Save & Print

Roll No:
Application No:
Name:
Exam Date: **08-Oct-2020**
Exam Time: **09:00-12:00**
Examination: **1. Course Code - M.A./M.Sc./M.C.A.**
2. Field of Study - ENVIRONMENTAL SCIENCE (SESM)

Registered Photo

Exam Day Photo

SECTION 1 - SECTION 1

Question No.1 (Question Id - 94)
A vessel contains two non-reactive gasses : neon (mono atomic) and oxygen (diatomic). The ratio of their partial pressures is 3 : 2. Then the ratio of their number of molecules is : (Atomic mass of Ne = 20.2 u and molecular mass of O_2 = 32.0 u)

(A) ◯ **3/2 (Correct Answer)**
(B) ◯ 101/160
(C) ◯ 303/320
(D) ◯ 1

Question No.2 (Question Id - 86)
Given below are two statements :

Statement I :

Glucagon is a peptide hormone and plays an important role in maintaining the normal blood glucose level.

Statement II :

Glucagon stimulates glycogenolysis resulting in hyperglycemia.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ◯ **Both Statement I and Statement II are true. (Correct Answer)**
(B) ◯ Both **Statement I** and **Statement II** are false.
(C) ◯ **Statement I** is correct, but **Statement II** is false.
(D) ◯ **Statement I** is incorrect, but **Statement II** is true.

Question No.3 (Question Id - 39)
Given below are two statements :

Statement I :

Haloarenes are less reactive towards nucleophilic substitution reactions compared to haloalkanes.

Statement II :

Carbon atom holding halogen atom is sp^2 hybridized in haloarenes and sp^3 hybridized in haloalkanes.

In the light of the above statements, choose the most appropriate answer from the options given below :

(A) ◯ **Both Statement I and Statement II are correct. (Correct Answer)**
(B) ◯ Both **Statement I** and **Statement II** are incorrect.
(C) ◯ **Statement I** is correct, but **Statement II** is incorrect.
(D) ◯ **Statement I** is incorrect, but **Statement II** is correct.

Question No.4 (Question Id - 24)
Agar, used in synthetic growth media for microbes, is a product of which one of the following ?

(A) ◯ Moss
(B) ◯ Fungi
(C) ◯ **Algae (Correct Answer)**
(D) ◯ Bacteria

Question No.5 (Question Id - 66)
As a macro element, sulphur is a component of which of the following proteins ?

A. Methionine

B. Vitamin B1

C. Lipoic acid

D. Coenzyme A

E. Carboxylase

Choose the **correct** answer from the options given below :

(A) ○ A and C Only
(B) ○ **A, B, C, D Only (Correct Answer)**
(C) ○ B, C, D, E Only
(D) ○ C and E Only

Question No.6 (Question Id - 35)
Which of the following is the most energetically and thermodynamically stable form of carbon (under saturated condition) ?

(A) ○ Carbon - 60
(B) ○ **Graphite (Correct Answer)**
(C) ○ Diamond
(D) ○ Carbon alloy

Question No.7 (Question Id - 15)
“Atoms are neither created nor destroyed in a chemical reaction” is a statement of the :

(A) ○ law of definite proportions
(B) ○ **law of conservation of mass (Correct Answer)**
(C) ○ law of percent composition
(D) ○ atomic theory

Question No.8 (Question Id - 23)
The pairs of spermathecae are located in which segment of earthworm ?

(A) ○ **6^{th} to 9^{th} segments (Correct Answer)**
(B) ○ 2^{nd} to 5^{th} segments
(C) ○ 15^{th} to 18^{th} segments
(D) ○ 10^{th} to 13^{th} segments

Question No.9 (Question Id - 38)
Which of the sequence of speed of molecules (as per Maxwell Boltzmann distribution at same temperature) is **correct** ?

A. U_{rms}

B. U_{av}

C. U_{mp}

Choose the **correct** answer from the options given below :

(A) ○ C > A > B
(B) ○ C > B > A
(C) ○ **A > B > C (Correct Answer)**
(D) ○ A > C > B

Question No.10 (Question Id - 14)
Which of the following is **not** a postulate of Bohr’s model for hydrogen atom ?

(A) ○ Electron moves around the nucleus in circular path of fixed radius and energy

(B) ○ Angular momentum of an electron is quantized
(C) ○ Energy of an electron in the orbit does not change
(D) ○ **Matter has dual behavior (Correct Answer)**

Question No.11 (Question Id - 89)
The below question has been dropped and full marks are awarded.

A block of mass 1 kg slides down on an inclined plane forming an angle 45° with the horizontal. If the coefficient of friction between the block and the inclined plane is 0.4, then the acceleration of the block when it starts to slide is :
(take $g = 10\ m/s^2$ and $\sqrt{2} = 1.414$)

(A) ○ 0.21 m/s^2
(B) ○ 2.1 m/s^2
(C) ○ 0.49 m/s^2
(D) ○ 4.9 m/s^2

Question No.12 (Question Id - 71)
Which of the following plants will grow best in nitrogen deficient soils ?

(A) ○ Lichens
(B) ○ Bryophytes
(C) ○ **Pitcher plants (Correct Answer)**
(D) ○ Polytrichum

Question No.13 (Question Id - 63)
For a positively skewed distribution, which of the following represents the correct sequence among mean, median and mode ?

