

CAREERS 360

PREPARATION **Series**

SSUHS BSc Nursing

**Previous Year
Question Papers
Answer Key & Solutions**

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SSUHS Entrance

Question Paper With Solutions eBook

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About this eBook

Welcome to the SSUHS Previous Year Question Paper With Solutions eBook! We have designed this eBook to help candidates who are preparing for the SSUHS entrance exam. This eBook includes questions from the years 2025 and 2023. Organised subject-wise with clear and concise solutions, this eBook will help you in understanding the exam pattern, focusing on important topics, and building the confidence required to succeed in the exam.

Features of This eBook

- **Authentic Coverage of Real Exam Questions**

All the provided questions are from the real SSUHS Common Entrance Examination, which will help in understanding the real test.

- **Accurately explained solutions**

Every question has a simple and clear answer explanation to help you understand how to solve it.

SSUHS Entrance Previous Year Question Paper With Solutions: Subject Highlights

This eBook helps you prepare for the SSUHS Common Entrance Examination (CEE), conducted by the Srimanta Sankaradeva University of Health Sciences for admission into B.Sc. Nursing and other health science courses in Assam. The exam tests a wide range of important subjects from the science and nursing syllabus, including Physics, Chemistry, Biology, and English. Each subject includes key topics that are frequently asked in the exam. With previous year questions from 2025 to 2023, you'll become familiar with the exam pattern and can focus on the most important chapters for success.

SSUHS 2025 Memory-Based Entrance Question Paper With Solutions

The **SSUHS 2025 Memory-Based Entrance Question Paper With Solutions** is a helpful resource for students who appeared in the exam and for those who are planning to take it next year. This paper is made using the questions remembered by students right after the exam. Along with the questions, proper solutions are also given so that students can check their answers and understand how to solve them the right way. It gives a clear idea about the type of questions asked, the level of difficulty, and the important topics. Going through this paper can help students get better prepared and feel more confident for the next entrance exam. Below are the memory-based questions from the 2025 question paper of the SSUHS Entrance Exam:

Question 1:

He is _ honest man.

Options:

- (A) a
- (B) an
- (C) the
- (D) no article

Correct Option:

(B) an

Explanation:

The correct article is "an" because the word "honest" starts with a vowel sound. Although "h" is a consonant, it is silent in the word "honest," making the word begin with a vowel sound. Therefore, the rule of using "an" before vowel sounds applies here to ensure proper pronunciation and fluency.

Question 2:

Breakfast is _ best meal.

Options:

- (A) a
- (B) an
- (C) the
- (D) no article

Correct Option:

(C) the

Explanation:

"The" is used before superlatives and specific nouns to indicate something that is one of a kind or well-known. In this sentence, "the best meal" refers to a specific meal that is considered the most important or excellent. Thus, "the" is the correct definite article to use in this context.

Question 3:

He is _ the café.

Options:

- (A) in
- (B) on
- (C) at
- (D) by

Correct Option:

(A) in

Explanation:

The correct preposition is "in" when referring to being inside a building or enclosed space. Saying "He is in the café" indicates the person is located within the premises of the café. The preposition provides spatial information and helps specify the exact position of the subject in relation to the café.

Question 4:

The bird flew _ the pond.

Options:

- (A) in
- (B) over
- (C) on
- (D) at

Correct Option:

(B) over

Explanation:

"Over" is the appropriate preposition because it describes movement from one side to another while being above something. In this sentence, the bird is not in or on the pond but is flying above it. This makes "over" the correct choice to convey the bird's position relative to the pond.

Question 5:

They sat _ the dining table.

Options:

- (A) around
- (B) on
- (C) by
- (D) over

Correct Option:

(A) around

Explanation:

The correct preposition is "around" when referring to people sitting in a circular or

surrounding arrangement. "They sat around the dining table" suggests that the individuals were positioned on all sides of the table, which is the common arrangement during meals. Other prepositions do not fit this context appropriately.

Question 6:

They haven't come, _?

Options:

- (A) have they?
- (B) haven't they?
- (C) did they?
- (D) do they?

Correct Option:

- (A) have they?

Explanation:

In tag questions, a negative statement is followed by a positive tag. "They haven't come" is a negative statement, so it should be followed by "have they?" to maintain grammatical correctness and clarity. This helps confirm or verify the statement politely in everyday conversational English.

Question 7:

They have come, _?

Options:

- (A) haven't they?
- (B) did they?
- (C) don't they?
- (D) do they?

Correct Option:

- (A) haven't they?

Explanation:

This is an example of a positive sentence requiring a negative question tag. "They have come" is positive, so the correct question tag must be "haven't they?" This rule helps form balanced tag questions, which are used in English to seek confirmation or express uncertainty politely.

Question 8:

Please write this note and send me an email. (Sentence Type)

Options:

- (A) Simple
- (B) Imperative
- (C) Complex
- (D) Compound

Correct Option:

- (B) Imperative

Explanation:

The sentence gives a direct command or request, which defines the imperative sentence type. Imperative sentences begin with a verb and are used to instruct or command someone to do something. "Please write this note and send me an email" fits this definition perfectly, making it an imperative sentence.

Question 9:

The cat sleeps and the dog plays. (Sentence Type)

Options:

- (A) Compound
- (B) Simple
- (C) Complex
- (D) Imperative

Correct Option:

- (A) Compound

Explanation:

This sentence contains two independent clauses: "The cat sleeps" and "the dog plays," which are joined by the coordinating conjunction "and." This structure defines a compound sentence. Each clause can stand alone as a sentence, which is the hallmark of compound sentence construction in English grammar.

Question 10:

The sun rises in the east. (Sentence Type)

Options:

- (A) Simple
- (B) Complex
- (C) Imperative
- (D) Exclamatory

Correct Option:

- (A) Simple

Explanation:

The sentence has one independent clause and expresses a complete idea using a single subject and predicate. "The sun" is the subject and "rises in the east" is the predicate. It does not contain any subordinate or dependent clause, making it a simple sentence by definition.

Question 11:

Synonym of "obvious":

Options:

- (A) hidden
- (B) unclear
- (C) evident
- (D) obscure

Correct Option:

- (C) evident

Explanation:

A synonym is a word that has the same or nearly the same meaning as another word. "Obvious" means something that is easily perceived or understood. "Evident" also means clearly visible or understood, making it the closest in meaning. The other options are antonyms or unrelated in context.

Question 12:

Synonym of "zest":

Options:

- (A) dullness

(B) enthusiasm

(C) laziness

(D) sadness

Correct Option:

(B) enthusiasm

Explanation:

"Zest" refers to great enthusiasm and energy. "Enthusiasm" means intense and eager enjoyment or interest, which directly matches the meaning of "zest." Therefore, it is the correct synonym. Words like dullness, laziness, and sadness convey the opposite emotion and are not appropriate synonyms here.

Question 13:

Antonym of "progress":

Options:

(A) improvement

(B) development

(C) decline

(D) growth

Correct Option:

(C) decline

Explanation:

An antonym is a word opposite in meaning. "Progress" means forward or onward movement toward a goal or advancement. The opposite of this is "decline," which means a decrease or deterioration in quality, quantity, or strength. Thus, "decline" is the correct antonym of "progress."

Question 14:

Antonym of "zest":

Options:

(A) excitement

(B) gloom

(C) joy

(D) thrill

Correct Option:

(B) gloom

Explanation:

"Zest" means lively excitement or enjoyment, while "gloom" refers to a state of depression, sadness, or lack of spirit. These are opposite in emotional tone. Other options like excitement, joy, and thrill are similar to zest and hence cannot be considered antonyms.

Question 15:

Meaning of "docile":

Options:

(A) passive

(B) aggressive

(C) to manage

(D) lazy

Correct Option:

(A) passive

Explanation:

"Docile" describes a person or animal that is calm, submissive, and easy to train or manage. The closest meaning is "passive," which refers to someone who does not actively resist or argue. The word does not relate to laziness, aggression, or managerial skills.

Question 16:

Enzyme that unwinds DNA:

Options:

(A) DNA polymerase

(B) Helicase

(C) Ligase

(D) Primase

Correct Option:

(B) Helicase

Explanation:

Helicase is the enzyme responsible for unwinding the DNA double helix during replication. It breaks the hydrogen bonds between the base pairs, creating two single strands. This action is crucial for replication to begin and allows other enzymes to copy the DNA strands accurately.

Question 17:

Enzyme used in PCR:

Options:

(A) DNA Ligase

(B) Helicase

(C) Taq Polymerase

(D) RNA Polymerase

Correct Option:

(C) Taq Polymerase

Explanation:

Taq Polymerase is a heat-stable enzyme derived from *Thermus aquaticus*. It is used in PCR (Polymerase Chain Reaction) because it can withstand high temperatures required for DNA denaturation. It synthesizes new strands of DNA using existing strands as templates, which is essential in the amplification process.

Question 18:

Fertilization in vertebrates occurs in:

Options:

(A) Ovary

(B) Uterus

(C) Fallopian tube

(D) Cervix

Correct Option:

(C) Fallopian tube

Explanation:

In vertebrates, fertilization typically occurs in the fallopian tube, also known as the oviduct. This is where the sperm meets the ovum after ovulation. The fertilized egg then travels to the uterus for implantation. The ovary produces the egg, but fertilization does not occur there.

