NEET 2023 Solutions Code G1

Physics Questions & Solutions

Question 6. For Young's double slit experiment, two statements are given below:
Statement I : If screen is moved away from the plane of slits, angular separation of the fringes remains
constant.
Statement II : If the monochromatic source is replaced by another monochromatic source of larger
wavelength, the angular separation of fringes decreases.
In the light of the above statements, choose the correct answer from the options given below:
(1) Statement I is false but Statement II is true.
(2) Both Statement I and Statement II are true.
(3) Both Statement I and Statement II are false.
(4) **Statement I is true but Statement II is false.**

Answer (4) Statement I is true but Statement II is false.

Solution . For YDSE, angular fringe width is given by $\alpha = \frac{\gamma}{d}$ It does not depend on the distance of screen from the slit, so statement I is correct.
Angular fringe width $\propto \lambda$
If $\lambda \uparrow \rightarrow$ angular separation of fringes increases
So, statement I is true and statement II is false.

Question 11. The errors in the measurement which arise due to unpredictable fluctuations in temperature and voltage
supply are
(1) **Random errors**

(2) Instrumental errors
(3) Personal errors
(4) Least count errors

Answer (1) Random errors

Solution. The errors which cannot be associated with any systematic or constant cause are called random errors. These errors can arise due to unpredictable fluctuations in experimental conditions. e.g., random change in pressure, temperature, voltage supply etc.

Question13. $\oint E.dS = 0$ over a surface, then

(1) The electric field inside the surface is necessarily uniform
(2) **The number of flux lines entering the surface must be equal to the number of flux lines leaving it**
(3) The magnitude of electric field on the surface is constant
(4) All the charges must necessarily be inside the surface

Answer (2) The number of flux lines entering the surface must be equal to the number of flux lines leaving it

Solution $\oint E.dS = 0$ Net flux through the surface is zero. Therefore, the number of flux lines entering the surface must be equal to the number of flux lines leaving it.

Question 14. A Carnot engine has an efficiency of 50% when its source is at a temperature 327°C. The temperature of the
sink is
(1) 200°C
(2) 27°C
(3) 15°C
(4) 100°C
Answer (2) 27°C

Solution . The efficiency of Carnot engine, $\%\eta = \left(1 - \frac{Tsink}{Tsource} X\ 100\right)$

$T_{source} = 327$ ° C$=600K$

$50=(1-\frac{Tsink}{600})$

$\frac{1}{2} = 1-\frac{Tsink}{600}$

$T_{sink} = 300K$, *So the temperature of the sink is= 327-300=* 27° C

Question 16. Given below are two statements:
Statement I: Photovoltaic devices can convert optical radiation into electricity.
Statement II: Zener diode is designed to operate under reverse bias in breakdown region.
In the light of the above statements, choose the most appropriate answer from the options given below.
(1) Statement I is incorrect but Statement II is correct
(2) **Both Statement I and Statement II are correct**
(3) Both Statement I and Statement II are incorrect
(4) Statement I is correct but Statement II is incorrect

Answer (2) Both Statement I and Statement II are correct

Solution . Both Statements are correct.
I: Photovoltaic devices convert optical radiation into electricity.
II: Zener diode is designed to operate under reverse bias in breakdown region.
e.g., Zener diode as a voltage regulator.

Question 19. The angular acceleration of a body, moving along the circumference of a circle, is
(1) **Along the axis of rotation**
(2) Along the radius, away from centre
(3) Along the radius towards the centre

(4) Along the tangent to its position

Answer (1) Along the axis of rotation

Solution. Angular acceleration of a body, moving along the circumference of a circle is along the axis of rotation.

Question 21. The work functions of Caesium (Cs), Potassium (K) and Sodium (Na) are 2.14 eV, 2.30 eV and 2.75 eV respectively. If incident electromagnetic radiation has an incident energy of 2.20 eV, which of these photosensitive surfaces may emit photoelectrons?