(A) ○ Mode > Median > Mean
(B) ○ Mode > Mean > Median
(C) ○ **Mean > Median > Mode (Correct Answer)**
(D) ○ Mean > Mode > Median

Question No.14 (Question Id - 19)
Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A :

Lysosomes function in degrading damaged cellular components.

Reason R :

Lysosomes help in the exocytosis of damaged components.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ Both **A** and **R** are correct and **R** is the correct explanation of **A**.
(B) ○ Both **A** and **R** are correct, but **R** is not the correct explanation of **A**.
(C) ○ **A is correct, but R is not correct. (Correct Answer)**
(D) ○ **A** is not correct, but **R** is correct.

Question No.15 (Question Id - 36)
Arrange the following carbocations in decreasing order of stability :

A. $CH_3 - {}^+CH_2$

B. ${}^+CH_3$

C. $(CH_3)_2 - {}^+CH$

D. $(CH_3)_3 - C^+$

Choose the **correct** answer from the options given below :

(A) ○ D > A > C > B
(B) ○ B > A > C > D
(C) ○ B > C > A > D
(D) ○ **D > C > A > B (Correct Answer)**

Question No.16 (Question Id - 56)
Consider the equation $x^3 - 9x^2 + 23x - 15 = 0$.

What would be the roots of the above equation if they are in arithmetic progression ?

(A) ○ 1, 2 and 3
(B) ○ 2, 4 and 6
(C) ○ **1, 3 and 5 (Correct Answer)**
(D) ○ 3, 5 and 7

Question No.17 (Question Id - 50)

Match **List - I** with **List - II** :

List - I	List - II
(Event)	**(Time Period)**
A. Hercynian orogeny	I. Pleistocene
B. Earliest vertebrates	II. Devonian
C. Vascular plants diversification	III. Cambrian
D. Recent glaciation	IV. Permian

Choose the **correct** answer from the options given below :

(A) ○ A - I, B - II, C - III, D - IV
(B) ○ A - II, B - III, C - IV, D - I
(C) ○ A - III, B - IV, C - I, D - II
(D) ○ **A - IV, B - III, C - II, D - I (Correct Answer)**

Question No.18 (Question Id - 91)

A particle of mass 1.0 kg, at a position $\hat{i}+\hat{j}+\hat{k}$ is accelerating under the influence of a force of $2\hat{k}$. The torque acting on the particle about the origin is :

(A) ○ $2\hat{i}-2\hat{j}$ **(Correct Answer)**
(B) ○ $2\hat{i}+2\hat{j}$
(C) ○ $2\hat{i}+2\hat{j}-2\hat{k}$
(D) ○ $2\hat{i}-2\hat{j}+2\hat{k}$

Question No.19 (Question Id - 22)

Which one of the following animals are diploblastic ?

(A) ○ Tapeworm
(B) ○ Locust
(C) ○ Star fish
(D) ○ **Sea Anemone (Correct Answer)**

Question No.20 (Question Id - 43)

What will be the final product of feldspar weathering ?

(A) ○ Illite
(B) ○ Kaolinite
(C) ○ **Gibbsite (Correct Answer)**
(D) ○ Goethite

Question No.21 (Question Id - 5)

If $\vec{a}$, $\vec{b}$ and $\vec{c}$ represent three vectors, then consider the following statements :

A. $\vec{a}.\vec{b}=\vec{b}.\vec{a}$

B. $\vec{a}.(\vec{b}+\vec{c})=\vec{a}.\vec{b}+\vec{a}.\vec{c}$

C. $\vec{a}\times\vec{b}=\vec{b}\times\vec{a}$

D. If $\vec{a}$ and $\vec{b}$ are parallel, then $\vec{a}\times\vec{b}=1$

Choose the **correct** answer from the options given below :

(A) ○ **A and B Only (Correct Answer)**
(B) ○ B and C Only
(C) ○ C and D Only
(D) ○ A and D Only

Question No.22 (Question Id - 27)

The boundary between the troposphere and the stratosphere is known as :

(A) ○ **Tropopause (Correct Answer)**
(B) ○ Thermopause
(C) ○ Thermocline

(D) ○ Stratopause

Question No.23 (Question Id - 2)

If $y=\sin^{-1}\frac{2x}{1+x^2}$ and $z=\tan^{-1}\frac{2x}{1-x^2}$, then $\frac{dy}{dz}$ is equal to :

(A) ○ **1 (Correct Answer)**
(B) ○ - 1
(C) ○ 0
(D) ○ 1/2

Question No.24 (Question Id - 8)

What is the pressure on a swimmer 10 m below the surface of a lake (take g = 10 m/s^2, 1 atm = 10^5 Pa) ?

(A) ○ 10^5 Pa
(B) ○ 1.01 x 10^5 Pa
(C) ○ 1.1 x 10^5 Pa
(D) ○ **2 x 10^5 Pa (Correct Answer)**

Question No.25 (Question Id - 55)

Given below are two statements :

Statement I :

If $\sum u_n$ is a positive term series, and $\lim_{n\to\infty}\frac{u_{n+1}}{u_n}=l$, then $\sum u_n$ is convergent if l > 1.