Question 19:

HIV attacks which cells?

Options:

- (A) RBC
- (B) T-helper cells
- (C) Neurons
- (D) Liver cells

Correct Option:

- (B) T-helper cells

Explanation:

HIV (Human Immunodeficiency Virus) specifically targets and infects CD4+ T-helper cells of the immune system. These cells are vital in activating and directing other immune responses. The destruction of T-helper cells weakens the immune system, making the body vulnerable to opportunistic infections and certain cancers.

Question 20:

Hormone for water reabsorption:

Options:

- (A) Insulin
- (B) ADH
- (C) Thyroxine
- (D) Cortisol

Correct Option:

- (B) ADH

Explanation:

ADH (Antidiuretic Hormone), also known as vasopressin, is released by the posterior pituitary gland and acts on the kidneys. It promotes the reabsorption of water in the kidney tubules, thereby reducing water loss and maintaining blood pressure and fluid balance. It is essential in preventing dehydration.

Question 21:

Asexual reproduction in *Penicillium*:

Options:

- (A) Conidia
- (B) Sporangia
- (C) Zoospores
- (D) Hyphae

Correct Option:

- (A) Conidia

Explanation:

Penicillium, a genus of fungi, reproduces asexually by forming conidia, which are non-motile spores produced at the tips of specialized hyphae called conidiophores. These conidia detach and disperse to form new colonies. This mode of reproduction is efficient for rapid multiplication and survival in favorable environmental conditions.

Question 22:

Golden rice is rich in:

Options:

- (A) Vitamin A
- (B) Vitamin B
- (C) Vitamin C
- (D) Vitamin E

Correct Option:

- (A) Vitamin A

Explanation:

Golden rice has been genetically modified to produce beta-carotene, a precursor of Vitamin A, in the rice grains. This fortification aims to combat Vitamin A deficiency, especially in developing countries where rice is a staple food. The golden color of the rice is due to the beta-carotene pigment.

Question 23:

Evolutionary link between birds and reptiles:

Options:

- (A) Archeopteryx
- (B) Crocodile
- (C) Bat
- (D) Platypus

Correct Option:

- (A) Archeopteryx

Explanation:

Archeopteryx is a transitional fossil that shows both reptilian and avian features. It had feathers and wings like birds but also teeth and a long tail like reptiles. It is considered strong evidence of the evolutionary link between birds and their reptilian ancestors, supporting the theory of evolution.

Question 24:

Function of tapetum:

Options:

- (A) Nourish pollen
- (B) Develop ovule
- (C) Control hormones
- (D) Support anther

Correct Option:

- (A) Nourish pollen

Explanation:

The tapetum is the innermost layer of the anther wall and plays a critical role in the development of pollen grains. It provides nutrients and enzymes necessary for the proper maturation of microspores into functional pollen. A defective tapetum can result in sterile pollen, affecting plant reproduction.

Question 25:

Sequence in plant sexual reproduction:

Options:

- (A) Gametogenesis → Pollination → Fertilization → Embryogenesis

Correct Option:

- (A) Gametogenesis → Pollination → Fertilization → Embryogenesis

Explanation:

The process of plant sexual reproduction follows a precise sequence. Gametogenesis forms the male and female gametes, which are then transferred during pollination. Fertilization occurs when these gametes fuse, and the resulting zygote undergoes embryogenesis to form the embryo. Each stage is vital for seed formation and plant propagation.

Question 26:

Not a part of pistil:

Options:

(A) Stigma

(B) Style

(C) Ovary

(D) Filament

Correct Option:

(D) Filament

Explanation:

The pistil is the female reproductive part of a flower and is composed of three parts: stigma, style, and ovary. The filament, however, is a part of the stamen, the male reproductive structure. It supports the anther, which produces pollen. Hence, filament is not included in the pistil.

Question 27:

First life forms on earth resembled:

Options:

(A) Cyanobacteria

(B) Amphibians

(C) Reptiles

(D) Algae

Correct Option:

(A) Cyanobacteria

Explanation:

Cyanobacteria, also known as blue-green algae, were among the earliest life forms on Earth. They are photosynthetic prokaryotes that played a key role in producing oxygen in the early atmosphere. Fossil evidence from stromatolites suggests their presence dates back around 3.5 billion years, marking them as ancient pioneers of life.

Question 28:

Binomial nomenclature was introduced by:

Options:

(A) Charles Darwin

(B) Linnaeus

(C) Mendel

(D) Pasteur

Correct Option:

(B) Linnaeus

Explanation:

Carl Linnaeus is known as the father of modern taxonomy. He introduced the system of binomial nomenclature, which assigns every organism a two-part Latin name indicating its

genus and species. This method brought standardization and universal understanding in naming living organisms across the scientific community.

Question 29:

ELISA test is based on:

Options:

- (A) Antigen-antibody interaction
- (B) DNA hybridization
- (C) RNAi
- (D) Chromatography

Correct Option:

- (A) Antigen-antibody interaction

Explanation:

ELISA (Enzyme-Linked Immunosorbent Assay) detects the presence of antigens or antibodies in a sample by using the principle of antigen-antibody binding. Enzymes attached to antibodies produce a detectable signal, often a color change. This test is widely used for diagnosing diseases like HIV, COVID-19, and various allergies.

Question 30:

Disease caused by bacteria:

Options:

- (A) Typhoid
- (B) Malaria
- (C) Dengue
- (D) Flu

Correct Option:

- (A) Typhoid

Explanation:

Typhoid is a bacterial infection caused by *Salmonella typhi*. It spreads through contaminated food and water and is characterized by prolonged fever, weakness, and abdominal discomfort. The other diseases mentioned—malaria (protozoa), dengue (virus), and flu (virus)—are not caused by bacteria, making typhoid the correct answer.

Question 31:

Quinine is extracted from:

Options:

- (A) Cinchona
- (B) Datura
- (C) Neem
- (D) Eucalyptus

Correct Option:

- (A) Cinchona

Explanation:

Quinine is a natural alkaloid extracted from the bark of the Cinchona tree. It has been historically used to treat malaria due to its antimalarial properties. The compound interferes with the parasite's ability to digest hemoglobin inside red blood cells. Other plants listed here do not contain quinine.

Question 32:

Phylogenetic tree shows:

Options:

- (A) Evolutionary relationships
- (B) Metabolism
- (C) Growth
- (D) Structure

Correct Option:

- (A) Evolutionary relationships

Explanation:

A phylogenetic tree is a diagram that depicts evolutionary relationships among various species or organisms based on similarities and differences in their physical or genetic characteristics. It shows how different species are related through common ancestors, providing a visual interpretation of evolutionary history over time.

Question 33:

Evidence of earliest life:

Options:

- (A) Stromatolites
- (B) Dinosaurs
- (C) Meteorite
- (D) Cave paintings

Correct Option:

- (A) Stromatolites

Explanation:

Stromatolites are layered sedimentary formations created by cyanobacteria, some of the earliest life forms. Fossilized stromatolites, dated to about 3.5 billion years ago, provide the oldest direct evidence of life on Earth. They show microbial activity and oxygen production long before the emergence of multicellular organisms.

Question 34:

Oxidation number of Ni in $\text{Ni}(\text{CO})_4$:

Options:

- (A) +2
- (B) 0
- (C) +1
- (D) -1

Correct Option:

- (B) 0

Explanation:

In $\text{Ni}(\text{CO})_4$, carbon monoxide (CO) is a neutral ligand, contributing no charge. The overall charge of the compound is zero. Hence, the oxidation number of nickel (Ni) must also be zero to maintain charge balance. This type of complex often appears in organometallic chemistry and coordination compounds.

Question 35:

Oxidation number of P in NaH_2PO_2 :

Options:

- (A) +1
- (B) +3
- (C) +5
- (D) -1

Correct Option:

- (A) +1

Explanation:

To calculate the oxidation number of phosphorus (P) in NaH_2PO_2 :

$\text{Na} = +1$, $\text{H} = +1$ (2 H = +2), $\text{O} = -2$ (2 O = -4).

Let $\text{P} = x$.

$+1 (\text{Na}) + 2(+1) (\text{H}) + x (\text{P}) + 2(-2) (\text{O}) = 0 \rightarrow 1 + 2 + x - 4 = 0 \rightarrow x = +1$.

Thus, the oxidation number of phosphorus is +1.

Question 36:

Molar mass of CO_2 :

Options:

- (A) 22
- (B) 44
- (C) 28
- (D) 32

Correct Option:

- (B) 44

Explanation:

The molar mass of carbon dioxide (CO_2) is calculated by summing the atomic masses of its atoms. Carbon (C) has a mass of 12 g/mol, and each oxygen (O) is 16 g/mol. Therefore, $12 + (2 \times 16) = 44$ g/mol. This is the standard molar mass used in stoichiometry.

Question 37:

SI unit of amount of substance:

Options:

- (A) Mole
- (B) Gram
- (C) Liter
- (D) Kilogram

Correct Option:

- (A) Mole

Explanation:

The mole (mol) is the SI unit used to measure the amount of substance. It represents Avogadro's number of particles (6.022×10^{23}). This unit allows chemists to count particles like atoms, molecules, or ions by weighing them and is fundamental in chemical equations and calculations.

