from the equilibrium position at $x=0$ at $t=0$, calculate the kinetic energy at a distance of 5 cm away from the mean position

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- (a) 0.19 J
- (b) 0.38 J
- (c) 0.095 J
- (d) 0.019 J

Options :

- 12820643719. A
- 12820643720. B
- 12820643721. C
- 12820643722. D

Question Number : 50 Question Id : 12820611065 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A man is standing 420 m apart from his friend. If the first person wants to communicate with the second man and shouts loudly, calculate what will be the time lapse between the speaking of the first man and the listening of the second man at standard temperature. [The mass of 1 mole of air is $29 \times 10^{-3} \text{ Kg}$, if the Laplace correction is not applied]

- (a) 2 s
- (b) 1.5 s
- (c) 3 s
- (d) 1.225 s

Options :

- 12820643723. A
- 12820643724. B
- 12820643725. C
- 12820643726. D

Question Number : 51 Question Id : 12820611066 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Molecular chaperones are proteins employed by nature that assist in the proper folding of proteins to their native state by preventing their misfolding and aggregation predominantly by interacting with the target proteins through

- (a) Ionic interactions
- (b) Hydrogen bonding interactions
- (c) Hydrophilic interactions
- (d) Hydrophobic interactions

Options :

- 12820643727. A
- 12820643728. B

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12820643729. C

12820643730. D

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Question Number : 52 Question Id : 12820611067 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Chromatography is a powerful technique for the separation of biomolecules from their crude mixtures isolated from natural sources. Alkaline phosphatase which has a pI of 5.0 can be best separated from such a mixture of proteins in a pH 7.0 buffer by using

- (a) Anion-exchange chromatography
- (b) Cation-exchange chromatography
- (c) Gel-filtration chromatography
- (d) Reverse phase chromatography

Options :

12820643731. A

12820643732. B

12820643733. C

12820643734. D

Question Number : 53 Question Id : 12820611068 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Denaturation of proteins by 8 M urea does NOT involve

- (a) Breaking of hydrogen bonds
- (b) Breaking of hydrophobic interactions
- (c) Breaking of electrostatic interactions
- (d) Breaking of peptide bonds

Options :

12820643735. A

12820643736. B

12820643737. C

12820643738. D

Question Number : 54 Question Id : 12820611069 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following amino acid has a side chain hydroxyl group?

- (a) Glycine
- (b) Aspartic acid
- (c) Threonine
- (d) Lysine

Options :

12820643739. A

12820643740. B

12820643741. C

12820643742. D

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Question Number : 55 Question Id : 12820611070 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Zea mays, the enzyme which fixes CO_2 into malic acid is

- (a) Ribulose biphosphate carboxylase
- (b) Fructose phosphatase
- (c) Ribulose phosphate kinase
- (d) Phosphoenol pyruvate carboxylase

Options :

12820643743. A

12820643744. B

12820643745. C

12820643746. D

Question Number : 56 Question Id : 12820611071 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following can be observed after shift of an *E. coli* culture from aerobic to anaerobic condition?

- I. Superoxide dismutase gene will be upregulated.
- II. Lactate dehydrogenase gene will be upregulated
- III. ATP to ADP ratio decreases
- IV. Generation time of *E. coli* decreases

The correct combination is

- (a) I and II
- (b) II and III
- (c) III and IV
- (d) I and III

Options :

12820643747. A

12820643748. B

12820643749. C

12820643750. D

Question Number : 57 Question Id : 12820611072 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Statement (S): Photophosphorylation occurs only in thylakoid membranes, but not in the mitochondrial cristae.

Reason (R): In mitochondria ATP synthase is responsible for phosphorylation of ADP.

- (a) (S) and (R) are true. (R) is the right explanation of (S)
- (b) (S) and (R) are true. But (R) is not the correct explanation of (S)
- (c) (S) is true, but (R) is false
- (d) (S) is false, but (R) is true

Options :

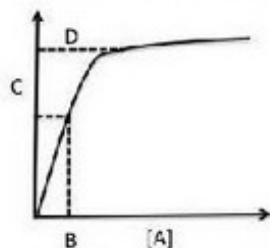
- 12820643751. A
- 12820643752. B
- 12820643753. C
- 12820643754. D

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Question Number : 58 Question Id : 12820611073 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Read the following graph related to the rate of enzymatic reaction



Identify the combination of alphabets with correct labels

- I. 'A' - substrate concentration
- II. 'B' - substrate concentration at half of the maximum velocity
- III. 'C' - substrate concentration at half of the maximum velocity
- IV. 'A' - enzyme velocity

- (a) I and II
- (b) I and III
- (c) II and III
- (d) III and IV

Options :

- 12820643755. A
- 12820643756. B
- 12820643757. C
- 12820643758. D

Question Number : 59 Question Id : 12820611074 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Identify incorrect statement from the following.

- (a) Photophosphorylation takes place in both chloroplast and mitochondria
- (b) Both chloroplast and mitochondria contain DNA
- (c) Chloroplasts are generally much larger than mitochondria
- (d) Both chloroplast and mitochondria contain inner and outer membrane

Options :

- 12820643759. A
- 12820643760. B
- 12820643761. C
- 12820643762. D

Question Number : 60 Question Id : 12820611075 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Which of the following statements is incorrect?

- (a) Membrane fluidity increases with an increase in saturated to unsaturated fatty acid ratio <https://pathfinderacademy.in/>
- (b) Membrane fluidity increases with a decrease in saturated to unsaturated fatty acid ratio
- (c) Membrane fluidity increases with an increase in the number of cis-double bonds in a biological membrane
- (d) Membrane fluidity decreases with an increase in the number of trans double bonds in membrane fatty acids.