Statement II :

If $\sum u_n$ is a positive term series, and $\lim_{n\to\infty}\frac{u_{n+1}}{u_n}=l$, then $\sum u_n$ is divergent if l < 1.

In the light of the above statements, choose the **correct** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are true.
(B) ○ **Both Statement I and Statement II are false. (Correct Answer)**
(C) ○ **Statement I** is correct, but **Statement II** is false.
(D) ○ **Statement I** is incorrect, but **Statement II** is true.

Question No.26 (Question Id - 98)

Given below are two statements :

Statement I :

The electric field inside a thin spherical charged conducting shell is zero.

Statement II :

The electric potential inside a thin spherical charged conducting shell is constant.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ **Both Statement I and Statement II are true. (Correct Answer)**
(B) ○ Both **Statement I** and **Statement II** are false.
(C) ○ **Statement I** is correct, but **Statement II** is false.
(D) ○ **Statement I** is incorrect, but **Statement II** is true.

Question No.27 (Question Id - 32)

Which of the following product will be formed from the reaction of benzene with CH_3Cl in the presence of aluminum chloride ?

(A) ○ **Toluene (Correct Answer)**
(B) ○ Chloro toluene
(C) ○ 4-ethyl toluene
(D) ○ 4-chloro toluene

Question No.28 (Question Id - 46)

What is the type of volcanic rock formed at mid oceanic ridges ?

(A) ○ Andesite
(B) ○ **Basalt (Correct Answer)**
(C) ○ Rhyolite
(D) ○ Granite

Question No.29 (Question Id - 51)
Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A :

Detrital deposits of Archean contain pyrite and uraninite.

Reason R :

Oxygen deficient but carbon dioxide rich atmosphere persisted during the Archean.

In the light of the above statements, choose the **correct** answer from the options given below :

(A) ○ **Both A and R are true and R is the correct explanation of A. (Correct Answer)**
(B) ○ Both **A** and **R** are true, but **R** is not the correct explanation of **A**.
(C) ○ **A** is true, but **R** is false.
(D) ○ **A** is false, but **R** is true.

Question No.30 (Question Id - 11)
Moon completes one revolution around the earth in 27.3 days. Assuming that the orbit is circular and has radius of 3,85,000 km, the magnitude of the acceleration of the moon towards earth would be :

(A) ○ **2.72×10^{-3} m/s^2 (Correct Answer)**
(B) ○ 27.2×10^{-3} m/s^2
(C) ○ 272 m/s^2
(D) ○ 7.22×10^{-3} m/s^2

Question No.31 (Question Id - 78)
Conglobate gland is present in which of the following invertebrates ?

(A) ○ Frog
(B) ○ Snake
(C) ○ **Cockroach (Correct Answer)**
(D) ○ Butterfly

Question No.32 (Question Id - 26)
The average amount of dissolved salt in seawater is approximately :

(A) ○ 35%
(B) ○ **3.5% (Correct Answer)**
(C) ○ 25%
(D) ○ 2.5%

Question No.33 (Question Id - 47)
Mature quartz arenite characterizes :

(A) ○ Continental rift valley
(B) ○ Fore arc basin
(C) ○ **Passive continental margin (Correct Answer)**
(D) ○ Convergent plate boundary

Question No.34 (Question Id - 21)
Given below are two statements :

Statement I :

As the ecosystem develops through different stages of succession, niche specialization becomes narrower.

Statement II :

As the ecosystem develops through different stages of succession, internal symbiotic relationships get diminished.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are correct.
(B) ○ Both **Statement I** and **Statement II** are incorrect.
(C) ○ **Statement I is correct, but Statement II is incorrect. (Correct Answer)**
(D) ○ **Statement I** is incorrect, but **Statement II** is correct.

Question No.35 (Question Id - 74)
In case of C_4 plants, the first acceptor of carbon-di-oxide for Hatch and Stack cycle is :

(A) ○ **Phosphoenol pyruvic acid (Correct Answer)**

(B) ○ Malic acid
(C) ○ Aspartic acid
(D) ○ Oxalic acid

Question No.36 (Question Id - 93)
A pot filled with hot food cools from 94°C to 86°C in two minutes when the room temperature is 20°C. The time taken for the food to cool from 71°C to 69°C for the same room temperature will be :

(A) ○ 21 s
(B) ○ **42 s (Correct Answer)**
(C) ○ 56 s
(D) ○ 63 s

Question No.37 (Question Id - 100)
Light of wavelength 5000 Å is coming from a star. The limit of resolution of a telescope whose objective has a diameter of 250 cm is :

(A) ○ 1.22×10^{-7} rad
(B) ○ **2.44×10^{-7} rad (Correct Answer)**
(C) ○ 1.22×10^{-6} rad
(D) ○ 2.44×10^{-6} rad

Question No.38 (Question Id - 12)
A ball is thrown at a speed of 30 m/s in a direction 308 above the horizontal. What is the maximum height that the ball will achieve ?

(A) ○ 1.53 m
(B) ○ **11.48 m (Correct Answer)**
(C) ○ 9.71 m
(D) ○ 8.45 m

Question No.39 (Question Id - 42)
Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A :

At same temperature, nitrogen gas molecules move faster than chlorine gas molecules.