Question 38:

Formula of Green vitriol:

Options:

- (A) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
- (B) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
- (C) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$

(D) $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$

Correct Option:

(A) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$

Explanation:

Green vitriol is the common name for ferrous sulfate heptahydrate, which has the formula $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$. The green color comes from the hydrated ferrous ions. It is used in dyeing, as a precursor for other iron compounds, and sometimes in agriculture as a soil amendment for iron deficiency.

Question 39:

Formula of Glauber's salt:

Options:

(A) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$

(B) NaCl

(C) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$

(D) K_2SO_4

Correct Option:

(A) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$

Explanation:

Glauber's salt is the decahydrate form of sodium sulfate ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$). It was historically used as a laxative and is also used in glass manufacturing and dyeing processes. Its name comes from Johann Rudolph Glauber, the German chemist who discovered it in the 17th century.

Question 40:

Formula of Prussian Blue:

Options:

(A) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$

(B) $\text{K}_4[\text{Fe}(\text{CN})_6]$

(C) Fe_2O_3

(D) CuSO_4

Correct Option:

(A) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$

Explanation:

Prussian Blue is a dark blue pigment with the chemical formula $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$. It is a coordination compound formed from iron(III) and ferrocyanide ions. It is used as a pigment, in medicine for heavy metal poisoning treatment, and in scientific applications such as histology and chemistry.

Question 41:

Which is not a greenhouse gas?

Options:

(A) CO_2

(B) CH_4

(C) H_2

(D) Water vapor

Correct Option:

(C) H_2

Explanation:

Hydrogen gas (H_2) is not a greenhouse gas. Greenhouse gases like carbon dioxide (CO_2), methane (CH_4), and water vapor trap heat in the atmosphere, contributing to the greenhouse effect and global warming. Hydrogen, although a gas, does not absorb infrared radiation significantly and hence does not act as a greenhouse gas.

Question 42:

Boron shows diagonal relationship with:

Options:

- (A) Silicon
- (B) Sodium
- (C) Carbon
- (D) Magnesium

Correct Option:

- (A) Silicon

Explanation:

Boron and silicon show a diagonal relationship in the periodic table due to their similar properties despite being in different groups. Both elements form covalent compounds, have semi-conducting nature, and form acids that act as weak monobasic acids. This relationship is especially notable in the chemistry of metalloids.

Question 43:

Most Lewis acidic compound:

Options:

- (A) HCl
- (B) AlCl_3
- (C) BF_3
- (D) H_3BO_3

Correct Option:

- (B) AlCl_3

Explanation:

Aluminum chloride (AlCl_3) is highly Lewis acidic because the aluminum atom has an incomplete octet and can accept electron pairs. It readily acts as an electron pair acceptor in chemical reactions, especially in Friedel-Crafts reactions. Although BF_3 is also Lewis acidic, AlCl_3 is stronger in this regard.

Question 44:

Wurtz reaction uses:

Options:

- (A) Sodium
- (B) Magnesium
- (C) Potassium
- (D) Calcium

Correct Option:

- (A) Sodium

Explanation:

The Wurtz reaction involves the coupling of alkyl halides in the presence of dry ether and metallic sodium to form alkanes. Sodium metal is used to donate electrons for the formation

of carbon-carbon bonds. This reaction is commonly used in organic chemistry for chain extension in hydrocarbons.

Question 45:

Series for visible spectrum:

Options:

- (A) Lyman
- (B) Balmer
- (C) Paschen
- (D) Pfund

Correct Option:

- (B) Balmer

Explanation:

The Balmer series corresponds to the electron transitions in the hydrogen atom that fall to the second energy level ($n = 2$) and emit radiation in the visible spectrum. The wavelengths of this series range from about 400 to 700 nm. Other series like Lyman, Paschen, and Pfund are outside the visible range.

Question 46:

Homogeneous mixture example:

Options:

- (A) Air
- (B) Oil-water
- (C) Sand
- (D) Iron filings

Correct Option:

- (A) Air

Explanation:

Air is a homogeneous mixture because it has a uniform composition of gases such as nitrogen, oxygen, carbon dioxide, and others throughout. Each part of the mixture has the same properties. In contrast, oil-water and sand mixtures are heterogeneous and can be physically distinguished and separated.

Question 47:

Thermos flask is an example of:

Options:

- (A) Isolated system
- (B) Open system
- (C) Closed
- (D) Mechanical

Correct Option:

- (A) Isolated system

Explanation:

A thermos flask is considered an isolated system because it minimizes exchange of both matter and energy with its surroundings. It is designed with vacuum insulation and reflective surfaces to retain the temperature of the contents by preventing heat transfer via conduction, convection, and radiation.

Question 48:

In adiabatic process:

Options:

- (A) No heat exchange
- (B) Constant temp
- (C) Heat loss
- (D) Pressure constant

Correct Option:

- (A) No heat exchange

Explanation:

An adiabatic process is one in which there is no exchange of heat ($Q = 0$) between the system and surroundings. All the energy is transferred as work. This process is key in thermodynamics and is used in applications like the rapid compression or expansion of gases, such as in air conditioners.

Question 49:

Latent heat is associated with:

Options:

- (A) Phase change
- (B) Pressure change
- (C) Volume change
- (D) Temp rise

Correct Option:

- (A) Phase change

Explanation:

Latent heat is the energy absorbed or released during a phase change—such as melting, boiling, or condensation—without any change in temperature. This heat is used to break or form intermolecular bonds. For example, during melting, latent heat converts a solid to a liquid at constant temperature.

Question 50:

When distance between masses doubles, force becomes:

Options:

- (A) One-fourth
- (B) Half
- (C) Same
- (D) Double

Correct Option:

- (A) One-fourth

Explanation:

According to Newton's law of gravitation, the gravitational force F between two masses is inversely proportional to the square of the distance between them:

$$F \propto \frac{1}{r^2}$$

If the distance r doubles, the force becomes $\frac{1}{(2)^2} = \frac{1}{4}$ of its original value. Thus, it becomes one-fourth.

Question 51:

Property of light that doesn't change in new medium:

Options:

- (A) Frequency
- (B) Speed
- (C) Wavelength
- (D) Direction

Correct Option:

- (A) Frequency

Explanation:

When light travels from one medium to another (e.g., from air to water), its speed and wavelength change due to the difference in optical densities, but its frequency remains unchanged. Frequency is determined by the source of light and does not depend on the medium through which it travels.

Question 52:

Compound microscope produces:

Options:

- (A) Virtual, magnified
- (B) Real, diminished
- (C) Virtual, diminished
- (D) Real, magnified

Correct Option:

- (A) Virtual, magnified

Explanation:

A compound microscope uses two lenses—objective and eyepiece—to magnify small objects. The image formed is virtual, upright (for the observer), and highly magnified. The final image is not formed on a screen, which confirms its virtual nature, and it is much larger than the actual object being observed.

Question 53:

Acceleration of object thrown upwards:

Options:

- (A) -9.8 m/s^2
- (B) 0
- (C) 9.8 m/s^2
- (D) Variable

Correct Option:

- (A) -9.8 m/s^2

Explanation:

An object thrown upward experiences constant acceleration due to gravity in the downward direction. This acceleration is taken as negative if upward is considered positive. The standard value is -9.8 m/s^2 near Earth's surface. The velocity decreases as the object rises, but the acceleration remains constant.

Question 54:

Ratio of KE and total energy in nth orbit (Bohr's model):

Options:

- (A) 1:2
- (B) -1
- (C) 2
- (D) 1

Correct Option:

- (A) 1:2

Explanation:

In Bohr's model of the atom, the total energy (E) of an electron in the n^{th} orbit is the sum of its kinetic energy (KE) and potential energy. The relationship is:

$$\text{KE} = -E \quad \text{and} \quad \text{PE} = 2E$$

Thus,

$$\frac{\text{KE}}{\text{Total Energy}} = \frac{-E}{E} = -1$$

This shows that kinetic energy is positive in magnitude and equal to the total energy in magnitude but opposite in sign.

SSUHS 2024 Memory-Based Entrance Question Paper With Solutions

Question 1:

Pollination in a closed flower is called

Options:

- (A) Cleistogamy
- (B) Chasmogamy
- (C) Xenogamy
- (D) Geitonogamy

Correct Option:

- (A) Cleistogamy

Explanation:

Cleistogamy is a type of self-pollination occurring in closed flowers, preventing cross-pollination. It ensures fertilisation without the involvement of external agents like wind or insects.

Question 2:

The uterus is single in females, and it is also called:

Options:

- (A) Cervix
- (B) Ovary
- (C) Womb
- (D) Ampulla

Correct Option:

- (C) Womb

Explanation:

The uterus is commonly referred to as the womb. It is the organ where implantation of the fertilized egg and development of the fetus occur during pregnancy.

Question 3:

The Family Planning Programme was initiated in the year

Options:

- (A) 1947
- (B) 1975
- (C) 1981
- (D) 1951

Correct Option:

- (D) 1951

Explanation:

India launched the world's first national family planning program in 1951 to control population growth and improve maternal and child health.