Options :

12820643763. A
12820643764. B
12820643765. C
12820643766. D

Question Number : 61 Question Id : 12820611076 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Read the following statements and identify the correct combination.

- I. Kranz anatomy pertains to leaf of C₄ plant
- II. ATP formation during photosynthesis is termed as photophosphorylation
- III. Reduction of NADP⁺ to NADPH occurs during Calvin cycle
- IV. Manganese is associated with photosystem I

- (a) I and II
- (b) I and III
- (c) II and III
- (d) III and IV

Options :

12820643767. A
12820643768. B
12820643769. C
12820643770. D

Question Number : 62 Question Id : 12820611077 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Read the following statements

- I. Cytokinins suppress the synthesis of chlorophyll
- II. Auxins control apical dominance
- III. Gibberellins promote shoot elongation
- IV. Absciscic acid enables seeds to withstand desiccation

Which of the above statements are correct?

- (a) I, II and IV
- (b) I, III and IV
- (c) II, III and IV
- (d) I, II and III

Options :

12820643771. A
12820643772. B
12820643773. C

12820643774. D

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Question Number : 63 Question Id : 12820611078 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which antibiotic inhibits interaction between aminoacyl tRNA and mRNA translation complex during bacterial protein synthesis?

- (a) Erythromycin
- (b) Tetracycline
- (c) Puromycin
- (d) Streptomycin

Options :

12820643775. A

12820643776. B

12820643777. C

12820643778. D

Question Number : 64 Question Id : 12820611079 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Adaptive radiation refers to

- (a) evolution of different species from a common ancestor
- (b) migration of members of a species to different geographical areas
- (c) power of adaptation in an individual to a variety of environments
- (d) adaptations due to geographical isolation

Options :

12820643779. A

12820643780. B

12820643781. C

12820643782. D

Question Number : 65 Question Id : 12820611080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Deficiency of thymus results in increased infections in humans. Such a condition is called

- (a) Thymectomy
- (b) Graves disease
- (c) Di Georges syndrome
- (d) Myasthenia gravis

Options :

12820643783. A

12820643784. B

12820643785. C

12820643786. D

Question Number : 66 Question Id : 12820611081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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The inheritance of shell-coiling direction in the snail is an example of maternal inheritance. A snail produced by a cross between two individuals has a shell with a dextral coiling. This snail produces only sinistral progeny on selfing. What is the genotype of female (mother) in F1 snail and its mother.

- (a) dd and Dd
- (b) DD and dd
- (c) Dd and Dd
- (d) dd and DD

Options :

12820643787. A

12820643788. B

12820643789. C

12820643790. D

Question Number : 67 Question Id : 12820611082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Some of the *E. coli* bacteria that were originally isolated from a contaminated salad were tetracycline resistant. When these tetracycline-resistant bacteria were incubated along with other tetracycline susceptible *E. coli* strains, all of them became tetracycline resistant. Which of the following is responsible for the transfer of resistance?

- (a) Donor cell lysis and the release of DNA from donor bacteria
- (b) Competent *E. coli* cells
- (c) Presence of conjugative plasmids in tetracycline resistant cells
- (d) Recombinase enzymes

Options :

12820643791. A

12820643792. B

12820643793. C

12820643794. D

Question Number : 68 Question Id : 12820611083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is an example of substrate-level phosphorylation?

- (a) The phosphorylation of glucose by glucokinase
- (b) The reduction of NAD^+ by triosphosphate dehydrogenase
- (c) The removal of a phosphate group from glucose 6-phosphate by glucose 6-phosphatase
- (d) The addition of an inorganic phosphate to ADP by pyruvate kinase.

Options :

12820643795. A

12820643796. B

12820643797. C

Question Number : 69 Question Id : 12820611084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The DNA fragment with a sequence to be amplified is shown below. Assuming that the primer attaches exactly to the end of the fragment, which of the following is most likely the primer? (Note: The N stands for any nucleotide.)

5'-ATGNNNN NNN NNNGCT-3'

- (a) 5'-GCT-3'
- (b) 5'-TAC-3'
- (c) 5'-TCG-3'
- (d) 5'-AGC-3'

Options :

- 12820643799. A
- 12820643800. B
- 12820643801. C
- 12820643802. D

Question Number : 70 Question Id : 12820611085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A person was tested for his blood group. Surprisingly the person was found to be positive for the presence of A, B, and H antigen-specific antibodies. Based on the observation, what will be the blood group of the person?

- (a) O
- (b) B
- (c) AB
- (d) Oh

Options :

- 12820643803. A
- 12820643804. B
- 12820643805. C
- 12820643806. D

Question Number : 71 Question Id : 12820611086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The coreceptor for HIV entry into the cell is

- (a) CD8
- (b) CD4
- (c) CXCR4
- (d) CCL5

Options :

- 12820643807. A
- 12820643808. B
- 12820643809. C

Question Number : 72 Question Id : 12820611087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If you block B7.1 and B7.2 on antigen presenting cells

- (a) You will disrupt the formation of antigen-antibody complex.
- (b) You will stimulate T cells to produce pro-inflammatory cytokines.
- (c) T cell will not receive co-stimulatory signals.
- (d) It will lead to Th1 polarization.

Options :

12820643811. A

12820643812. B

12820643813. C

12820643814. D

Question Number : 73 Question Id : 12820611088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two patients from London and Berlin have been in news recently for having cleared the HIV infection achieved through a breakthrough strategy. The strategy employed was

- (a) Highly Active Antiretroviral therapy (HAART) treatment intensification
- (b) Consumption of probiotics with ART
- (c) Alternative medicine
- (d) Bone marrow transplantation from healthy donor with CCR5 mutation.