(1) Na only
(2) **Cs only**
(3) Both Na and K
(4) K only

Answer (2) Cs only

Solution. Energy of incident radiation = 2.80 eV
Work function of Cs → 2.14 eV
Work function of K → 2.30 eV
Work function of Na → 2.75 eV
Since the work function of potassium and sodium are more than energy of incident radiation hence photons may be emitted from caesium.

Question 22. The net magnetic flux through any closed surface is
(1) Negative
(2) **Zero**
(3) Positive
(4) Infinity

Answer (2) Zero

Solution $\oint$ B. ds = 0

Magnetic monopoles don't exist.
Hence net magnetic flux through any closed surface is zero.

Question 23. A full wave rectifier circuit consists of two p-n junction diodes, a center-tapped transformer, capacitor and a
load resistance. Which of these components remove the ac ripple from the rectified output?
(1) Load resistance
(2) A center-tapped transformer
(3) p-n junction diodes
(4) **Capacitor**

Answer (4) Capacitor

Solution . Capacitor removes the ac ripple from rectified output.

Question 24. An ac source is connected to a capacitor C. Due to decrease in its operating frequency
(1) Capacitive reactance remains constant
(2) Capacitive reactance decreases
(3) Displacement current increases
(4) **Displacement current decreases**

Answer (4) Displacement current decreases

Solution Xc = $\frac{1}{\omega c}$ Since ω decreasing XC will increases hence current will decreases also
conduction current = displacement current
Therefore displacement current will decrease.

Question 32. The venturi-meter works on
(1) The principle of perpendicular axes

(2) Huygen's principle
(3) **Bernoulli's principle**
(4) The principle of parallel axes

Answer (3) Bernoulli's principle

Solution . Venturi-meter works on the Bernoulli's principle

Question 34. The magnetic energy stored in an inductor of inductance 4 μH carrying a current of 2 A is
(1) **8 μJ**
(2) 4 μJ
(3) 4 mJ
(4) 8 mJ

Answer (1) 8 μJ

Solution. Energy = $\frac{1}{2}Li^2$

= $\frac{1}{2}$X 4 X $10^{-2}X\ 2^2$

= 8 x 10-6 J

= 8 μJ

Chemistry Questions & Solutions

Question 54. Some tranquilizers are listed below. Which one from the following belongs to barbiturates?
(1) **Veronal**

(2) Chlordiazepoxide
(3) Meprobamate
(4) Valium

Answer (1)Veronal

Solution . Veronal is the derivative of Barbituric acid and considered as barbiturate. Meprobamate, valium and chlordiazepoxide are other tranquilizers.

Question63. Given below are two statements : one is labelled as Assertion A and the other is labelled as
Reason R :
Assertion A : A reaction can have zero activation energy.
Reasons R : The minimum extra amount of energy absorbed by reactant molecules so that their energy becomes equal to threshold value, is called activation energy.
In the light of the above statements, choose the correct answer from the options given below :
(1) A is false but R is true
(2) Both A and R are true and R is the correct explanation of A
(3) Both A and R are true and R is NOT the correct explanation of A
(4) A is true but R is false

Answer (3)

Solution . • Few reactions can have zero activation energy for example radical reactions.
• Activation energy is defined as the minimum amount of extra energy absorbed by reactants to achieve threshold energy.

Question 67. The element expected to form largest ion to achieve the nearest noble gas configuration is
(1) Na
(2) O

(3) F
(4) N

Answer (4) N

Solution . For isoelectronic species, as the charge on anion increases, ionic size increases So, N forms N3– anion with largest ionic size

Question 69. Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R
Assertion A : Helium is used to dilute oxygen in diving apparatus.
Reason R : Helium has high solubility in O2.
In the light of the above statements, choose the correct answer from the options given below
(1) A is false but R is true
(2) Both A and R are true and R correct explanation of A
(3) Both A and R are true and R is NOT the correct explanation of A
(4) A is true but R is false
Answer (3)

Solution . • Helium is used as diluent for oxygen in modern diving apparatus because of its very low solubility in blood.
• Gases diffuses easily with each other.