Question 4:

F1 generation resembles both parents in

Options:

- (A) Incomplete dominance
- (B) Co-Dominance
- (C) Pleiotropy
- (D) Law of Dominance

Correct Option:

- (B) Co-Dominance

Explanation:

In co-dominance, both alleles in the heterozygote express themselves fully, resulting in traits of both parents appearing in the F1 generation without blending.

Question 5:

In the Lac Operon, the number of structural genes is

Options:

- (A) Five
- (B) Four
- (C) Three
- (D) Two

Correct Option:

- (C) Three

Explanation:

The Lac operon consists of three structural genes: lacZ, lacY, and lacA, which are involved in the metabolism of lactose in bacteria.

Question 6:

When the original drifted population becomes founders, the effect is called

Options:

- (A) Founder effect
- (B) Industrial Melanism
- (C) Adaptive Radiation
- (D) Mutation Effect

Correct Option:

- (A) Founder effect

Explanation:

The founder effect occurs when a new population is established by a small number of individuals, leading to reduced genetic variation and potential genetic drift.

Question 7:

The yellowish fluid colostrum secreted by the mother during the initial days of lactation has abundant

Options:

- (A) Antigens
- (B) Antibodies
- (C) Allergy
- (D) Oncogenes

Correct Option:

- (B) Antibodies

Explanation:

Colostrum is rich in antibodies, especially IgA, which helps newborns develop passive immunity and protects against infections.

Question 8:

Large holes in "Swiss Cheese" are due to the production of large amounts of

Options:

- (A) H_2SO_4
- (B) O_2
- (C) CO_2
- (D) H_2S

Correct Option:

- (C) CO_2

Explanation:

The holes in Swiss cheese are caused by carbon dioxide gas produced by *Propionibacterium* during fermentation, which gets trapped in the cheese.

Question 9:

DNA fragments can be joined together by using

Options:

- (A) Restriction Endonuclease
- (B) Okazaki Fragments
- (C) DNA Ligase
- (D) DNA Helicase

Correct Option:

- (C) DNA Ligase

Explanation:

DNA ligase is an enzyme that facilitates the joining of DNA strands by forming phosphodiester bonds, crucial in DNA replication and recombinant DNA technology.

Question 10:

When one species causes harm to another organism without any cost or benefit to itself

Options:

- (A) Commensalism
- (B) Amensalism
- (C) Predation
- (D) Mutualism

Correct Option:

- (B) Amensalism

Explanation:

Amensalism is a type of biological interaction where one species is harmed while the other is unaffected, such as when penicillin kills bacteria.

Question 11:

The smallest living cells are

Options:

- (A) Mycoplasma
- (B) Bacteria
- (C) Fungus
- (D) Bacteriophage

Correct Option:

- (A) Mycoplasma

Explanation:

Mycoplasmas are the smallest known living cells, lacking a cell wall and capable of surviving without oxygen. They are even smaller than many viruses.

Question 12:

Plants having naked seeds are

Options:

- (A) Angiosperms
- (B) Gymnosperms
- (C) Pteridophytes
- (D) Bryophytes

Correct Option:

- (B) Gymnosperms

Explanation:

Gymnosperms produce seeds that are not enclosed within an ovary, hence termed “naked seeds.” Examples include pine, fir, and cycads.

Question 13:

The presence of feathers is characteristic of

Options:

- (A) Mammals
- (B) Reptiles
- (C) Aves
- (D) Amphibians

Correct Option:

- (C) Aves

Explanation:

Feathers are a unique feature of birds (Aves). They play roles in flight, insulation, and mating displays.

Question 14:

When sepals are united, the condition is called

Options:

- (A) Polysepalous
- (B) Polypetalous
- (C) Gamopetalous
- (D) Gamosepalous

Correct Option:

- (D) Gamosepalous

Explanation:

In gamosepalous flowers, the sepals are fused together, forming a tubular or cup-shaped calyx. This is common in many dicot plants.

Question 15:

Cell Theory was given by

Options:

- (A) Singer and Nicolson
- (B) Rudolf Virchow
- (C) Schleiden and Schwann
- (D) Robertson

Correct Option:

- (C) Schleiden and Schwann

Explanation:

Schleiden and Schwann proposed the Cell Theory in the 1830s, stating that all living organisms are composed of cells and that the cell is the basic unit of life.

Question 16:

Kranz anatomy is found in the leaves of

Options:

- (A) C4 Plants
- (B) C3 Plants
- (C) C2 Plants
- (D) All of the above

Correct Option:

- (A) C4 Plants

Explanation:

Kranz anatomy is a special structure in the leaves of C4 plants like maize, where bundle sheath cells are arranged around the vascular bundles for efficient photosynthesis.

Question 17:

Each mammalian haemoglobin molecule can carry a maximum number of ___ molecules of oxygen

Options:

- (A) 5
- (B) 4

(C) 3

(D) 2

Correct Option:

(B) 4

Explanation:

Each haemoglobin molecule has four iron-containing heme groups, and each can bind to one oxygen molecule, allowing a total of four oxygen molecules per haemoglobin.

Question 18:

Which one of the following is not a part of an ECG?

Options:

(A) P-Wave

(B) Q-Wave

(C) T-Wave

(D) Z-Wave

Correct Option:

(D) Z-Wave

Explanation:

The standard ECG includes P, Q, R, S, and T waves. There is no Z-wave in a normal ECG reading; thus, it is not part of the electrocardiogram.

Question 19:

Accumulation of urea in the blood is called

Options:

(A) Angina

(B) Gout

(C) Uremia

(D) Osteoporosis

Correct Option:

(C) Uremia

Explanation:

Uremia is a condition where there is excessive urea in the blood, usually due to kidney failure, and can lead to serious complications if untreated.

Question 20:

The site for active ribosomal RNA synthesis is

Options:

(A) Ribosome

(B) Mitochondria

(C) Nucleolus

(D) Vacuoles

Correct Option:

(C) Nucleolus

Explanation:

The nucleolus is the site inside the nucleus where ribosomal RNA (rRNA) is synthesized and assembled into ribosomal subunits.

Question 21:

The dimensions of Planck's constant are equal to those of

Options:

- (A) Energy
- (B) Momentum
- (C) Angular momentum
- (D) Power

Correct Option:

- (C) Angular momentum

Explanation:

Planck's constant has the dimensions of angular momentum, which is $[ML^2T^{-1}]$. It represents the quantum of action in quantum mechanics.

Question 22:

The angle between two equal vectors is

Options:

- (A) 0°
- (B) 30°
- (C) 90°
- (D) 180°

Correct Option:

- (C) 90°

Explanation:

Two equal vectors will form a 90° angle when their dot product is zero, i.e., they are perpendicular.

Question 23:

Change in momentum is given by

Options:

- (A) Force \times Mass
- (B) Force \times Time
- (C) Force \times Velocity
- (D) Force \times Distance

Correct Option:

- (B) Force \times Time

Explanation:

Impulse, which is Force \times Time, is equal to the change in momentum according to the impulse-momentum theorem.

Question 24:

eV is the unit of

Options:

- (A) Charge
- (B) Voltage
- (C) Energy
- (D) Acceleration

Correct Option:

- (C) Energy

Explanation:

An electron volt (eV) is the amount of energy gained by an electron when accelerated through 1 volt of electric potential.

Question 25:

For which of the following does the centre of mass lie outside the body?

Options:

- (A) A pencil
- (B) A dice
- (C) A bangle
- (D) A shot put

Correct Option:

- (C) A bangle

Explanation:

In hollow or ring-shaped objects like a bangle, the mass is distributed away from the center, placing the center of mass outside the material body.

Question 26:

The acceleration due to gravity at the center of Earth is

Options:

- (A) $9.8ms^{-2}$
- (B) $4.9ms^{-2}$
- (C) Zero
- (D) None of these

Correct Option:

- (C) Zero

Explanation:

At the center of the Earth, gravitational forces from all sides cancel out, resulting in zero net acceleration due to gravity.

Question 27:

An ice cube floats in a glass of water. What happens to the level of water when ice melts?

Options:

- (A) Decreases
- (B) Increases
- (C) Remains the same
- (D) First increases, then decreases

Correct Option:

- (C) Remains the same

Explanation:

Floating ice displaces its own weight in water. When it melts, it exactly fills the space of the water it displaced, so the water level remains unchanged.

Question 28:

The degree of freedom of a monoatomic gas molecule is

Options:

- (A) 3
- (B) 5
- (C) 6
- (D) 7

Correct Option:

- (A) 3

Explanation:

Monoatomic gases have 3 degrees of freedom corresponding to translational motion along x, y, and z axes.

Question 29:

The phenomenon of sound propagation in air is

Options:

- (A) Isothermal process
- (B) Adiabatic process
- (C) Isobaric process
- (D) Isochoric process

Correct Option:

- (B) Adiabatic process

Explanation:

Sound waves propagate through air with rapid compressions and rarefactions, making heat exchange negligible, so it is an adiabatic process.