Options :

12820643815. A

12820643816. B

12820643817. C

12820643818. D

Question Number : 74 Question Id : 12820611089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the turnover rate of 10^{-6} M solution of carbonic anhydrase that catalyses conversion of 0.6M H_2CO_3 per sec.

- (a) 0.6×10^{-5} per sec
- (b) 6×10^5 per sec
- (c) 0.6×10^{-6} per sec
- (d) 6×10^6 per sec

Options :

12820643819. A

12820643820. B

12820643821. C

12820643822. D

Question Number : 75 Question Id : 12820611090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A bacterial strain can grow on agar supplemented with arginine (Arg), tryptophan (Trp) and histidine (His). It fails to grow on agar containing (I) only Arg and Trp or (II) only His and Trp. It will grow if (III) only Arg and His are present. What is the genotype of the bacterium with respect to these three amino acids?

- (a) $Arg^+ His^+ Trp^-$
- (b) $Arg^- His^- Trp^+$
- (c) $Arg^+ His^- Trp^+$
- (d) $Arg^- His^+ Trp^+$

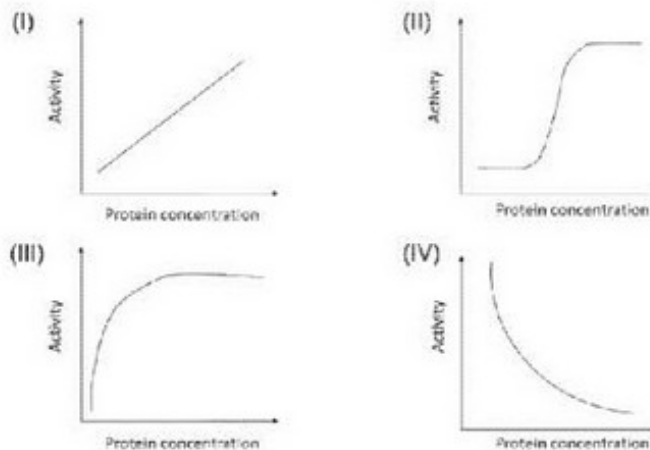
Options :

- 12820643823. A
- 12820643824. B
- 12820643825. C
- 12820643826. D

Question Number : 76 Question Id : 12820611091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following graphs represents the phenomenon of cooperativity in a protein function?



- (a) I
- (b) II
- (c) III
- (d) IV

Options :

- 12820643827. A
- 12820643828. B
- 12820643829. C
- 12820643830. D

Question Number : 77 Question Id : 12820611092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements about a receptor protein signal cascade is **WRONG**?

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- (a) External signals can cause changes in gene expression via receptor protein signal cascade
- (b) Multiple steps are required for the response of the cell resulting from activation of a receptor tyrosine kinase
- (c) A stimulated response can be generated by mutation in more than one protein in the cascade
- (d) Multiple steps allow the same response in all cells from the same ligand

Options :

- 12820643831. A
- 12820643832. B
- 12820643833. C
- 12820643834. D

Question Number : 78 Question Id : 12820611093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Mark the **CORRECT** statement about the integration of F plasmid into *E. coli* chromosome.

- (a) The site where F integrates is unique
- (b) Integration always occurs in clockwise direction
- (c) Integration always occurs in anticlockwise direction
- (d) Both clockwise or anticlockwise direction depending on the orientation of IS elements

Options :

- 12820643835. A
- 12820643836. B
- 12820643837. C
- 12820643838. D

Question Number : 79 Question Id : 12820611094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Molecular target of Colicin E3, a ribonuclease produced by Col plasmid is

- (a) tRNA
- (b) 16S rRNA
- (c) 5S rRNA
- (d) 23S rRNA

Options :

- 12820643839. A
- 12820643840. B
- 12820643841. C
- 12820643842. D

Question Number : 80 Question Id : 12820611095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

E. coli uses alternative sigma factors for transcription besides the standard σ^{70} under special circumstances. Sigma factor σ^{38} also known as RpoS recognizes consensus sequence found in promoters of which of the following genes?

- (a) Genes expressed during stationary phase
- (b) Gene expressed in response to heat shock
- (c) Genes involved in flagellar synthesis
- (d) Gene expressed in response to misfolded proteins in periplasm

Options :

- 12820643843. A
- 12820643844. B
- 12820643845. C
- 12820643846. D

Question Number : 81 Question Id : 12820611096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alternative splicing of an mRNA encoding two different proteins, would likely

- (a) have identical functions.
- (b) have completely different functions.
- (c) have different functions under similar mechanism of regulation.
- (d) have similar functions under different forms of regulation.

Options :

- 12820643847. A
- 12820643848. B
- 12820643849. C
- 12820643850. D

Question Number : 82 Question Id : 12820611097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following enzyme is not involved in the normal pathway for breakdown of amino acids in the liver?

- (a) aminotransferases
- (b) glutamate dehydrogenase
- (c) carbamoyl phosphate synthetase
- (d) α ketoglutarate dehydrogenase

Options :

- 12820643851. A
- 12820643852. B
- 12820643853. C
- 12820643854. D

Question Number : 83 Question Id : 12820611098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thermogenin protein, involved in the production of heat in brown adipose tissue, produces heat by

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- (a) storing excess NADH for the use in electron transport chain
- (b) increasing the membrane potential of the inner mitochondrial membrane
- (c) uncoupling of the electron transport chain from ATP synthase
- (d) enhancing the use of β -oxidation in a fed state.