Reason R :

Speed of gas molecules depends on temperature and mass of gas molecules.

In the light of the above statements, choose the **correct** answer from the options given below :

(A) ○ **Both A and R are true and R is the correct explanation of A . (Correct Answer)**
(B) ○ Both **A** and **R** are true but **R** is not the correct explanation of **A**.
(C) ○ **A** is true, but **R** is false.
(D) ○ **A** is false, but **R** is true.

Question No.40 (Question Id - 48)
Which one of the following is **not** associated with felsic volcanism ?

(A) ○ Strato volcano
(B) ○ Pyroclastic ejections
(C) ○ Highly viscous lava
(D) ○ **Pahoehoe lava flow (Correct Answer)**

Question No.41 (Question Id - 40)
Given below are two statements :

Statement I :

Lassaigne's test is applied to detect N, S and halogens in organic compounds.

Statement II :

Carbon and Hydrogen cannot be detected by heating organic compounds with copper (II) oxide.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are correct.
(B) ○ Both **Statement I** and **Statement II** are incorrect.
(C) ○ **Statement I is correct, but Statement II is incorrect. (Correct Answer)**
(D) ○ **Statement I** is incorrect, but **Statement II** is correct.

Question No.42 (Question Id - 90)

The below question has been dropped and full marks are awarded.

A stone is thrown at an angle of 308 to the horizontal from a height of 15 m above the ground with an initial velocity of 10 m/s. The velocity with which the stone reaches the ground is : (take g = 10 m/s^2)

(A) ○ 12 m/s
(B) ○ 15 m/s
(C) ○ 18 m/s
(D) ○ 20 m/s

Question No.43 (Question Id - 73)

The method of inducing early flowering in plants by pretreatment of their seeds at very low temperature is termed as :

(A) ○ Photoperiodism
(B) ○ **Vernalisation (Correct Answer)**
(C) ○ Germination
(D) ○ Florigens

Question No.44 (Question Id - 52)

Polymorphs of quartz indicative of a high pressure origin found in meteorite craters and in high pressure origin assemblages are :

A. Coesite

B. Chert

C. Stishovite

D. Tridymite

E. Cristobalite

Choose the **correct** answer from the options given below :

(A) ○ A and B Only
(B) ○ **A and C Only (Correct Answer)**
(C) ○ B and C Only
(D) ○ D and E Only

Question No.45 (Question Id - 72)

Given below are two statements :

Statement I :

Quantum yield is defined as the number of oxygen molecules released per light quanta absorbed.

Statement II :

Eight quanta of light energy is required for the reduction of one molecule of CO_2 to carbohydrate.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ **Both Statement I and Statement II are true. (Correct Answer)**
(B) ○ Both **Statement I** and **Statement II** are false.
(C) ○ **Statement I** is correct, but **Statement II** is false.
(D) ○ **Statement I** is incorrect, but **Statement II** is true.

Question No.46 (Question Id - 70)

The proliferation of parenchymatous cells is accompanied by an enlargement of vacuoles of mature cells and a considerable reduction in the size of intercellular spaces is termed as :

(A) ○ Aging
(B) ○ Senescence
(C) ○ Proliferation
(D) ○ **Succulence (Correct Answer)**

Question No.47 (Question Id - 53)

Match **List - I** with **List - II** :

List - I	List - II
A. Placer deposits	I. Rare metals
B. Chemical precipitation	II. Gold nuggets
C. Crystal settling in magma chamber	III. Iron ore
D. Pegmatite	IV. Chromium

Choose the **correct** answer from the options given below :

(A) ○ A - I, B - II, C - III, D - IV
(B) ○ **A - II, B - III, C - IV, D - I (Correct Answer)**
(C) ○ A - II, B - IV, C - III, D - I
(D) ○ A - IV, B - III, C - II, D - I

Question No.48 (Question Id - 10)
A passenger sitting by the window of a train moving with a velocity 60 km/h sees for 10 s, a train moving with a velocity of 30 km/h in the opposite direction. The length of the second train is :

(A) ○ 200 m
(B) ○ 225 m
(C) ○ **250 m (Correct Answer)**
(D) ○ 300 m

Question No.49 (Question Id - 61)

$\lim_{x\to 0}\frac{e^{x}-2\cos x+e^{-x}}{x\sin x}$ is equal to :

(A) ○ 0
(B) ○ **1 (Correct Answer)**
(C) ○ 2
(D) ○ ∞

Question No.50 (Question Id - 7)
Three resistors each of value 1 Ω are connected end to end to form a triangular shaped network ABC. What is the equivalent resistance between the terminals A and B ?

(A) ○ $\frac{1}{3}\Omega$
(B) ○ $\frac{2}{3}\Omega$ **(Correct Answer)**
(C) ○ 1 Ω
(D) ○ $\frac{4}{3}\Omega$

Question No.51 (Question Id - 68)
Which among the following is a chemolithoautotroph ?