Questionn70. Which of the following statements are NOT correct?
A. Hydrogen is used to reduce heavy metal oxides to metals.
B. Heavy water is used to study reaction mechanism.
C. Hydrogen is used to make saturated fats from oils.
D. The H–H bond dissociation enthalpy is lowest as compared to a single bond between two atoms of
any elements.
E. Hydrogen reduces oxides of metals that are more active than iron.
Choose the most appropriate answer from the options given below:
(1) A, B, C only
(2) B, C, D, E only

(3) B, D only
(4) **D, E only**

Answer (4) D, E only

Solution. Statement A, B, C are correct
(D) H – H bond dissociation energy is maximum as compared to single bond between two atom of any
element.
(E) Hydrogen reduces oxides of metal that are less active than iron.

Question 71. Which one of the following statements is correct?
(1) Mg plays roles in neuromuscular function and interneuronal transmission
(2) **The daily requirement of Mg and Ca in the human body is estimated to be 0.2-0.3 g**

(3) All enzymes that utilise ATP in phosphate transfer require Ca as the cofactor
(4) The bone in human body is an inert and unchanging substance

Answer (2) The daily requirement of Mg and Ca in the human body is estimated to be 0.2-0.3 g

Solution . • All enzymes that utilize ATP in phosphate transfer require Mg as the co-factor.
• Bone in human body is not an inert and unchanging substance but is continuously being solubilised and redeposited.
• Ca plays important role in neuromuscular function, interneuronal transmission, cell membrane integrity and blood coagulation.
• The daily requirement of Mg and Ca in the human body is estimated to be 200 - 300 mg (0.2 - 0.3 g).

Question 77. Intermolecular forces are forces of attraction and repulsion between interacting particles that will include :

A. dipole - dipole forces
B. dipole - induced dipole forces
C. hydrogen bonding
D. covalent bonding
E. dispersion forces

Choose the most appropriate answer from the options given below :
(1) A, C, D, E are correct
(2) B, C, D, E are correct
(3) A, B, C, D are correct
(4) A, B, C, E are correct

Answer (4)

Solution. Intermolecular forces are the forces of attraction and repulsion between interacting molecules. This term does not include covalent bonds as covalent bond holds atoms of a molecule together. Hence, dipole - dipole forces, dipole - induced dipole forces, hydrogen bonding and dispersion forces
are intermolecular forces.

Question 78. Select the correct statements from the following
A. Atoms of all elements are composed of two fundamental particles.
B. The mass of the electron is 9.10939 × 10–31 kg.
C. All the isotopes of a given element show same chemical properties:
D. Protons and electrons are collectively known as nucleons.
E. Dalton's atomic theory, regarded the atom as an ultimate particles of matter
Choose the correct answer from the options given below
(1) **B, C and E only**
(2) A, B and C only
(3) C, D and E only
(4) A and E only

Answer (1) B, C and E only

Solution. • Atoms consist of three fundamental particles :
Electrons, protons and neutrons
• The mass of the electron is 9.10939 × 10–31 kg
• All the isotopes of a given element show same chemical properties.
• Protons and neutrons present in the nucleus are collectively called as nucleons.
• Dalton's atomic theory, regarded the atom as the ultimate particle of matter So, the correct statements are B, C, E only

Question 87. Pumice stone is an example of
(1) Foam
(2) Sol
(3) Gel
(4) **Solid sol**

Answer (4) Solid sol

Solution . Pumice stone is a solid sol.
Dispersed phase : Gas
Dispersed medium : Solid

Botany Questions & Solutions

Question 101. Movement and accumulation of ions across a membrane against their concentration gradient can be
explained by
(1) Active Transport
(2) Osmosis
(3) Facilitated Diffusion
(4) Passive Transport

Answer (1)

Solution. Movement and accumulation of ions across a membrane against their concentration gradient can be explained by active transport. It uses energy to transport molecules from lower concentration to a higher Concentration.