Options :

- 12820643855. A
- 12820643856. B
- 12820643857. C
- 12820643858. D

Question Number : 84 Question Id : 12820611099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The catabolite activator protein acts on the *lac* promoter through:

- (a) binding of monomer to the promoter and stimulating the interaction of RNA polymerase
- (b) blocking of the binding of the C-terminal domain of RNA polymerase
- (c) binding of the CAP-cAMP complex to the activator site and facilitating interaction of RNA-polymerase to the lac promoter.
- (d) binding of the CAP-cAMP complex to the activator site and blocking the interaction of RNA-polymerase to the lac promoter.

Options :

- 12820643859. A
- 12820643860. B
- 12820643861. C
- 12820643862. D

Question Number : 85 Question Id : 12820611100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Low activity of the acyltransferase enzyme, involved in synthesis of fat and phospholipid, would result in accumulation of the following intermediates

- (a) diacylglycerol phosphate
- (b) triglyceride
- (c) glycerol-3-phosphate
- (d) phosphatidyl serine

Options :

- 12820643863. A
- 12820643864. B
- 12820643865. C
- 12820643866. D

Question Number : 86 Question Id : 12820611101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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During the elucidation of genetic code, when synthetic mRNA of 5' AUAUAUAUAUA.....3' sequence was used, the amino acid components of the polypeptide were isoleucine and tyrosine, while the other synthetic mRNA of 5' AUUAUAUAUAUU....3' resulted in a polypeptide containing isoleucine, leucine and tyrosine. A third synthetic mRNA 5' UAAUAAUAA....3' resulted in a polypeptide that contained asparagine and isoleucine. Based on these data, "UAU" codon will encode for

- (a) isoleucine
- (b) tyrosine
- (c) leucine
- (d) asparagine

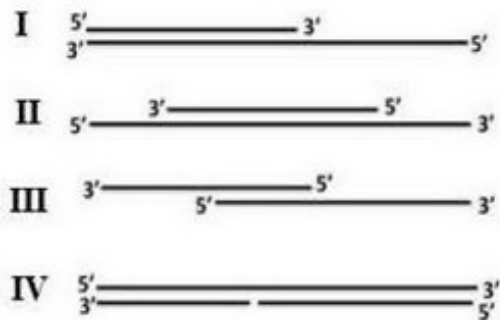
Options :

- 12820643867. A
- 12820643868. B
- 12820643869. C
- 12820643870. D

Question Number : 87 Question Id : 12820611102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following double stranded DNA is NOT a substrate of DNA polymerase I?



- (a) I
- (b) II
- (c) III
- (d) IV

Options :

- 12820643871. A
- 12820643872. B
- 12820643873. C
- 12820643874. D

Question Number : 88 Question Id : 12820611103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT performed by RecA?

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- (a) stimulation of autocleavage of LexA
- (b) recombinational repair of double-strand breaks, using homologous chromosomal DNA to repair the break
- (c) protection of the free single-stranded 5' end generated by RecBCD from exonucleolytic degradation.
- (d) assist error-prone DNA polymerase to synthesize across DNA lesions

Options :

- 12820643875. A
- 12820643876. B
- 12820643877. C
- 12820643878. D

Question Number : 89 Question Id : 12820611104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mutation resulting in inactivation of the Shine-Dalgarno sequence in the *trp* leader would affect the expression of the *trp* operon in the following way.

- (a) in the presence of high level of tryptophan, expression would increase
- (b) in the presence of low level of tryptophan, expression would increase
- (c) expression becomes independent of mutation in Shine-Dalgarno sequence
- (d) in the presence of low level of tryptophan, expression would decrease

Options :

- 12820643879. A
- 12820643880. B
- 12820643881. C
- 12820643882. D

Question Number : 90 Question Id : 12820611105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the methyl donor in the reaction leading from dUMP to dTMP?

- (a) N5-N10-Methylenetetrahydrofolate
- (b) S-adenosylmethionine
- (c) N10-formyl tetrahydrofolate
- (d) N5-methylformamide

Options :

- 12820643883. A
- 12820643884. B
- 12820643885. C
- 12820643886. D

Question Number : 91 Question Id : 12820611106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Which of the following elements are required for the synthesis of chlorophyll in plants?

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- (a) Calcium and Potassium
- (b) Sodium and Copper
- (c) Magnesium and Iron
- (d) Manganese and Calcium

Options :

- 12820643887. A
- 12820643888. B
- 12820643889. C
- 12820643890. D

Question Number : 92 Question Id : 12820611107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the correct sequence of events in a plant transformation experiment?

- (a) Explants, Callusing, Shoot formation, Agrobacterium infection, Callus formation, Plantlets
- (b) Cocultivation, Callus formation, Shoot development, Preculture, Plantlets
- (c) Preculture, Shoot development, Cocultivation, Callus formation, Plantlets
- (d) Preculture, Cocultivation, Callus formation, Shoot development, Plantlets

Options :

- 12820643891. A
- 12820643892. B
- 12820643893. C
- 12820643894. D

Question Number : 93 Question Id : 12820611108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following Vir proteins facilitate transfer of T-DNA from Agrobacterium to plant cell?