Question 30:

For an ideal gas

Options:

- (A) $C_p < C_v$

(B) $C_p = C_v$

(C) $C_p > C_v$

(D) $C_p = C_v = 0$

Correct Option:

(C) $C_p > C_v$

Explanation:

For ideal gases, heat capacity at constant pressure C_p is greater than at constant volume C_v because extra energy is needed to do work at constant pressure.

Question 31:

In a nonuniform electric field, an electric dipole experiences

Options:

(A) Torque only

(B) Torque as well as net force

(C) Force only

(D) None of these

Correct Option:

(B) Torque as well as net force

Explanation:

A nonuniform electric field exerts unequal forces on the two charges of the dipole, resulting in both net force and torque.

Question 32:

A galvanometer acting as a voltmeter will have

Options:

(A) High resistance in parallel with its coil

(B) High resistance in series with its coil

(C) Low resistance in parallel with the coil

(D) Low resistance in series with the coil

Correct Option:

(B) High resistance in series with its coil

Explanation:

To convert a galvanometer into a voltmeter, a high resistance is connected in series so it can measure potential difference without drawing much current.

Question 33:

A transformer is a device that transforms

Options:

- (A) DC voltage
- (B) AC voltage
- (C) AC and DC voltage
- (D) None

Correct Option:

- (B) AC voltage

Explanation:

Transformers work on the principle of electromagnetic induction and can only transform alternating current (AC) voltage, not DC.

Question 34:

Which of the following has the smallest wavelength?

Options:

- (A) Yellow rays
- (B) X-rays
- (C) α -rays
- (D) γ -rays

Correct Option:

- (D) γ -rays

Explanation:

Gamma (γ) rays have the highest energy and shortest wavelength in the electromagnetic spectrum, even shorter than X-rays.

Question 35:

Image formed by the objective of a compound microscope is

Options:

- (A) Virtual and enlarged
- (B) Virtual and diminished
- (C) Real and diminished
- (D) Real, enlarged, and inverted

Correct Option:

- (D) Real, enlarged and inverted

Explanation:

The objective lens of a compound microscope forms a real, inverted, and magnified image of the object, which is then magnified further by the eyepiece.

Question 36:

If particles are moving with the same velocity, then the maximum de Broglie wavelength is for

Options:

- (A) Proton
- (B) Neutron
- (C) α -particle
- (D) β -particle

Correct Option:

(D) β -particle

Explanation:

The de Broglie wavelength is inversely proportional to mass. Beta particles (electrons) have the smallest mass, so they have the longest wavelength at the same velocity.

Question 37:

Demodulation is an essential feature of a

Options:

- (A) Transmitter
- (B) Receiver
- (C) Medium
- (D) None of these

Correct Option:

- (B) Receiver

Explanation:

Demodulation is the process of extracting the original information signal from a modulated carrier wave, and it occurs in the receiver.

Question 38:

Which sphere of the atmosphere is closest to Earth?

Options:

- (A) Troposphere
- (B) Stratosphere
- (C) Mesosphere
- (D) Ionosphere

Correct Option:

- (A) Troposphere

Explanation:

The troposphere is the lowest layer of Earth's atmosphere and is where weather phenomena occur. It extends up to about 8–15 km.

Question 39:

Torque acting on electric dipole moment \vec{P} placed in uniform electric field \vec{E} is

Options:

- (A) $\vec{P} \times \vec{E}$
- (B) \vec{P}, \vec{E}
- (C) $\vec{P} \times \vec{E} \times \vec{P}$
- (D) $\frac{\vec{E} \cdot \vec{P}}{D^2}$

Correct Option:

- (A) $\vec{P} \times \vec{E}$

Explanation:

The torque τ on a dipole in an electric field is given by the vector cross product of dipole moment and electric field: $\tau = \vec{P} \times \vec{E}$.

Question 40:

Which of the following terms is unitless?

Options:

- (A) Molality
- (B) Molarity
- (C) Mole fraction
- (D) Strength

Correct Option:

- (C) Mole fraction

Explanation:

Mole fraction is the ratio of moles of one component to the total moles, making it a pure number without units.

Question 41:

The maximum number of electrons in a subshell is given by the expression

Options:

- (A) $4l - 2$
- (B) $4d + 2$
- (C) $2l + 1$
- (D) $2n^2$

Correct Option:

- (B) $4l + 2$

Explanation:

Each subshell can hold a maximum of $4d + 2$ electrons, where d is the azimuthal quantum number.

Question 42:

Which of the following is not a transition metal?

Options:

- (A) Silver
- (B) Lead (Pb)
- (C) Tungsten (W)
- (D) Manganese (Mn)

Correct Option:

- (B) Lead (Pb)

Explanation:

Lead (Pb) is a post-transition metal, not a transition metal. Transition metals are found in the d-block of the periodic table.

Question 43:

The ratio of π to σ bonds in benzene is

Options:

- (A) 1:2
- (B) 1:6
- (C) 1:4
- (D) 1:1

Correct Option:

- (A) 1:2

Explanation:

Benzene has 3π bonds and 6σ bonds, giving a $\pi : \sigma$ bond ratio of 1 : 2.

Question 45:

The spherical shape of a rainwater droplet is due to

Options:

- (A) Viscosity
- (B) Surface tension
- (C) Temperature
- (D) Pressure

Correct Option:

- (B) Surface tension

Explanation:

Surface tension acts to minimize the surface area of a liquid. This force pulls the water

molecules into the shape with the least surface area — a sphere — giving rain droplets their rounded shape.

Question 46:

The normal pH range of human blood is

Options:

- (A) 0–5.25
- (B) 7.35–7.45
- (C) 6.25–6.75
- (D) 8.00–9.25

Correct Option:

- (B) 7.35–7.45

Explanation:

Human blood is slightly alkaline with a normal pH range between 7.35 and 7.45. This narrow range is crucial for proper biochemical functioning.

Question 47:

The formula of soda ash is

Options:

- (A) $Na_2CO_3 \cdot 10H_2O$
- (B) $Na_2CO_3 \cdot 2H_2O$
- (C) Na_2CO_3, H_2O
- (D) Na_2CO_3

Correct Option:

- (D) Na_2CO_3

Explanation:

Soda ash is the common name for anhydrous sodium carbonate, Na_2CO_3 , used in glass making and water softening.

Question 48:

The reduction process involves

Options:

- (A) Gain of electrons
- (B) Addition of oxygen
- (C) Loss of electrons
- (D) Increase in oxidation number

Correct Option:

- (A) Gain of electrons

Explanation:

Reduction is defined as the gain of electrons by a substance, which leads to a decrease in its oxidation state.

Question 49:

An electrophilic reagent is

Options:

- (A) Electron-deficient species
- (B) Electron-rich species
- (C) Negatively charged species
- (D) None of the above

Correct Option:

- (A) Electron-deficient species

Explanation:

Electrophiles are species that seek electrons. They are electron-deficient and are attracted to electron-rich regions in molecules, often initiating reactions with nucleophiles.

Question 50:

The IUPAC name of the compound $CH_3 - CH = CH - C \equiv CH$ is

Options:

- (A) Pent-2-en-4-yne
- (B) Pent-1-en-4-yne
- (C) Pent-3-en-1-yne
- (D) Pent-2-en-5-yne

Correct Option:

- (A) Pent-2-en-4-yne

Explanation:

Numbering starts from the end closer to the double bond to give it the lowest number. So the compound has a double bond at position 2 and a triple bond at position 4. Hence, the correct IUPAC name is Pent-2-en-4-yne.

Question 51:

The chlorination of methane is an example of

Options:

- (A) Elimination reaction
- (B) Substitution reaction
- (C) Addition reaction
- (D) Oxidation reaction

Correct Option:

- (B) Substitution reaction

Explanation:

In chlorination, a hydrogen atom of methane is replaced by a chlorine atom in the presence of UV light, which is a typical substitution reaction.

Question 52:

Isotonic solutions have

Options:

- (A) Same boiling point
- (B) Same vapor pressure
- (C) Same melting point
- (D) Same osmotic pressure

Correct Option:

- (D) Same osmotic pressure

Explanation:

Isotonic solutions have equal osmotic pressure due to the same concentration of solute particles, even if the solutes themselves differ.

Question 53:

The concentration term is independent of temperature is

Options:

- (A) Normality
- (B) Volume percentage
- (C) Molality
- (D) Molarity

Correct Option:

- (C) Molality

Explanation:

Molarity is defined as moles of solute per kilogram of solvent. Since it involves mass (not volume), it remains unaffected by temperature changes.

Question 54:

For redox reaction to proceed in a cell, the e.m.f. must be

Options:

- (A) Positive
- (B) Negative
- (C) Fixed
- (D) Zero

Correct Option:

- (A) Positive

Explanation:

A positive electromotive force (e.m.f.) indicates a spontaneous redox reaction in an electrochemical cell, allowing the cell to generate electricity.

Question 55:

The unit of cell constant is

Options:

- (A) $\Omega^{-1}cm^{-1}$
- (B) cm

(C) $\Omega^{-1}cm$

(D) cm^{-1}

Correct Option:

(D) cm^{-1}

Explanation:

Cell constant is the ratio of the distance between electrodes to the cross-sectional area of the cell. It has units of inverse length, i.e., cm^{-1} .