Question 102. Among 'The Evil Quartet', which one is considered the most important cause driving extinction of species?
(1) Co-extinctions
(2) **Habitat loss and fragmentation**
(3) Over exploitation for economic gain
(4) Alien species invasions

Answer (2) Habitat loss and fragmentation

Solution . Habitat loss and fragmentation is the most important cause driving animals and plants to extinction.

Question 103. Expressed Sequence Tags (ESTs) refers to
(1) Certain important expressed genes.
(2) All genes that are expressed as RNA.
(3) All genes that are expressed as proteins.
(4) All genes whether expressed or unexpressed.

Answer (2)

Solution . All the genes that are expressed as RNA are referred to as Expressed Sequence Tags (ESTs).

Question 104. The phenomenon of pleiotropism refers to
(1) More than two genes affecting a single character
(2) Presence of several alleles of a single gene controlling a single crossover
(3) Presence of two alleles, each of the two genes controlling a single trait
(4) **A single gene affecting multiple phenotypic expression**
Answer (4) A single gene affecting multiple phenotypic expression

Solution. When a single gene affects multiple phenotypic expression, the gene is called pleiotropic gene and the phenomenon is called pleiotropism.

Question 105. In tissue culture experiments, leaf mesophyll cells are put in a culture medium to form callus. This phenomenon may be called as
(1) Senescence
(2) Differentiation
(3) Dedifferentiation
(4) Development

Answer (3)
Solution. In tissue culture experiments, leaf mesophyll cells are put in a culture medium to form callus. This phenomenon may be called as dedifferentiation. Dedifferentiation is a phenomenon by which the living differentiated plant cells, that by now have lost the capacity to divide can regain the capacity of division under certain conditions.

Question 106. Given below are two statements :
Statement I : Endarch and exarch are the terms often used for describing the position of secondary xylem in the plant body.
Statement II : Exarch condition is the most common feature of the root system.
In the light of the above statements, choose the correct answer from the options given below:
(1) **Statement I is incorrect but Statement II is true**
(2) Both Statement I and Statement II are true
(3) Both Statement I and Statement II are false
(4) Statement I is correct but Statement II is false

Answer (1) Statement I is incorrect but Statement II is true

Solution. Endarch and exarch are the terms often used for describing the position of primary xylem in the plant body. Primary xylem is of two types protoxylem and metaxylem. On the basis of relative position of protoxylem and metaxylem in the organ the arrangement of primary xylem can be

endarch or exarch. Exarch type of primary xylem is seen in roots. Therefore, Statement I is false and Statement II is true

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Question 107. Given below are two statements : One labelled as Assertion A and the other labelled as Reason R:

Assertion A : The first stage of gametophyte in the life cycle of moss is protonema stage.

Reason R : Protonema develops directly from spores produced in capsule.

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

(1) A is not correct but R is correct

(2) **Both A and R are correct and R is the correct explanation of A**

(3) Both A and R are correct but R is NOT the correct explanation of A

(4) A is correct but R is not correct

Answer (2) Both A and R are correct and R is the correct explanation of A

Solution . The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages.The first stage is the protonema stage, which develops directly from a spore. Capsule of the sporophyte contains spore which gives rise to protonema. Thus, reason correctly explains the assertion.

Question 108. Which of the following stages of meiosis involves division of centromere?

(1) Telophase

(2) Metaphase I

(3) Metaphase II

(4) Anaphase II

Answer (4)

Solution. Splitting of centromere occurs during anaphase of mitosis or anaphase II of meiosis. During Metaphase I and II, chromosomes align at the equator. During telophase, chromosomes reach the respective poles.

Question 109. Upon exposure to UV radiation, DNA stained with ethidium bromide will show
(1) **Bright orange colour**
(2) Bright red colour
(3) Bright blue colour
(4) Bright yellow colour

Answer (1) Bright orange colour

Solution. Option (1) is the correct answer because in recombinant DNA technology the separated DNA fragments can be visualised only after staining the DNA with a substance known as ethidium bromide followed by exposure to U.V. radiation. You can see bright orange coloured bands of DNA in an ethidium bromide stained gel exposed to U.V. light.