- (a) Vir A & Vir G
- (b) Vir G & Vir D2
- (c) Vir D2 and Vir E2
- (d) Vir G and Vir E2

Options :

- 12820643895. A
- 12820643896. B
- 12820643897. C
- 12820643898. D

Question Number : 94 Question Id : 12820611109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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a , b and c are recessive to their respective wild type alleles A , B and C . If individuals heterozygous at all 3 loci are crossed among themselves, the proportion of progeny showing all three wild type characters will be

- (a) $1/16$
- (b) $1/64$
- (c) $9/16$
- (d) $27/64$

Options :

- 12820643899. A
- 12820643900. B
- 12820643901. C
- 12820643902. D

Question Number : 95 Question Id : 12820611110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a certain genetic condition, two different versions of a gene are expressed, leading to the synthesis of two slightly different proteins. In such a situation, both the variants (alleles) determine the outcome of phenotypic presentation. Such an inheritance pattern is called

- (a) autosomal dominant
- (b) co-dominant
- (c) X-linked recessive
- (d) mitochondrial inheritance

Options :

- 12820643903. A
- 12820643904. B
- 12820643905. C
- 12820643906. D

Question Number : 96 Question Id : 12820611111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a particular plant, the monoploid number of chromosomes is $\frac{1}{4}$ of the total number in gametes. This plant is

- (a) Tetraploid
- (b) Octoploid
- (c) Hexaploid
- (d) Decaploid

Options :

- 12820643907. A
- 12820643908. B
- 12820643909. C
- 12820643910. D

Question Number : 97 Question Id : 12820611112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The “one gene – one enzyme” hypothesis was proposed on the basis of work with

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- (a) *Neurospora crassa*
- (b) *Drosophila melanogaster*
- (c) *Escherichia coli*
- (d) Bacteriophage T4

Options :

- 12820643911. A
- 12820643912. B
- 12820643913. C
- 12820643914. D

Question Number : 98 Question Id : 12820611113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The genotype of an individual showing a dominant phenotype is determined by crossing it with a recessive individual. Such a cross is called

- (a) back cross
- (b) test cross
- (c) reciprocal cross
- (d) out cross

Options :

- 12820643915. A
- 12820643916. B
- 12820643917. C
- 12820643918. D

Question Number : 99 Question Id : 12820611114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Larval stages very different from the adult stage are NOT found in development of

- (a) insects
- (b) reptiles
- (c) molluscs
- (d) echinoderms

Options :

- 12820643919. A
- 12820643920. B
- 12820643921. C
- 12820643922. D

Question Number : 100 Question Id : 12820611115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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A harmless, palatable species of butterfly has evolved the coloration/pattern of a different species of toxic/unpalatable/noxious butterfly. This is known as

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- (a) Cryptic coloration
- (b) Aposematic coloration
- (c) Batesian mimicry
- (d) Mullerian mimicry

Options :

- 12820643923. A
- 12820643924. B
- 12820643925. C
- 12820643926. D

Question Number : 101 Question Id : 12820611116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Insulin and thyroxine arrive at an organ at the same time. Thyroxine elicits a response in the organ but insulin does not. Why?

- (a) Thyroxine is a lipid-soluble hormone and insulin is not
- (b) Thyroxine is a local hormone and insulin is a circulating hormone
- (c) Thyroxine inhibits the action of insulin
- (d) The organ's cells have receptors for thyroxine but not for insulin

Options :

- 12820643927. A
- 12820643928. B
- 12820643929. C
- 12820643930. D

Question Number : 102 Question Id : 12820611117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In an angiospermic plant, with diploid chromosome number 20, the number of chromosomes in endosperm cells would be:

- (a) 10
- (b) 20
- (c) 30
- (d) 40

Options :

- 12820643931. A
- 12820643932. B
- 12820643933. C
- 12820643934. D

Question Number : 103 Question Id : 12820611118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Which of the following receptors are formed by somatic recombination of gene

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- I. Toll like receptor
- II. T-cell receptor
- III. B-cell receptor
- IV. Mannose receptors

Answer options

- (a) I and II
- (b) II and III
- (c) II and IV
- (d) I and III

Options :

- 12820643935. A
- 12820643936. B
- 12820643937. C
- 12820643938. D

Question Number : 104 Question Id : 12820611119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The lampbrush chromosomes of amphibian oocytes differ from the polytene chromosomes of *Drosophila* salivary glands in that the former are _____ while the latter are _____.

- (a) condensed, relaxed
- (b) banded, unbanded
- (c) multiple copies, single pair
- (d) transcriptionally active, transcriptionally inactive

Options :

- 12820643939. A
- 12820643940. B
- 12820643941. C
- 12820643942. D

Question Number : 105 Question Id : 12820611120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is CORRECT for protandry?

- (a) Individuals start as female and later become male
- (b) It produces eggs at one time and sperm at a different time, rather than both together
- (c) Individuals start as male and later become female
- (d) They exhibit hermaphroditism in early life but not in adults.

Options :

- 12820643943. A
- 12820643944. B
- 12820643945. C
- 12820643946. D

Question Number : 106 Question Id : 12820611121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 1 Wrong Marks : 0

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Find out the WRONGLY matched pair

- (a) Ciliated epithelium – bronchioles
- (b) Stratified cuboidal – oesophagus epithelium
- (c) Columnar epithelium – peritoneum of body cavity
- (d) Squamous epithelium – skin of frog

Options :

12820643947. A

12820643948. B

12820643949. C

12820643950. D

Question Number : 107 Question Id : 12820611122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the items in column I with column II and choose the correct option from the codes given below:

	Column I	Column II
A.	Neuron	i. Antibodies
B.	Bone matrix	ii. Nissl bodies
C.	RBC of man	iii. Ossein
D.	Lymphocytes	iv. Non-nucleated

	A	B	C	D
(a)	IV	I	II	III
(b)	III	II	I	IV
(c)	II	III	IV	I
(d)	I	III	IV	II

Options :

12820643951. A

12820643952. B

12820643953. C

12820643954. D

Question Number : 108 Question Id : 12820611123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the effect of GnRH produced by hypothalamus?