Question 56:

For a zero-order reaction, the rate of reaction is

Options:

(A) Independent of the initial concentration of reactants

(B) Depends upon the initial concentration of reactants

(C) Both of the above

(D) None of the above

Correct Option:

(A) Independent of the initial concentration of reactants

Explanation:

In a zero-order reaction, the rate of reaction does not change with the concentration of the reactant. It remains constant throughout the reaction, which is a defining feature of zero-order kinetics.

Question 57:

Transition metals behave as good catalysts because

Options:

(A) High melting point

(B) High ionization enthalpy

(C) Alloy formation

(D) Variable oxidation states

Correct Option:

(D) Variable oxidation states

Explanation:

Transition metals can change oxidation states easily, which allows them to form temporary bonds with reactants, lowering activation energy and increasing the rate of reaction. This makes them effective catalysts.

Question 58:

EDTA is

Options:

(A) Unidentate ligand

(B) Bidentate ligand

(C) Tridentate ligand

(D) Hexadentate ligand

Correct Option:

(D) Hexadentate ligand

Explanation:

EDTA (Ethylenediaminetetraacetic acid) has six donor atoms (four carboxylate oxygens and two amine nitrogens), allowing it to bind to a central metal ion through six sites. Thus, it is a hexadentate ligand.

Question 59:

Which of the following is a colligative property?

Options:

- (A) Relative lowering in vapour pressure
- (B) Lowering in vapour pressure
- (C) Vapour pressure
- (D) Saturated pressure

Correct Option:

- (A) Relative lowering in vapour pressure

Explanation:

Colligative properties depend on the number of solute particles and not on their nature. Relative lowering in vapor pressure is one such property, alongside boiling point elevation, freezing point depression, and osmotic pressure.

Question 60:

The highest source of Vitamin A is

Options:

- (A) Papaya
- (B) Green leafy vegetables
- (C) Cod liver oil
- (D) Carrot

Correct Option:

- (C) Cod liver oil

Explanation:

Cod liver oil is one of the richest sources of Vitamin A, providing it in a readily usable form (retinol). While carrots and leafy vegetables contain beta-carotene, an inactive precursor, cod liver oil offers direct Vitamin A.

Question 61:

Which one of the following organs breaks down fat to produce cholesterol?

Options:

- (a) Lungs
- (b) Intestine
- (c) Liver
- (d) Kidneys

Correct Option: (c) Liver

Explanation:

The liver plays a key role in breaking down fats and synthesizing cholesterol. It processes fatty acids, stores energy, and converts some into cholesterol, which is used for cell membrane structure, hormones, and bile acids.

Question 62:

Who has propounded the word "Vitamin"?

Options:

- (a) Darwin
- (b) Pasteur
- (c) Landeck
- (d) Casimir Funk

Correct Option: (d) Casimir Funk

Explanation:

Casimir Funk coined the term "vitamin" in 1912 after discovering substances in food that were vital for health. He believed these substances were "amines," hence the name "vital amines," shortened to "vitamins."

Question 63:

Which of the following has oxygenated blood?

Options:

- (a) Renal Veins
- (b) Pulmonary Veins
- (c) Pulmonary artery
- (d) Hepatic portal veins

Correct Option: (b) Pulmonary Veins

Explanation:

Pulmonary veins carry oxygenated blood from the lungs to the left atrium of the heart. Unlike most veins, which carry deoxygenated blood, these are an exception in the circulatory system.

Question 64:

Which part of the brain is responsible for respiration?

Options:

- (a) Pons
- (b) Cerebrum
- (c) Medulla oblongata
- (d) Gyri

Correct Option: (c) Medulla oblongata

Explanation:

The medulla oblongata controls autonomic functions like breathing, heart rate, and blood pressure. It contains respiratory centers that regulate the rhythm and depth of breathing.

Question 65:

The meiotic division takes place in

Options:

- (a) Meristematic cells
- (b) Conductive cells
- (c) Reproductive cells
- (d) Vegetable cells

Correct Option: (c) Reproductive cells

Explanation:

Meiosis occurs in reproductive cells (gametes) to reduce the chromosome number by half,

ensuring genetic diversity in offspring. It does not happen in vegetative or meristematic cells, which undergo mitosis.

Question 66:

What is the standard value of the pH range of acids?

Options:

- (a) 0–7
- (b) 7–14
- (c) 2–7
- (d) 7–15

Correct Option: (a) 0–7

Explanation:

Acids have a pH less than 7. The pH scale ranges from 0 (strongly acidic) to 14 (strongly basic), with 7 being neutral. Acids typically fall in the 0–7 range.

Question 67:

What is the SI unit of current?

Options:

- (a) Coulomb
- (b) Ampere
- (c) Ohm
- (d) Volt

Correct Option: (b) Ampere

Explanation:

The SI unit of electric current is the Ampere (A). It measures the flow of electric charge per unit time, defined as one coulomb per second.

Question 68:

Name the part of the body on which coronavirus affects the most?

Options:

- (a) Heart
- (b) Liver
- (c) Kidney
- (d) Lungs

Correct Option: (d) Lungs

Explanation:

COVID-19 primarily affects the lungs, causing respiratory symptoms like cough, shortness of breath, and in severe cases, pneumonia. It targets alveoli and damages lung tissues.

Question 69:

What is the chemical formula of alcohol?

Options:

- (a) C_2H_5OH

(b) C_2H_5

(c) C_2H_5COOH

(d) C_2H_5O

Correct Option: (a) C_2H_5OH

Explanation:

Ethanol, the most common alcohol used in beverages and disinfectants, has the formula C_2H_5OH , representing two carbon atoms, six hydrogens, and one hydroxyl group.

Question 70:

What is the scientific name of Humans?

Options:

(a) *Mangifera Indica*

(b) *Rana Tigrina*

(c) *Homo sapiens*

(d) *Homo species*

Correct Option: (c) *Homo sapiens*

Explanation:

The scientific name for modern humans is *Homo sapiens*, which means “wise man” in Latin. It belongs to the genus *Homo* and the species *sapiens*.

Question 71:

Which hormone stimulates the development of ovarian follicles?

Options:

(a) FSH

(b) Estrogen

(c) Progesterone

(d) L.H.

Correct Option: (a) FSH

Explanation:

Follicle-stimulating hormone (FSH) initiates the growth of ovarian follicles in the ovaries during the menstrual cycle. It is produced by the anterior pituitary gland.

Question 72:

What do we call nuclides with the same mass numbers?

Options:

(a) Isotopes

(b) Isobars

(c) Isotones

(d) Such species don't exist

Correct Option: (b) Isobars

Explanation:

Isobars are atoms with the same mass number (total protons and neutrons) but different atomic numbers. They are different elements with equal nucleon count.

Question 73:

Who is the father of Genetics?

Options:

- (a) Gregor Mendel
- (b) Thomas Hunt Morgan
- (c) Francis Galton
- (d) Krateuas

Correct Option: (a) Gregor Mendel

Explanation:

Gregor Mendel is called the father of genetics for his pioneering work on inheritance patterns in pea plants, which led to the formulation of Mendel's laws.

Question 74:

Which of the following is the lens of the eye?

Options:

- (a) Concave
- (b) Biconcave
- (c) Biconvex
- (d) None of the above

Correct Option: (c) Biconvex

Explanation:

The human eye contains a transparent, flexible, biconvex lens. It focuses light on the retina, adjusting shape for near and far vision through accommodation.

Question 75:

How many bones are present in the middle ear?

Options:

- (a) 2
- (b) 3
- (c) 6
- (d) 9

Correct Option: (b) 3

Explanation:

The middle ear has three small bones: the malleus, incus, and stapes. These ossicles transmit sound vibrations from the eardrum to the inner ear.

Question 76:

Which of the following is not an infectious disease?

Options:

- (a) Cholera
- (b) Chickenpox
- (c) Malaria

(d) Alzheimer's

Correct Option: (d) Alzheimer's

Explanation:

Alzheimer's disease is a neurodegenerative disorder, not caused by pathogens. In contrast, cholera, chickenpox, and malaria are all infectious and spread via microbes or vectors.

Question 77:

Which vitamin is responsible for wound healing?

Options:

(a) Vitamin A

(b) Vitamin B

(c) Vitamin K

(d) Vitamin C

Correct Option: (d) Vitamin C

Explanation:

Vitamin C (ascorbic acid) is essential for collagen synthesis, which is vital for wound healing. It strengthens skin, blood vessels, and connective tissue.

Question 78:

In the RNA of humans, adenine pairs with

Options:

(a) Uracil

(b) Guanine

(c) Thymine

(d) None of the above

Correct Option: (a) Uracil

Explanation:

In RNA, adenine (A) pairs with uracil (U) instead of thymine (T), which is found in DNA. This pairing is part of RNA's structural difference from DNA.

Question 79:

Which of the following is the functional unit of the body?

Options:

(a) Mitochondria

(b) Cytoplasm

(c) Spleen

(d) Cell

Correct Option: (d) Cell

Explanation:

The cell is the basic structural and functional unit of life. All organisms are made of cells, and various organelles within the cell carry out life functions.

Question 80:

She dyed her hair and wore dark glasses.....people wouldn't recognise her.