Question 110. The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis?
(1) Diakinesis
(2) Zygotene
(3) **Pachytene**
(4) Diplotene

Answer (3) Pachytene

Solution. The process of recombination occurs at Pachytene stage of prophase I. This stage is characterised by the appearance of recombination nodules.

Question 111. Cellulose does not form blue colour with Iodine because
(1) It breaks down when iodine reacts with it
(2) It is a disaccharide

(3) It is a helical molecule
(4) It does not contain complex helices and hence cannot hold iodine molecules

Answer (4)

Solution. Option (4) is the correct answer because cellulose does not contain complex helices and hence cannot hold iodine molecules.
Option (1), (2) and (3) are not correct as cellulose is a polysaccharide.

Question 112. Family Fabaceae differs from Solanaceae and Liliaceae. With respect to the stamens, pick out the characteristics specific to family Fabaceae but not found in Solanaceae or Liliaceae.
(1) Epiphyllous and Dithecous anthers
(2) **Diadelphous and Dithecous anthers**
(3) Polyadelphous and epipetalous stamens
(4) Monoadelphous and Monothecous anthers

Answer (2) Diadelphous and Dithecous anthers

Solution. Fabaceae → Diadelphous and dithecous anther.
Solanaceae → Polyandrous, epipetalous and dithecous anther.
Liliaceae → Polyandrous, epiphyllous and dithecous anther.

Question 113. The thickness of ozone in a column of air in the atmosphere is measured in terms of :
(1) Kilobase
(2) Dobson units
(3) Decibels
(4) Decameter

Answer (2)

Solution. The thickness of the ozone in a column of air from the ground to the top of the atmosphere is measured in terms of Dobson units (DU). Noise is measured in decibels.

Question 114. Given below are two statements : One is labelled as Assertion A and the other is labelled as Reason R :
Assertion A : ATP is used at two steps in glycolysis.
Reason R : First ATP is used in converting glucose into glucose-6-phosphate and second ATP is used in conversion of fructose-6-phosphate into fructose-1, 6-diphosphate.
In the light of the above statements, choose the correct answer from the options given below :
(1) A is false but R is true.
(2) **Both A and R are true and R is the correct explanation of A.**
(3) Both A and R are true but R is NOT the correct explanation of A.
(4) A is true but R is false.

Answer (2) Both A and R are true and R is the correct explanation of A.

Solution. ATP in glycolysis is used at two steps of conversion that are
Glucose → Glucose-6-phosphate
Fructose-6-phosphate → Fructose-1, 6-bisphosphate
The reason for the utilization of ATP is for phosphorylation of the substrates.

Question116. During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out
(1) Polysaccharides
(2) RNA
(3) DNA
(4) Histones

Answer (3)

Solution. Option (3) is the correct answer as, during isolation of the genetic material, purified DNA ultimately precipitates out after the addition of chilled ethanol.
Option (4) is not the answer as, proteins can be removed by treatment with proteases.
Option (2) is not the answer as RNA can be removed by treatment with ribonuclease.

Question 117. Spraying of which of the following phytohormone on juvenile conifers helps hastening the maturity period, that leads early seed production?
(1) Abscisic Acid
(2) Indole-3-butyric Acid
(3) **Gibberellic Acid**
(4) Zeatin
Answer (3) Gibberellic Acid

Solution. Spraying juvenile conifers with gibberellins (GAs) hastens the maturity period, thus leading to early seed production.

Question 119. Axile placentation is observed in
(1) **China rose, Petunia and Lemon**
(2) Mustard, Cucumber and Primrose
(3) China rose, Beans and Lupin
(4) Tomato, Dianthus and Pea
Answer (1) China rose, Petunia and Lemon

Solution. China rose, Tomato, Petunia and Lemon show axile placentation. Dianthus and Primrose show free central placentation.
Pea, Lupin and Beans show marginal placentation. Cucumber and mustard show parietal placentation.