- (a) stimulates the synthesis and secretion of androgens
- (b) stimulates secretion of milk in mammary glands
- (c) stimulates foetal ejection reflex
- (d) stimulates synthesis of carbohydrates from non-carbohydrates in liver

Options :

12820643955. A

12820643956. B

12820643957. C

12820643958. D

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Correct Marks : 1 Wrong Marks : 0

During excitement or fear, which of the following hormones signals the increase of blood glucose levels:

- (a) Insulin
- (b) Glucagon
- (c) Epinephrine
- (d) Thyroid stimulating hormone

Options :

12820643959. A

12820643960. B

12820643961. C

12820643962. D

Question Number : 110 Question Id : 12820611125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What will be the effect on endocytic vesicle formation from the plasma membrane if dynamin protein is inactive?

- (a) Endocytic vesicles will not form at all
- (b) There will be no detachment of endocytic vesicles from the plasma membrane
- (c) There will be no effect on endocytic vesicles
- (d) Endocytic vesicles will not attach to clathrin coat

Options :

12820643963. A

12820643964. B

12820643965. C

12820643966. D

Question Number : 111 Question Id : 12820611126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The viscosity of a dilute aqueous solution of a polymer was determined to be 1.8 cp at 25 °C using an Ostwald's viscometer. If the time required for the flow of water from designated one point to another in the viscometer was 100 seconds, the time required for the flow of the aqueous polymer solution between the same points would be :

(Viscosity of water at 25°C = 0.9 cp and the density of aqueous polymer solution = 1.1 g cm⁻³)

- (a) 150 seconds
- (b) 180 seconds
- (c) 200 seconds
- (d) 220 seconds

Options :

12820643967. A

12820643968. B

12820643969. C

Question Number : 112 Question Id : 12820611127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

ϕ , Ψ and ω are known as dihedral angles that define the conformation of polypeptides.
The dihedral angle ϕ represents rotation around

- (a) N-C $^{\alpha}$ bond
- (b) C $^{\alpha}$ -C' bond
- (c) C'-N bond
- (d) C-H bond

Options :

12820643971. A

12820643972. B

12820643973. C

12820643974. D

Question Number : 113 Question Id : 12820611128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

One mg of the following peptide was dissolved in 10 ml of de-ionized water and its spectrum was taken in a UV-Visible spectrophotometer using a quartz cuvette of 1 cm path length.

Gly-Ala-Val-Ser-Gly-Ala

The peptide would show absorption maximum at

- (a) 220 nm
- (b) 260 nm
- (c) 280 nm
- (d) 595 nm

Options :

12820643975. A

12820643976. B

12820643977. C

12820643978. D

Question Number : 114 Question Id : 12820611129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a centrifugation experiment, the rotor speed was set at 42,000 rpm. The angular velocity of the rotor in radians/sec when it reaches maximum speed would be

- (a) 4200
- (b) 4400
- (c) 2,64,000
- (d) 100,000

Options :

12820643979. A

12820643980. B

12820643981. C

12820643982. D

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Question Number : 115 Question Id : 12820611130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Identify the molecule(s) in which sp hybridized atoms are not present

(I) CH_3CN (II) C_2H_2 (III) $^+\text{NO}_2$ (IV) C_6H_6

- (a) I only
- (b) IV only
- (c) III and IV
- (d) I, III and IV

Options :

12820643983. A

12820643984. B

12820643985. C

12820643986. D

Question Number : 116 Question Id : 12820611131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In an aroma factory, one operator who was assigned to purify eucalyptus oil (obtained from the plant leaf and barks), accidentally mixed eucalyptus oil with aniline (obtained from another process). He should now separate the oil from aniline. Which of the following would be the most efficient process?

- (a) Double distillation
- (b) Chromatography
- (c) Steam distillation
- (d) Azeotropic distillation

Options :

12820643987. A

12820643988. B

12820643989. C

12820643990. D

Question Number : 117 Question Id : 12820611132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A carboxamide can be converted to an amine with same number of carbon atoms by

- (a) Sodium borohydride (NaBH_4)
- (b) Lithium aluminum hydride (LiAlH_4)
- (c) Br_2 and NaOH
- (d) Sodium cyanoborohydride (NaBH_3CN)

Options :

12820643991. A

12820643992. B

12820643993. C

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Question Number : 118 Question Id : 12820611133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Toluene was treated with hot KMnO_4 to give compound A. This was then treated with thionyl chloride to give compound B. This compound turns moist blue litmus paper to pink. Compound B on treatment with hydrogen in the presence of Pd/BaSO_4 gave compound C. Compound A, B and C are respectively

- (a) Benzoic acid, benzyl chloride, benzaldehyde
- (b) Benzoic acid, benzoyl chloride, benzyl alcohol
- (c) Benzoic acid, benzyl chloride, benzyl alcohol
- (d) Benzoic acid, benzoyl chloride, benzaldehyde

Options :

12820643995. A

12820643996. B

12820643997. C

12820643998. D

Question Number : 119 Question Id : 12820611134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following spectroscopic techniques cannot be used to differentiate the isomers of hydroxy benzoic acid

- (a) Nuclear magnetic resonance
- (b) Ultra-violet spectroscopy
- (c) Infra-red spectroscopy
- (d) Mass spectroscopy

Options :

12820643999. A

12820644000. B

12820644001. C

12820644002. D

Question Number : 120 Question Id : 12820611135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statement is true for tartaric acid?