(A) ○ *Anabaena*
(B) ○ *Oryza sativa*
(C) ○ *Saccharomyces cerevisiae*
(D) ○ ***Beggiatoa*** **(Correct Answer)**

Question No.52 (Question Id - 83)
What kind of laboratory facility will be needed to work with anthrax pathogen ?

(A) ○ Routine microbiology laboratory
(B) ○ Laboratory complying to BSL-1 levels
(C) ○ Laboratory complying to BSL-2 levels
(D) ○ **Laboratory complying to BSL-3 levels (Correct Answer)**

Question No.53 (Question Id - 62)
Consider the following statements regarding the eccentricity of parabola, ellipse and hyperbola :

A. Eccentricity of a parabola is less than 1.

B. Eccentricity of a hyperbola is greater than 1.

C. Eccentricity of an ellipse is less than 1.

D. Eccentricity of a parabola is greater than 1.

Choose the **correct** answer from the options given below :

(A) ○ A and B Only
(B) ○ **B and C Only (Correct Answer)**
(C) ○ C and D Only
(D) ○ A and C Only

Question No.54 (Question Id - 45)
Nephaline is a :

(A) ○ Feldspar mineral having composition of $NaAlSiO_4$
(B) ○ **Feldspathoid mineral having composition of $NaAlSiO_4$ (Correct Answer)**
(C) ○ Feldspar mineral having composition of $NaAlSi_3O_8$
(D) ○ Feldspathoid mineral having composition of $NaAlSi_3O_8$

Question No.55 (Question Id - 29)
Over which part of the Earth, ozone hole was first discovered ?

(A) ○ Equator
(B) ○ Tropic
(C) ○ Arctic
(D) ○ **Antarctic (Correct Answer)**

Question No.56 (Question Id - 3)

If $|A| = \begin{vmatrix} 1 & 1 & 1 \\ \alpha & \beta & \gamma \\ \beta\gamma & \gamma\alpha & \alpha\beta \end{vmatrix}$, then which of the following will correctly represent the value of |A| ?

(A) ○ 0
(B) ○ 1
(C) ○ $\alpha\beta\gamma$
(D) ○ **$(\alpha - \beta)(\beta - \gamma)(\gamma - \alpha)$ (Correct Answer)**

Question No.57 (Question Id - 59)
A^T is the transpose of matrix A and B^T is the transpose of matrix B. Now consider the following statements :

A. Matrix B is symmetric if it is a square matrix and $B^T = -B$

B. Matrix A is skew-symmetric if it is a square matrix and $A^T = A$

C. $(A^T)^T = A$

D. $(AB)^T = B^T A^T$

Choose the **correct** answer from the options given below :

(A) ○ A and B Only
(B) ○ B and C Only
(C) ○ **C and D Only (Correct Answer)**
(D) ○ A and C Only

Question No.58 (Question Id - 49)
Which of the following landforms are made by the action of underground water ?

A. Kettle

B. Uvala

C. Ventifacts

D. Karst valley

E. Wadis

Choose the **correct** answer from the options given below :

(A) ○ A and B Only
(B) ○ **B and D Only (Correct Answer)**
(C) ○ B and C Only
(D) ○ A and E Only

Question No.59 (Question Id - 99)
The ratio of the number of turns in the primary to secondary coil of a step down transformer is 10 : 1. A load of 50 W connected to the secondary coil draws a current of 1 A. Then the voltage applied to the primary coil is :

○

(A) 100 V
(B) ◯ 250 V
(C) ◯ **500 V (Correct Answer)**
(D) ◯ 1000 V

Question No.60 (Question Id - 34)
What would be the approximate mass of iron (III) oxide needed to produce 28 g of iron by reduction with carbon monoxide ?

(A) ◯ 28 g
(B) ◯ **40 g (Correct Answer)**
(C) ◯ 80 g
(D) ◯ 56 g

Question No.61 (Question Id - 41)
Given below are two statements :

Statement I :

Optical isomerism is the most subtle of five forms of isomerism as the physical and chemical properties of optical isomers are identical.

Statement II :

Optical isomers cannot be distinguished using a Polarimeter.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ◯ Both **Statement I** and **Statement II** are correct.
(B) ◯ Both **Statement I** and **Statement II** are incorrect.
(C) ◯ **Statement I is correct, but Statement II is incorrect. (Correct Answer)**
(D) ◯ **Statement I** is incorrect, but **Statement II** is correct.

Question No.62 (Question Id - 65)
Which among the following experimental setups is used to keep a continuous culture of microorganisms in a steady-state over long period of time ?

(A) ◯ Batch Culture
(B) ◯ **Chemostat (Correct Answer)**
(C) ◯ Hybridization Oven
(D) ◯ Orbital Shaker

Question No.63 (Question Id - 64)
Consider the following statements :

A. Standard deviation is independent of change of origin.

B. Standard deviation is independent of change of scale.

C. Correlation coefficient is independent of change of origin.

D. Correlation coefficient is affected by change of scale.

Choose the **correct** answer from the options given below :

(A) ◯ A and B Only
(B) ◯ **A and C Only (Correct Answer)**
(C) ◯ A and D Only
(D) ◯ B and D Only

Question No.64 (Question Id - 16)
Salt is spread on icy roads because it :

(A) ◯ **lowers the freezing point of water (Correct Answer)**
(B) ◯ raises the freezing point of water
(C) ◯ does not affect the freezing point of water
(D) ◯ increases friction and boiling point of water

Question No.65 (Question Id - 82)
A facultative anaerobic microorganism is introduced to an environment containing oxygen. What will happen to the microorganism ?