Question 120. Unequivocal proof that DNA is the genetic material was first proposed by
(1) Wilkins and Franklin

(2) Frederick Griffith
(3) Alfred Hershey and Martha Chase
(4) Avery, Macleoid and McCarthy
Answer (3)

Solution. The unequivocal proof that DNA is the genetic material came from the experiment of Alfred Hershey and Martha Chase.
Avery, Macleoid and McCarty gave the biochemical characterisation of Transforming Principle. The transformation experiments by using Pneumococcus was conducted by Frederick Griffith. Wilkins and Franklin produced X-ray diffraction data of DNA.

Question 121. What is the function of tassels in the corn cob?
(1) To protect seeds
(2) To attract insects
(3) To trap pollen grains
(4) To disperse pollen grains

Answer (3)

Solution. Tassels in the com cob represents stigma and style which wave in the wind to trap pollen grains.

Question 122. Which micronutrient is required for splitting of water molecule during photosynthesis?
(1) Copper
(2) Manganese
(3) Molybdenum
(4) Magnesium

Answer (2)

Solution. Manganese plays a major role in the splitting of water to liberate oxygen during photosynthesis. Copper is essential for the overall metabolism in plants. Molybdenum is included in nitrogen metabolism.

Magnesium activates several enzymes involved in photosynthesis and respiration.

Zoology Questions & Solutions

Question 151. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.Assertion A: Nephrons are of two types: Cortical & Juxta medullary, based on their relative position in cortex and medulla.
Reason R: Juxta medullary nephrons have short loop of Henle whereas, cortical nephrons have longer loop of Henle.
In the light of the above statements, choose the correct answer from the options given below:

(1) A is false but R is true.
(2) Both A and R are true and R is the correct explanation of A.
(3) Both A and R are true but R is NOT the correct explanation of A.
(4) **A is true but R is false.**

Answer (4) A is true but R is false
Solution. The correct answer is option (4) because Assertion is true as there are two types of nephrons, i.e., cortical nephrons and juxtamedullary nephrons based on their relative position in the cortex and medulla. Reason is not correct as loop of Henle in juxtamedullary nephrons is very long and runs deep into the medulla. Therefore, Assertion is true but Reason is false.

Question 152. Match List I with List II with respect to human eye.

List I	List II
A. Fovea	I. Visible coloured portion of eye that regulates diameter of pupil.
B. Iris	II. External layer of eye formed of dense connective tissue.

C. Blind spot III. Point of greatest visual acuity or resolution.
D. Sclera IV. Point where optic nerve leaves the eyeball and photoreceptor cells are absent.
Choose the correct answer from the options given below:
(1) A-II, B-I, C-III, D-IV
(2) A-III, B-I, C-IV, D-II
(3) A-IV, B-III, C-II, D-I
(4) A-I, B-IV, C-III, D-II

Answer (2)

Solution. Option (2) is the correct answer because
(i) Fovea is the point of greatest visual acuity or resolution.
(ii) Iris is the visible coloured portion of the eye that regulates diameter of pupil.
(iii) Blind spot is the point where optic nerve leaves the eye-ball and photoreceptor cells are absent.
(iv) Sclera is the external layer of eye formed of dense connective tissue.

Question 153. Which of the following functions is carried out by cytoskeleton in a cell?
(1) Transportation
(2) Nuclear division
(3) Protein synthesis
(4) Motility

Answer (4)

Solution. An elaborate network of filamentous proteinaceous structures consisting of microtubules, microfilaments and intermediate filaments present in cytoplasm is collectively referred to as the cytoskeleton. It is involved in many functions such as mechanical support, motility, maintenance of the shape of the cell.

Question 155. Match List I with List II.

List I	List II
A. Heroin	I. Effect on cardiovascular system
B. Marijuana	II. Slow down body function
C. Cocaine	III. Painkiller
D. Morphine	IV. Interfere with transport of dopamine

Choose the correct answer from the options given below:
(1) A-III, B-IV, C-I, D-II
(2) A-II, B-I, C-IV, D-III
(3) A-I, B-II, C-III, D-IV
(4) A-IV, B-III, C-II, D-I

Answer (2)
Solution. The correct answer is option (2) as
Heroin belongs to the category of opioids and it is a depressant that slows down body functions.Marijuana is known for its effect on the cardiovascular system of the body. Cocaine interferes with the transport of the neurotransmitter dopamine. Morphine is used is a sedative and painkiller.