- (a) It has two stereogenic centers, three stereoisomers all of them optically active
- (b) It has two stereogenic centers and three stereoisomers, one of them optically inactive
- (c) It has two stereogenic centers and four stereoisomers, all of them optically active
- (d) It has two stereogenic centers and four stereoisomers, one of them optically inactive

Options :

12820644003. A

12820644004. B

12820644005. C

12820644006. D

Correct Marks : 1 Wrong Marks : 0

For a chemical reaction, it was observed that every 10 °C rise in temperature doubles the rate of the reaction. If the temperature is raised by 40 °C how much will be the increase?

- (a) 40 times
- (b) 20 times
- (c) 4 times
- (d) 16 times

Options :

12820644007. A

12820644008. B

12820644009. C

12820644010. D

Question Number : 122 Question Id : 12820611137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the reaction $A + 2B \rightarrow 2C$ which of the following statement is false?

- (a) Order of the reaction changes with temperature
- (b) Molecularity of the reaction changes with temperature or concentration
- (c) Order of the reaction changes with temperature
- (d) Order of the reaction can be experimentally determined

Options :

12820644011. A

12820644012. B

12820644013. C

12820644014. D

Question Number : 123 Question Id : 12820611138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In which of the following case does the entropy decrease?

- (a) Polymerization
- (b) Melting of ice
- (c) Boiling of water
- (d) Dissolution of sodium chloride in water

Options :

12820644015. A

12820644016. B

12820644017. C

12820644018. D

Question Number : 124 Question Id : 12820611139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In ethanol fermentation, one glucose molecule is converted into

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- (a) 3 ethanol molecules
- (b) 2 ethanol and 2 CO₂ molecules
- (c) 2 ethanol and 2 CO molecule
- (d) 1 ethanol and 4 CO₂ molecule

Options :

- 12820644019. A
- 12820644020. B
- 12820644021. C
- 12820644022. D

Question Number : 125 Question Id : 12820611140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the citric acid cycle (I) conversion of citrate to cis-aconitate and (II) conversion of fumarate to malate are respectively

- (a) (I) and (II) hydration reactions
- (b) (I) and (II) dehydration reactions
- (c) (I) hydration (II) dehydration reactions
- (d) (I) dehydration (II) hydration reactions

Options :

- 12820644023. A
- 12820644024. B
- 12820644025. C
- 12820644026. D

Question Number : 126 Question Id : 12820611141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the Friedel-Crafts alkylation reaction, it is generally observed that rearrangement (shift of hydride or alkyl group) is a side reaction. To prepare alkyl substituted aromatic compounds using Friedel-Crafts alkylation reaction, it is a better practice to avoid the rearrangement

- (a) Use acylation and then carryout reduction of carbonyl group
- (b) Run the reaction at lower temperature
- (c) Run the reaction at lower concentration of alkyl halide
- (d) Run the reaction with lower concentration of Lewis acid

Options :

- 12820644027. A
- 12820644028. B
- 12820644029. C
- 12820644030. D

Question Number : 127 Question Id : 12820611142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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In the Grignard reaction, which of the following statement is true for R-MgX?

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- (a) It is easily soluble in benzene
- (b) The alkyl carbon is electrophilic
- (c) It is a non-polar covalent compound
- (d) The alkyl carbon is nucleophilic

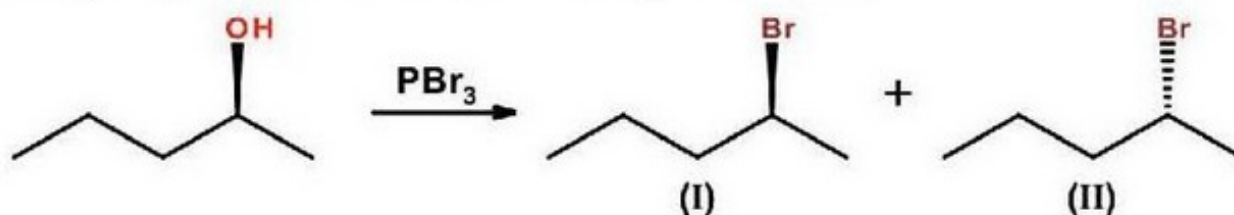
Options :

- 12820644031. A
- 12820644032. B
- 12820644033. C
- 12820644034. D

Question Number : 128 Question Id : 12820611143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Identify the products formed in the following transformation



- (a) I only
- (b) I and II
- (c) II only
- (d) Insufficient data to predict

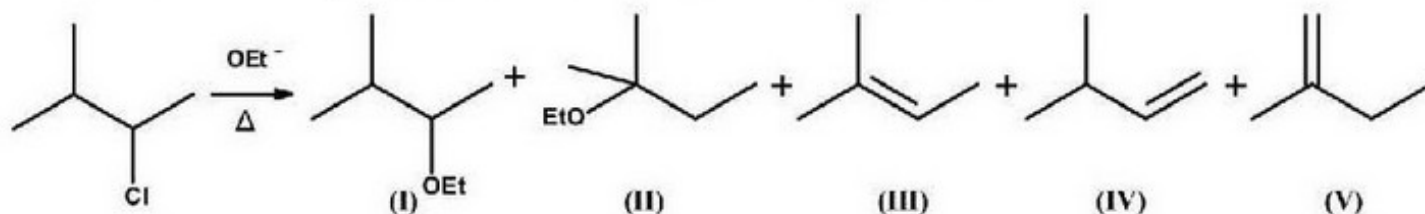
Options :

- 12820644035. A
- 12820644036. B
- 12820644037. C
- 12820644038. D

Question Number : 129 Question Id : 12820611144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the following transformation which products are formed



- (a) I to V
- (b) I and II only
- (c) III, IV and V only
- (d) I, III and IV only

Options :