A. It will die.

B. It will survive.

C. It will reproduce and grow.

D. It will become dormant till favorable conditions return.

E. It will mutate to become an aerobe.

Choose the **correct** answer from the options given below :

(A) ○ D Only
(B) ○ **B and C Only (Correct Answer)**
(C) ○ A Only
(D) ○ B and E Only

Question No.66 (Question Id - 97)

If $\oint_s \vec{E}.\vec{dS} = 0$ over a closed surface, then

A. Electric field inside the surface and on it is zero.

B. The electric field inside the surface is necessarily uniform.

C. The number of flux lines entering the surface must be equal to the flux lines leaving it.

D. All charges must necessarily be outside the surface.

E. The net charge inside the surface must be zero.

Choose the **correct** answer from the options given below :

(A) ○ A and C Only
(B) ○ C and D Only
(C) ○ B and E Only
(D) ○ **C and E Only (Correct Answer)**

Question No.67 (Question Id - 96)

A block of mass 1.0 kg is fastened to a spring of spring constant 50 N/m. The block is pulled to a distance of 10 cm from its equilibrium position on horizontal frictionless surface and allowed to oscillate. The total energy of the block when it is 5 cm away from its mean position is :

(A) ○ 0.0625 J
(B) ○ 0.1250 J
(C) ○ 0.1875 J
(D) ○ **0.2500 J (Correct Answer)**

Question No.68 (Question Id - 37)

Arrange the following metals in increasing order of their oxidizing power :

A. Na

B. Pb

C. Zn

D. Fe

E. Cu

Choose the **correct** answer from the options given below :

(A) ○ A < B < C < D < E
(B) ○ A < B < D < E < C
(C) ○ **A < C < D < B < E (Correct Answer)**
(D) ○ E < B < D < C < A

Question No.69 (Question Id - 54)

Given below are two statements :

Statement I :

When the head of large plume nears the crust, it causes eruptions of vast field of flood basalts.

Statement II :

Indian subcontinent does not have any flood basalt eruptions in the geological past.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are true.
(B) ○ Both **Statement I** and **Statement II** are false.
(C) ○ **Statement I is correct, but Statement II is false. (Correct Answer)**
(D) ○ **Statement I** is incorrect, but **Statement II** is true.

Question No.70 (Question Id - 6)

Match **List - I** with **List - II** :

List - I	List - II
Differential Equations	**Order and Degree**
A. $\left(\frac{d^3y}{dx^3}\right)^2 + 7\left(\frac{dy}{dx}\right)^3 + x^2 - y^2 = 0$	I. Order 1, degree 2
B. $\frac{d^2y}{dx^2} - x\left(\frac{dy}{dx}\right)^2 = \cos x$	II. Order 2, degree 3
C. $\left(\frac{dy}{dx}\right)^2 = 5x^2 + 3x + 2$	III. Order 3, degree 2
D. $\left(\frac{d^2y}{dx^2}\right)^3 + 7\left(\frac{dy}{dx}\right)^2 + 8x = 6$	IV. Order 2, degree 1

Choose the **correct** answer from the options given below :

(A) ○ A - I, B - II, C - III, D - IV
(B) ○ A - II, B - III, C - IV, D - I
(C) ○ A - IV, B - III, C - II, D - I
(D) ○ **A - III, B - IV, C - I, D - II (Correct Answer)**

Question No.71 (Question Id - 85)
Which of the following statements regarding mammalian cell culture are true ?

A. Transformed cell lines do need external supply of serum to grow.

B. The cells that are obtained directly from organisms constitute a primary culture.

C. Trypsin is added to cell culture medium to maintain cell culture.

D. HEPES buffer is generally used to maintain pH of culture medium.

E. It is always essential to add high level glucose to the medium externally.

Choose the **correct** answer from the options given below :

(A) ○ A, C and E Only
(B) ○ B, C, and E Only
(C) ○ **A, B and D Only (Correct Answer)**
(D) ○ C, D and E Only

Question No.72 (Question Id - 67)
Who proposed the term totipotency ?

(A) ○ Miller
(B) ○ Seward
(C) ○ Steward
(D) ○ **Haberlandt (Correct Answer)**

Question No.73 (Question Id - 13)
An ideal gas does **not** follow :

A. Charles law

B. Avogadro law

C. Gay Lussac's law

D. Boyle's law

Choose the **correct** answer from the options given below :

(A) ○ A and D Only
(B) ○ B Only
(C) ○ **C Only (Correct Answer)**
(D) ○ B and C Only

Question No.74 (Question Id - 76)

Match **List - I** with **List - II :**

List - I	List - II
A. Endospores	I. Bacteriochlorophyll
B. Heterocysts	II. RubisCo
C. Chlorosomes	III. Exosporium
D. Carboxysomes	IV. Nitrogenase

Choose the **correct** answer from the options given below :

(A) ○ A - II, B - IV, C - I, D - III
(B) ○ **A - III, B - IV, C - I, D - II (Correct Answer)**
(C) ○ A - IV, B - III, C - II, D - I
(D) ○ A - II, B - I, C - IV, D - III

Question No.75 (Question Id - 57)

Which of the following expressions correctly represents the Taylor Series expansion of the function sinh x ?