Options:

- (a) if only
- (b) so that
- (c) never again
- (d) even so

Correct Option: (b) so that

Explanation:

"So that" introduces a purpose clause. The sentence implies she disguised herself with a purpose: to avoid recognition. The other options do not fit the intended meaning.

Question 81:

The doctor recommended that I ____ more careful with my diet.

Options:

- (a) be
- (b) will be
- (c) am
- (d) was

Correct Option: (a) be

Explanation:

In the subjunctive mood, after verbs like "recommend," we use the base form of the verb. So, "be" is correct and formal grammar.

Question 82:

Synonym of the word "erase":

Options:

- (a) Dilute
- (b) Aerate
- (c) Delete
- (d) Ignite

Correct Option: (c) Delete

Explanation:

"Delete" means to remove or erase. The other words do not relate to the action of removing something written or stored.

Question 83:

Antonym of the word "glut":

Options:

- (a) Shortage
- (b) Shout
- (c) Sick
- (d) Shroud

Correct Option: (a) Shortage

Explanation:

"Glut" means an oversupply or excess. Its opposite is "shortage," which implies a deficiency or lack of something.

Question 84:

Antonym of the word "incidental":

Options:

- (a) Fortunate
- (b) Planned
- (c) Important
- (d) Arbitrary

Correct Option: (b) Planned

Explanation:

"Incidental" means occurring by chance. The opposite is "planned," which means something decided beforehand or done with intention.

Question 85:

Synonym of the word "tedious":

Options:

- (a) Interesting
- (b) Boring
- (c) Exciting
- (d) Confusing

Correct Option: (b) Boring

Explanation:

"Tedious" means something dull, repetitive, or boring. It is associated with monotony and a lack of excitement.

Question 86:

Synonym of the word "unpredictable":

Options:

- (a) Expected
- (b) Surprising
- (c) Clear
- (d) Boring

Correct Option: (b) Surprising

Explanation:

"Unpredictable" means not able to be foreseen or anticipated, and "surprising" matches closely, indicating something that catches you off guard.

Question 87:

Antonym of the word "jubilant":

Options:

- (a) Happy
- (b) Depressed
- (c) Surprised
- (d) Confused

Correct Option: (b) Depressed

Explanation:

"Jubilant" means full of joy and celebration. The opposite emotion is "depressed," which reflects sadness and low spirits.

Question 88:

Correct spelling:

Options:

- (a) Embarassment
- (b) Embarrassment
- (c) Embarrasment
- (d) Embarassmentt

Correct Option: (b) Embarrassment

Explanation:

"Embarrassment" is correctly spelled with two "r"s and two "s"s. It refers to a feeling of self-consciousness or awkwardness.

Question 89:

Correct spelling:

Options:

- (a) accomodate
- (b) accommodate
- (c) accomodation
- (d) accomodated

Correct Option: (b) accommodate

Explanation:

"Accommodate" is correctly spelled with two "c"s and two "m"s. It means to provide lodging or adjust to a need.

Question 90:

Correct spelling:

Options:

- (a) Beleive
- (b) believe
- (c) belive
- (d) beleiveing

Correct Option: (b) believe

Explanation:

"Believe" is the correct spelling. It follows the common English spelling rule "i before e except after c."

Question 91:

A person who renounces the world and practices self-discipline in order to attain salvation:

Options:

- (a) Sceptic
- (b) Ascetic
- (c) Devotee
- (d) Antiquarian

Correct Option: (b) Ascetic

Explanation:

An ascetic is someone who lives a simple, self-disciplined life and often renounces worldly pleasures for spiritual reasons.

Question 92:

A sad song is:

Options:

- (a) Ditty
- (b) Knell
- (c) Dirge
- (d) Lay

Correct Option: (c) Dirge

Explanation:

A "dirge" is a slow, mournful song, often sung at funerals. It expresses grief and sorrow.

Question 93:

A disease that spreads by contact:

Options:

- (a) Incurable
- (b) Infectious
- (c) Contagious
- (d) Fatal

Correct Option: (c) Contagious

Explanation:

"Contagious" diseases spread through direct or indirect contact, such as flu or chickenpox.

"Infectious" is broader and includes vector-borne diseases.

Question 94:

She is interested ___ learning a new language

Options:

- (a) At
- (b) To
- (c) On
- (d) In

Correct Option: (d) In

Explanation:

The correct preposition is "in." We say someone is "interested in" doing something, such as learning.

Question 95:

He ran ___ the house

Options:

- (a) Onto
- (b) Into
- (c) To
- (d) For

Correct Option: (b) Into

Explanation:

"Ran into the house" implies entering the house while running. "Into" shows movement toward the inside of a space.

Question 96:

I usually ___ for a walk every morning

Options:

(a) Goes

(b) Go

(c) Will go

(d) Have gone

Correct Option: (b) Go

Explanation:

With the subject "I," the correct form is "go." "Goes" is used with third third-person singular like "he" or "she."

Question 97:

What are you doing here? She asked me.

Options:

(a) She asked what I was doing here

(b) She wanted to know what I am doing here

(c) She wants to know what I was doing here

(d) She wanted to know what I was doing here

Correct Option: (d) She wanted to know what I was doing here

Explanation:

This sentence is indirect speech in the past tense. "She wanted to know..." correctly reports the question using past tense structure.

SSUHS 2023 Memory-Based Entrance Question Paper With Solutions

Question 1:

Which is autosomal recessive?

Answer: Not clearly visible

Explanation: Autosomal recessive might refer to traits inherited via autosomal (non-sex) chromosomes. If it meant "autosomal recessive", examples include cystic fibrosis, sickle cell anaemia, etc.

Question 2 :

How many ATPs are produced in the EMP Pathway?

Answer: 2 ATP (net gain)

Explanation: The Embden-Meyerhof-Parnas (EMP) pathway is glycolysis. It produces 4 ATPs but consumes 2, giving a net gain of 2 ATP. The Embden-Meyerhof-Parnas (EMP) pathway, commonly known as glycolysis, is the primary pathway for glucose breakdown in most organisms. Besides yielding a net gain of 2 ATP molecules, it also generates 2 molecules of NADH and pyruvate, essential for cellular respiration processes.

Question 3:

Ashoka was just a king / just synonyms

Answer: Ashoka was a king

Explanation: Emperor Ashoka was one of the greatest rulers of ancient India. The "synonyms" part seems unclear, but may suggest a phrasing or history MCQ. Emperor Ashoka was one of the greatest rulers of ancient India, known for his vast Mauryan Empire and embrace of Buddhism after the Kalinga War. His reign is remembered for promoting peace, tolerance, and the spread of Dharma through rock and pillar edicts.

Question 4:

Which of the following sexually transmitted diseases is not curable?

Answer: AIDS

Explanation: AIDS is caused by HIV. There is no permanent cure, although antiretroviral therapy can manage it. Other STDs, like syphilis or gonorrhoea, are curable with antibiotics.

Question 5:

Which of the following is not a double membrane-bound organelle?

Answer: Ribosome

Explanation: Ribosomes are not membrane-bound. Mitochondria, chloroplasts, and nuclei are double membrane-bound organelles. Ribosomes are not membrane-bound organelles; they may exist freely in the cytoplasm or attached to the rough endoplasmic reticulum. In contrast, mitochondria, chloroplasts, and nuclei are double membrane-bound organelles that perform vital cellular functions such as energy production, photosynthesis, and genetic information storage and regulation in eukaryotic cells.

Question 6:

In chlorobenzene, the hybridisation of the carbon attached to the chlorine is?

Answer: sp^2

Explanation: The carbon attached to chlorine is part of the benzene ring, which has sp^2 hybridised carbons due to delocalised π -bonding. The carbon attached to chlorine in chlorobenzene is part of the benzene ring structure. All carbons in the benzene ring are sp^2 hybridised because of the presence of delocalised π -electrons across the ring. This sp^2 hybridisation leads to a planar structure with equal bond lengths and resonance stability in benzene.

Question 7:

Which one has the largest wavelength?

Answer: Radio waves

Explanation: In the electromagnetic spectrum, radio waves have the longest wavelengths and lowest frequencies. In the electromagnetic spectrum, radio waves have the longest wavelengths and lowest frequencies, making them ideal for long-distance communication like radio, television, and mobile signals. Their wavelengths can range from a few millimeters to kilometers, and they easily penetrate through the atmosphere, buildings, and other obstacles, enabling reliable signal transmission.

Question 8:

Meiosis occurs in?

Answer: Germ cells

Explanation: Meiosis occurs in reproductive cells (spermatocytes, oocytes) to produce gametes with half the chromosome number. Meiosis occurs in reproductive cells (spermatocytes, oocytes) to produce gametes with half the chromosome number, ensuring genetic stability across generations. This process involves two successive divisions—meiosis I and meiosis II—leading to four haploid cells. It introduces genetic variation through crossing over and independent assortment, which are essential for evolution and diversity.

Question 9:

Ionic radius order?

Answer: Varies based on context

Explanation: Cations are smaller than their neutral atoms; anions are larger. Across a period, the radius decreases within a group: radius increases. Cations are smaller than their neutral atoms because they lose electrons, reducing electron-electron repulsion and pulling the electrons closer to the nucleus. Anions are larger due to the gain of electrons, which increases repulsion. Across a period, atomic radius decreases due to increased nuclear charge, while down a group, radius increases.