Question 156. Which of the following is not a cloning vector?
(1**) Probe**
(2) BAC
(3) YAC
(4) pBR322

Answer (1) Probe

Solution. Option (1) is correct answer because a single stranded DNA or RNA tagged with a radioactive molecule is called a probe and it helps in the detection of mutated gene. Option (2), (3) and (4) are not correct because YAC, BAC, pBR322 are vectors.

Question 158. Which of the following statements are correct regarding female reproductive cycle?

A. In non-primate mammals cyclical changes during reproduction are called oestrus cycle.
B. First menstrual cycle begins at puberty and is called menopause.
C. Lack of menstruation may be indicative of pregnancy.
D. Cyclic menstruation extends between menarche and menopause.
Choose the most appropriate answer from the options given below.
(1) **A, C and D only**
(2) A and D only
(3) A and B only
(4) A, B and C only

Answer (1) A, C and D only
Solution. The correct answer is option
(1) as first menstrual cycle that begins at puberty is called menarche.Cyclic menstruation is an indicator of normal reproductive phase and extends between menarche and menopause.
In primates, cyclical changes during reproduction are called menstrual cycle.

Question 159. Which one of the following techniques does not serve the purpose of early diagnosis of a disease for its early treatment?
(1) Enzyme Linked Immuno-Sorbent Assay (ELISA) technique
(2) Recombinant DNA Technology
(3) **Serum and Urine analysis**
(4) Polymerase Chain Reaction (PCR) technique

Answer (3) Serum and Urine analysis

Solution. The correct answer is option (3) because using conventional methods of diagnosis like serum and urine analysis, etc, do not help in early diagnosis. Recombinant DNA technology, Polymerase Chain Reaction [PCR] and Enzyme Linked Immuno-Sorbent Assay (ELISA) are some of the techniques that serve the purpose of early diagnosis.

Question 160. Match List I with List II.

List I	List II
A. Ringworm	I. Haemophilus influenzae
B. Filariasis	II. Trichophyton
C. Malaria	III. Wuchereria bancrofti
D. Pneumonia	IV. Plasmodium vivax

Choose the correct answer from the options given below:
(1) A-III, B-II, C-IV, D-I
(2) **A-II, B-III, C-IV, D-I**
(3) A-II, B-III, C-I, D-IV
(4) A-III, B-II, C-I, D-IV

Answer (2) A-II, B-III, C-IV, D-I

Solution. Option (2) is the correct answer because:
(i) Ringworm is caused by Trichophyton.
(ii) Filariasis is caused by Wuchereria bancrofti.
(iii) Malaria is caused by Plasmodium species.
(iv) Pneumonia is caused by Haemophilus influenzae.

Question161. Given below are two statements: one is labelled as Assertion A and other is labelled as Reason R. Assertion A : Amniocentesis for sex determination is one of the strategies of Reproductive and Child Health Care Programme.
Reason R : Ban on amniocentesis checks increasing menace of female foeticide.
In the light of the above statements, choose the correct answer from the options given below.
(1) **A is false but R is true.**
(2) Both A and R are true and R is the correct explanation of A.
(3) Both A and R are true and R is NOT the correct explanation of A.
(4) A is true but R is false.
Answer (1) A is false but R is true.

Solution. creating awareness among people about various reproduction related aspects and providing facilities and support for building up a reproductively healthy society. Amniocentesis is basically used to test for the presence of certain genetic disorders such assyndrome, haemophilia, etc., to determine the survivability of the foetus. Amniocentesis is not a sex determination technique in India and is not a strategy of RCH.