(A) ○ $1 + x + x^2 + x^3 + \ldots\ldots\ldots\ldots, |x| \infty <$:
(B) ○ $x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \cdots \ldots\ldots\ldots\ldots, |x| < \infty$
(C) ○ $x + \frac{x^3}{3!} + \frac{x^5}{5!} + \frac{x^7}{7!} + \cdots \ldots\ldots\ldots\ldots, |x| < \infty$ **(Correct Answer)**
(D) ○ $1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \cdots \ldots\ldots\ldots\ldots, |x| < \infty$

Question No.76 (Question Id - 58)

If $I = \int_0^{\pi/2} \frac{\sqrt{\cot x}}{\sqrt{\cot x} + \sqrt{\tan x}}\, dx$,

Then the value of I is equal to which of the following ?

(A) ○ 0
(B) ○ 1
(C) ○ $\frac{\pi}{2}$
(D) ○ $\frac{\pi}{4}$ **(Correct Answer)**

Question No.77 (Question Id - 95)

A body oscillates with SHM according to the equation : (in SI units)

$X = 5 \sin(100\pi t + \pi/4)$

The velocity of the body at t = 1 s is (take $\sqrt{2}$ = 1.4)

(A) ○ 250 π m/s
(B) ○ **350 π m/s (Correct Answer)**
(C) ○ 500 π m/s
(D) ○ 700 π m/s

Question No.78 (Question Id - 88)

Tubefeet is present as locomotive organs in :

(A) ○ Crop fish
(B) ○ Silver fish
(C) ○ **Star fish (Correct Answer)**
(D) ○ Jelly fish

Question No.79 (Question Id - 33)

Half-life period of first order reaction having rate constant (K) value equal to $6.93 \times 10^{-14}\ s^{-1}$ will be :

(A) ○ 1×10^{15} s
(B) ○ **1×10^{13} s (Correct Answer)**
(C) ○ 3.45×10^{-7} s
(D) ○ 3.45×10^{-14} s

Question No.80 (Question Id - 79)
Leydig cells are found in :

(A) ○ **Testis of rabbit (Correct Answer)**
(B) ○ Testis of frog
(C) ○ Kidney of frog
(D) ○ Kidney of rabbit

Question No.81 (Question Id - 1)
Given below are two statements :

Statement I :

If two rows or columns of a determinant are interchanged, then the determinant remains unchanged.

Statement II :

If all the elements of a row or column are multiplied by a factor, then the value of the determinant is multiplied by that factor.

In the light of the above statements, choose the **correct** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are true.
(B) ○ Both **Statement I** and **Statement II** are false.
(C) ○ **Statement I** is correct but **Statement II** is false.
(D) ○ **Statement I is incorrect but Statement II is true. (Correct Answer)**

Question No.82 (Question Id - 9)
If a narrow cone of light rays is incident obliquely on a small portion of a large concave mirror, the reflected rays do not form a sharp focus even if the aperture is small. This effect is known as :

(A) ○ Angular magnification
(B) ○ Distortion
(C) ○ **Astigmatism (Correct Answer)**
(D) ○ Transverse magnification

Question No.83 (Question Id - 25)
Enriched Uranium contains more :

(A) ○ Tritium
(B) ○ Deuterium
(C) ○ **Uranium 235 (Correct Answer)**
(D) ○ Uranium 238

Question No.84 (Question Id - 60)
Given below are two statements :

Statement I :

Every homogenous equation of second degree represents a cone whose vertex is (1, 1, 1).

Statement II :

The locus of the normal through the vertex of a given cone to the tangent planes is called the reciprocal cone.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) ○ Both **Statement I** and **Statement II** are true.
(B) ○ Both **Statement I** and **Statement II** are false.
(C) ○ **Statement I** is correct, but **Statement II** is false.
(D) ○ **Statement I is incorrect, but Statement II is true. (Correct Answer)**

Question No.85 (Question Id - 84)
Which of the following organ in the human body does not harbor any microbial life ?

(A) ○ Gut
(B) ○ Skin
(C) ○ Urethra
(D) ○ **Uterus (Correct Answer)**

Question No.86 (Question Id - 17)
Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A :

Lassaigne's test is used to detect nitrogen, sulphur and halogens in organic compounds.

Reason R :

Elements present in the organic compounds are converted from covalent form to the ionic form by fusing compound with sodium metal.

In the light of the above statements, choose the **correct** answer from the options given below :

(A) ○ **Both A and R are true and R is the correct explanation of A. (Correct Answer)**
(B) ○ Both **A** and **R** are true, but **R** is not the correct explanation of **A**.
(C) ○ **A** is true, but **R** is false.
(D) ○ **A** is false, but **R** is true.

Question No.87 (Question Id - 31)
Which of the following is not an Extensive property ?