- 12820644039. A
- 12820644040. B

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12820644041. C

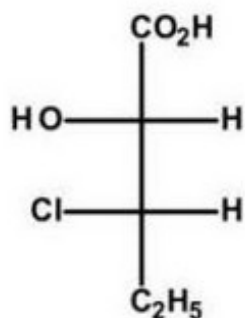
12820644042. D

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Question Number : 130 Question Id : 12820611145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Identify the absolute configuration of the following compound



(a) 2S, 3S

(b) 2R, 3R

(c) 2S, 3R

(d) 2R, 3S

Options :

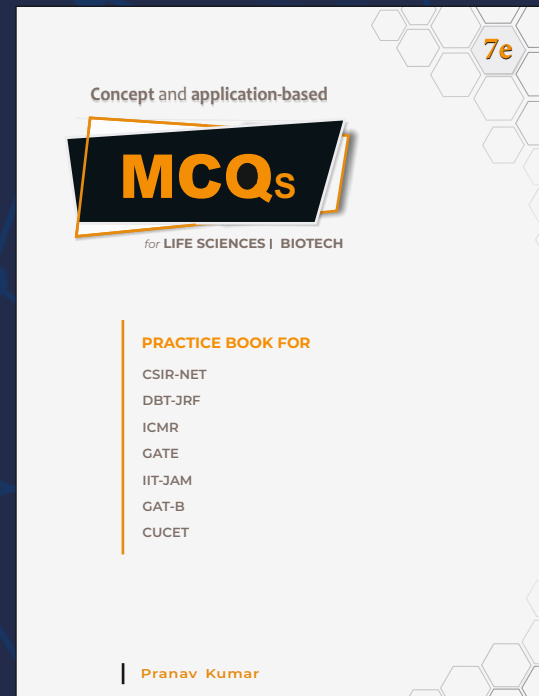
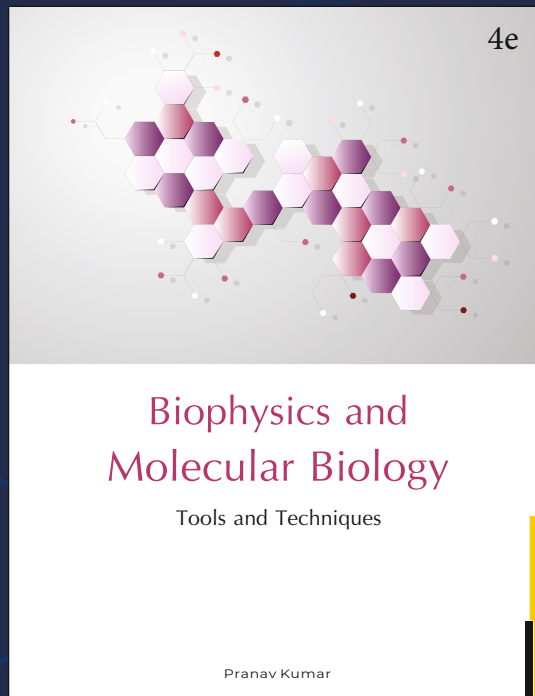
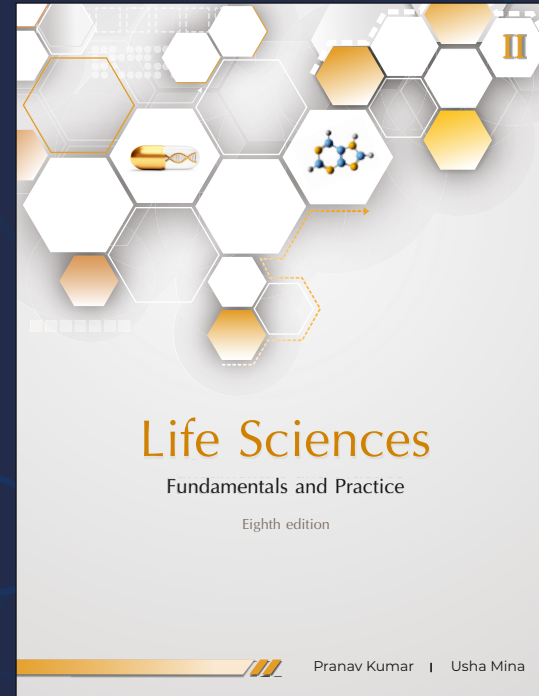
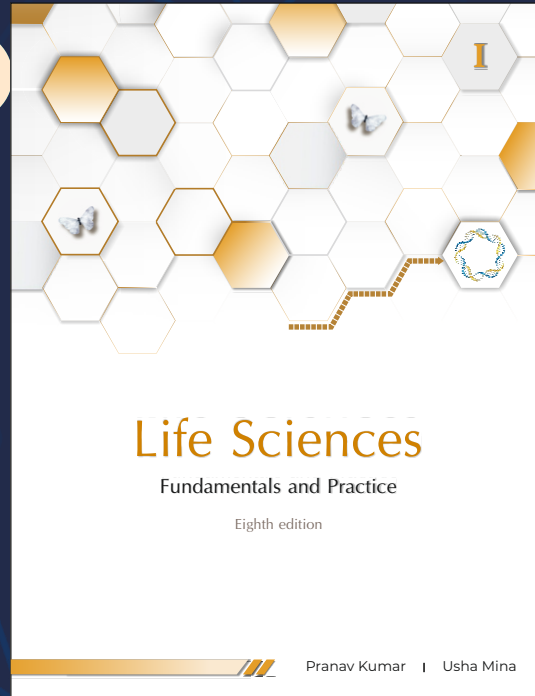
12820644043. A

12820644044. B

12820644045. C

12820644046. D

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