Question 10:

Ovulation induced by?

Answer: Luteinizing Hormone (LH)

Explanation: A surge in LH triggers ovulation, causing the mature egg to be released from the ovary. A surge in LH triggers ovulation, causing the mature egg to be released from the ovary around the 14th day of the menstrual cycle. This process is essential for reproduction, as the egg enters the fallopian tube for possible fertilization. LH also stimulates corpus luteum formation, supporting progesterone production.

Question 11:

Capacitive impedance of DC current?

Answer: Infinite

Explanation: A capacitor blocks DC after full charge, so its impedance is infinite for DC. For AC, impedance is frequency-dependent. A capacitor blocks DC after full charge, so its impedance is infinite for DC, preventing continuous current flow. For AC, its impedance depends on frequency, given by $1/(2\pi fC)$. At higher frequencies, impedance decreases, allowing AC signals to pass more easily. This property is useful in filtering and coupling circuits.

Question 12:

Klinefelter's syndrome?

Answer: XXY chromosome

Explanation: It's a genetic condition where males have an extra X chromosome, leading to features like reduced fertility, breast development, etc. It's a genetic condition where males have an extra X chromosome, leading to features like reduced fertility, breast development, taller than average height, small testes, and less facial or body hair. This condition is called Klinefelter syndrome. It often remains undiagnosed until puberty or adulthood when symptoms become more apparent.

Question 13 :

Bond of contention?

Answer: A topic of dispute

Explanation: It's an idiom meaning a cause for argument or disagreement. It's an idiom meaning a cause for argument or disagreement, often referring to a specific issue, topic, or subject that triggers conflict between individuals or groups. "Bone of contention" is commonly used in discussions where ongoing disputes or tensions exist.

Question 14:

Which is pollination and fertilisation at the same time?

Answer: Cleistogamy

Explanation: In cleistogamous flowers, self-pollination and fertilisation occur without the flower opening. In cleistogamous flowers, self-pollination and fertilisation occur without the flower opening, ensuring reproductive success even in the absence of external pollinators. This type of pollination guarantees seed production and maintains genetic uniformity, commonly seen in plants like peas, violets, and certain grasses.

Question 15:

She set ___ the fire.

Answer: off

Explanation: “Set off the fire” means to ignite or trigger it. “Set off the fire” means to ignite or trigger it, often referring to causing an explosion, blaze, or sudden burst of flames. This phrase can also be used figuratively to describe starting intense emotions, conflicts, or dramatic events in various situations.

Question 16:

Is the intensity of light is rare to densest?

Answer: Decreases

Explanation: When light travels from a rarer to a denser medium, some is reflected, some absorbed, and the intensity generally decreases. When light travels from a rarer to a denser medium, some is reflected at the surface, some is absorbed within the material, and the remaining portion is refracted. This results in a decrease in the overall intensity of the transmitted light beam.

Question 17:

Which of the following is an autosomal-recessive disorder?

Answer: Cystic Fibrosis (example)

Explanation: Cystic Fibrosis is an autosomal recessive disorder caused by mutations in the CFTR gene on chromosome 7. Cystic fibrosis is an autosomal recessive disorder caused by mutations in the CFTR gene on chromosome 7, leading to defective chloride ion transport across cell membranes. This results in thick, sticky mucus accumulation in the lungs, pancreas, and other organs, causing respiratory issues, digestive problems, and increased susceptibility to infections.

Question 18:

The number of OH and H bonds in H_3PO_3 is?

Answer: 2 OH bonds, 1 P-H bond

Explanation: H_3PO_3 (phosphorus acid) has two OH groups and one P-H bond, not three OHs as the name might suggest. H_3PO_3 (phosphorus acid) has two OH groups and one P-H bond, not three OHs as the name might suggest. Only the hydrogen atoms of the OH groups are ionisable, making it a dibasic acid. The P-H bond does not participate in acidity, despite the molecular formula indicating three hydrogens.

Question 19:

Too many cooks spoil the broth?

Answer: Yes (True)

Explanation: An idiom meaning that too many people trying to manage the same task leads to poor results. An idiom meaning that too many people trying to manage the same task leads to poor results is “too many cooks spoil the broth.” It highlights how excessive involvement,

conflicting ideas, or lack of coordination can ruin a project or plan that might have succeeded with fewer contributors or clear leadership.

Questions 20:

Zero-order unit?

Answer: mol L⁻¹ s⁻¹

Explanation: For zero-order reactions, rate = k. So, unit of rate = unit of k = concentration/time = mol L⁻¹ s⁻¹. For zero-order reactions, rate = k, meaning the rate is independent of reactant concentration. The unit of the rate constant k is the same as that of rate, which is concentration per unit time. Therefore, k has units of mol L⁻¹ s⁻¹ or molarity per second in SI units.

Question 21:

He died ___ overeating.

Answer: From

Explanation: The correct preposition to use with "died" in this context is "from" — we say someone died from a cause (like disease, overeating, etc.). The correct preposition to use with "died" in this context is "from" — we say someone died from a cause, such as a disease, injury, or condition. For example, “He died from cancer” or “She died from overeating.” This usage indicates the specific cause leading to death.

Question 22 :

A group of crows is called a ___.

Answer: Murder

Explanation: The term “murder” is a collective noun specifically used for a group of crows. This unique and poetic usage originates from old English traditions of fanciful naming. It reflects the crow's dark appearance and cultural associations with mystery, death, or bad omens, making “murder” a fitting metaphorical group name.

Questions 23:

Which of the following is not present in DNA?

Answer: Uracil

Explanation: DNA (Deoxyribonucleic acid) contains four nitrogenous bases: Adenine, Thymine, Cytosine, and Guanine. Uracil is not found in DNA—it is present in RNA instead, where it replaces Thymine. This difference helps distinguish the two nucleic acids structurally and functionally. Thus, Uracil is not part of the DNA molecule.

Questions 24:

Binomial nomenclature was introduced by?

Answer: Linnaeus

Explanation: Binomial nomenclature is the formal system of naming organisms using two Latin names: the genus and the species. This classification method was introduced by Carl Linnaeus in the 18th century. It provides a standardized way to name organisms worldwide, avoiding confusion caused by regional or common names.

Question 25:

Ampere's law equation?

Answer: $\oint \mathbf{B} \cdot d\mathbf{l} = \mu_0 I$

Explanation: Ampere's Circuital Law relates the magnetic field in a loop to the electric current passing through the loop.

Question 26:

The coefficient of static friction may be?

Answer: Less than 1, equal to 1, greater than 1

Explanation: The coefficient of static friction is the ratio of maximum static frictional force to the normal force between two surfaces. It has no theoretical upper limit and depends on the nature of the surfaces. For very rough or adhesive materials, it can be greater than 1, though usually it's less.

Question 27:

If $\mathbf{A} \cdot \mathbf{B} = A \times B$, then the angle between A and B is?

Answer: 90°

Explanation: The dot product $\mathbf{A} \cdot \mathbf{B}$ is zero when vectors are perpendicular. The cross product $\mathbf{A} \times \mathbf{B}$ is maximum when they are perpendicular.

Question 28:

In benzene, what is the hybridisation of each carbon atom?

Answer: sp^2

Explanation: Each carbon atom in benzene forms three sigma bonds—two with adjacent carbon atoms and one with a hydrogen atom—and has one unhybridized p-orbital forming a delocalized π -bond. This bonding structure corresponds to sp^2 hybridisation, which leads to a planar hexagonal ring with equal bond lengths in benzene.

Question 29:

The train ___ leaves the station before we reach.

Answer: Had left

Explanation: The sentence refers to two past actions: the train leaving and "we" reaching the station. The action that occurred first must be in the past perfect tense. "Had left" correctly indicates that the train departed before the second past event of us reaching, following standard rules of tense sequence.

Question 30:

Strive means what?

Answer: Try

Explanation: The word "strive" is a verb that means to make a strong and determined effort to achieve a goal. It implies trying hard or working persistently toward something challenging. For example, students strive for success in exams by studying hard. In simple terms, "strive" basically means "try hard."

Question 31:

Write the unit of rate constant for a zero-order reaction.

Answer: mol L⁻¹ s⁻¹

Explanation: For zero-order reactions, the rate of reaction is independent of reactant concentration. Hence, unit = [Concentration]/[Time].

Question 32:

Which of the following STDs are not completely curable?

Answer: HIV/AIDS, genital warts, hepatitis B

Explanation: Sexually transmitted diseases like HIV/AIDS, genital warts, and hepatitis B are caused by viruses. Unlike bacterial infections that can be cured with antibiotics, these viral STDs cannot be completely eliminated from the body. They can only be controlled or managed with medications, lifestyle changes, and ongoing medical care or therapy.

Question 33:

Rama and ___ were present in the class.

Answer: I

Explanation: In English grammar, "I" is a subject pronoun, while "me" is an object pronoun. In the sentence "Rama and ___ were present in the class," the blank is part of the subject, so "I" is the correct choice. Therefore, "Rama and I" is the grammatically correct usage here.