A. Density

B. Enthalpy

C. Internal Energy

D. Heat Capacity

Choose the **correct** answer from the options given below :

(A) ○ A, B and C Only
(B) ○ B and C Only
(C) ○ A and C Only
(D) ○ **A Only (Correct Answer)**

Question No.88 (Question Id - 30)
Arrange the following gases in increasing order in terms of their global warming potential.

A. CFC

B. CO_2

C. N_2O

D. CH_4

Choose the **correct** answer from the options given below :

(A) ○ B < D < A < C
(B) ○ **B < D < C < A (Correct Answer)**
(C) ○ D < B < C < A
(D) ○ D < B < A < C

Question No.89 (Question Id - 44)
The subordinate soil horizon of O horizon consisting of moderately decomposed organic material is called as :

(A) ○ O_a
(B) ○ O_i
(C) ○ **O_e (Correct Answer)**
(D) ○ O_g

Question No.90 (Question Id - 77)
In which of the following tissues, communication junctions are fused between the cells ?

(A) ○ Striated muscle tissue
(B) ○ **Cardiac muscle tissue (Correct Answer)**
(C) ○ Smooth muscle tissue
(D) ○ Areolar connective tissue

Question No.91 (Question Id - 92)
Arrange the bulk modulii, B of different materials in **correct** sequence.

A. B (Steel)

B. B (Glass)

C. B (Air)

D. B (Water)

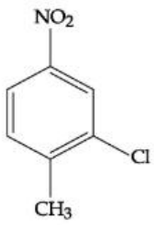
Choose the **correct** answer from the options given below :

(A) ○ B (Air) > B (Water) > B (Glass) > B (Steel)

(B) ○ B (Water) > B (Air) > B (Steel) > B (Glass)
(C) ○ B (Glass) > B (Steel) > B (Air) > B (Water)
(D) ○ **B (Steel) > B (Glass) > B (Water) > B (Air) (Correct Answer)**

Question No.92 (Question Id - 18)

Choose the **correct** IUPAC name of the following compound :



(A) ○ **2-chloro-1-methyl-4-nitrobenzene (Correct Answer)**
(B) ○ 2-chloro-1-methyl-nitrobenzene
(C) ○ 4-methyl-5-chloro-nitrobenzene
(D) ○ 2-chloro-4-nitro-toluene

Question No.93 (Question Id - 75)
Biome represents :

(A) ○ Large geographical area as a result of succession.
(B) ○ **Large geographical area delimited by climate. (Correct Answer)**
(C) ○ Large geographical area having high endemicity.
(D) ○ Large geographical area with similar edaphic factors.

Question No.94 (Question Id - 4)

$\int_0^1 \frac{1}{e^x + e^{-x}}\,dx$ is equal to which of the following expressions ? Given that 'c' is the arbitrary constant.

(A) ○ $\tan^{-1} e - \frac{\pi}{4}$ **(Correct Answer)**
(B) ○ $1 - \frac{\pi}{4}$
(C) ○ $1 - \frac{\pi}{4}$
(D) ○ $\frac{\pi}{4} - 1$

Question No.95 (Question Id - 87)
Which one among the following is **true** ?

A. *Hippocampus* is the connecting link between the Pisces and the Amphibia.

B. Hydra is the connecting link between the Protozoa and Metazoa.

C. Platypus is the connecting link between the Reptiles and Mammals.

D. Archeopteryx is the connecting link between the Aves and Mammals.

E. Octopus is the connecting link between the Mollusca and Osteichthyes.

Choose the **correct** answer from the options given below :

(A) ○ **C Only (Correct Answer)**
(B) ○ A and B Only
(C) ○ D Only
(D) ○ C and E Only

Question No.96 (Question Id - 80)
The milk production during the initial few days after child birth of human, containing several essential antibodies, is called :

(A) ○ Lactation
(B) ○ Parturition
(C) ○ **Colostrum (Correct Answer)**
(D) ○ Prolactation

Question No.97 (Question Id - 20)
The source of litmus is :

(A) ○ *Indigofera tinctoria*

(B) ◯ *Rubia tinctoria*
(C) ◯ *Carthamus tinctoria*
(D) ◯ ***Roccella tinctoria* (Correct Answer)**

Question No.98 (Question Id - 81)
Mostly metabolically stable mRNAs are found in :

A. *Bacteria*

B. Reticulocytes

C. Chick oviduct

D. *Anabaena*

E. *Paramecium*

Choose the **correct** answer from the options given below :

(A) ◯ A and B Only
(B) ◯ **B and C Only (Correct Answer)**
(C) ◯ C and D Only
(D) ◯ D and E Only

Question No.99 (Question Id - 69)
Metabolite that is transported from chloroplast to peroxisome during C_2 oxidative photosynthetic cycle is :

(A) ◯ Glycerate
(B) ◯ **Glycolate (Correct Answer)**
(C) ◯ Serine
(D) ◯ Glycine

Question No.100 (Question Id - 28)
Which among the following describes the potability of water ?

A. Temperature

B. Color

C. pH

D. Turbidity

E. Sulphur content

Choose the **correct** answer from the options given below :

(A) ◯ B, D and E Only
(B) ◯ **A, B, C and D Only (Correct Answer)**
(C) ◯ A, C, D and E Only
(D) ◯ A, B, D and E Only

Save & Print