Question 162. Given below are two statements:
Statement I: RNA mutates at a faster rate.
Statement II: Viruses having RNA genome and shorter life span mutate and evolve faster.
In the light of the above statements, choose the correct answer from the options given below:
(1) Statement I is false but Statement II is true.
(2) Both Statement I and Statement II are true.
(3) Both Statement I and Statement II are false.
(4) Statement I is true but Statement II is false.

Answer (2)

Solution. RNA being unstable, mutate at a faster rate. Consequently, viruses having RNA genome and having shorter life span mutate and evolve faster

Question 163. Given below are two statements:
Statement I: In prokaryotes, the positively charged DNA is held with some negatively charged proteins in a region called nucleoid.
Statement II: In eukaryotes, the negatively charged DNA is wrapped around the positively charged histone octamer to form nucleosome.
In the light of the above statements, choose the correct answer from the options given below:
(1) **Statement I is incorrect but Statement II is true.**
(2) Both Statement I and Statement II are true.
(3) Both Statement I and Statement II are false.

(4) Statement I is correct but Statement II is false.

Answer (1) Statement I is incorrect but Statement II is true.
Sol. In prokaryotes, the negatively charged DNA is held with some positively charged proteins in a region termed as nucleoid.
In eukaryotes, the negatively charged DNA is wrapped around the positively charged histone octamer to form a structure called nucleosome.

Question 166. Match List I with List II.

List I	List II
A. Vasectomy	I. Oral method
B. Coitus interruptus	II. Barrier method
C. Cervical caps	III. Surgical method
D. Saheli	IV. Natural method

Choose the correct answer from the options given below:
(1) A-IV, B-II, C-I, D-III
(2) A-III, B-I, C-IV, D-II
(3) A-III, B-IV, C-II, D-I
(4) A-II, B-III, C-I, D-IV

Answer (3)

Solution. Option (3) is the correct answer because
(i) Vasectomy is a surgical method of contraception
(ii) Coitus interruptus is a natural method of contraception
(iii) Cervical cap is a barrier method of contraception
(iv) Saheli is an oral method of contraception which is a non-steroidal pill

Question 168. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R. Assertion A: Endometrium is necessary for implantation of blastocyst.
Reason R: In the absence of fertilization, the corpus luteum degenerates that causes disintegration of endometrium.
In the light of the above statements, choose the correct answer from the options given below:

(1) A is false but R is true.
(2) Both A and R are true and R is the correct explanation of A.
(3) **Both A and R are true but R is NOT the correct explanation of A.**
(4) A is true but R is false.
Answer (3) Both A and R are true but R is NOT the correct explanation of A.

Solution. Option (3) is the correct answer because both Assertion and Reason are true. Implantation is embedding of the blastocyst into the endometrium of the uterus. Correct explanation of the reason is that Corpus luteum secretes a large amount of progesterone which is essential for maintenance of endometrium of uterus. In absence of fertilization, the corpus luteum degenerates hence the decrease in the level of progesterone hormone will cause disintegration of endometrium leading to menstruation

Question 171. Which one of the following common sexually transmitted diseases is completely curable when detected early and treated properly?
(1) HIV Infection
(2) Genital herpes
(3) **Gonorrhea**
(4) Hepatitis-B

Answer (3) Gonorrhea

Solution. The correct answer is option (3) because except for hepatitis-B, genital herpes and HIV infection other STIs are completely curable if detected early and treated properly. Gonorrhea is a bacterial disease which can be treated and cured completely, other diseases mentioned are viral diseases.

Question 176. Select the correct group/set of Australian Marsupials exhibiting adaptive radiation.
(1) Lemur, Anteater, Wolf
(2) Tasmanian wolf, Bobcat, Marsupial mole

(3) Numbat, Spotted cuscus, Flying phalanger
(4) Mole, Flying squirrel, Tasmanian tiger cat
Answer (3)

Solution. Option (3) is the correct answer because numbat, spotted cuscus and flying phalanger are Australian marsupials exhibiting adaptive radiation.
Option (4) is incorrect because mole and flying squirrel are placental mammals.
Option (1) is incorrect because lemur and wolf are placental mammals.
Option (2) is incorrect because bobcat is a placental mammal.