NEET (2025)

Practice Test - 05

DURATION : 180 Minutes | **M. MARKS : 720**

Topics Covered

Physics :	Moving Charges and Magnetism (Complete Chapter), Magnetism and Matter (Complete Chapter), Electromagnetic Induction (Complete Chapter)
Chemistry :	Aldehydes, Ketones and Carboxylic Acids (Complete Chapter), Amines (Complete Chapter), Biomolecules (Complete Chapter), Alcohols, Phenols and Ethers
Biology :	**(Botany):** Principle of Inheritance and Variation: Introduction, Mendel's Laws of Inheritance, Inheritance of One Gene, Exceptions to Mendelian Principles, Inheritance of Two Gene, Two Genes Interaction (w.r.t Post-Mendelism),polygenic inheritance and pleiotropy, Sex Determination, Mutation **(Zoology):** Human Health and Diseases: Introduction, Protozoan Disease, Immunity, Innate immunity, Acquired immunity, Lymphoid organs, Immunisation, Vaccination, Transplantation, Allergy, Autoimmunity, Immunodeficiency disorders, Cancer, Drug abuse, Alcohol abuse

General Instructions:

1. Immediately fill in the particulars on this page of the test booklet.
2. The test is of **180 minutes** duration and the Test Booklet contains **180** multiple choice questions (four options with a single correct answer) from **Physics, Chemistry and Biology (Botany and Zoology)**. **45** questions in each subject
3. The test booklet consists of **180** questions. The maximum marks are **720**.
4. There is only **one correct** response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. inside the examination room/hall.
7. Use of white fluid for correction is **not permissible** on the **Answer Sheet**.
8. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the candidates are allowed to take away this Test Booklet with them.

OMR Instructions:

1. Use blue/black dark ballpoint pens.
2. Darken the bubbles completely. Don't put a tick mark or a cross mark where it is specified that you fill the bubbles completely. Half-filled or over-filled bubbles will not be read by the software.
3. Never use pencils to mark your answers.
4. Never use whiteners to rectify filling errors as they may disrupt the scanning and evaluation process.
5. Writing on the **OMR Sheet** is permitted on the specified area only and even small marks other than the specified area may create problems during the evaluation.
6. Multiple markings will be treated as invalid responses.
7. **Do not fold or make any stray mark on the Answer Sheet (OMR).**

Name of the Student (In CAPITALS) : _____

Roll Number : _____

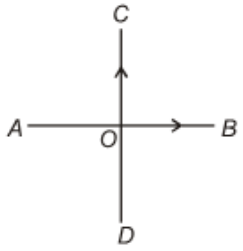
OMR Bar Code Number : _____

Candidate's Signature : _____ **Invigilator's Signature** _____

Practice Test-12

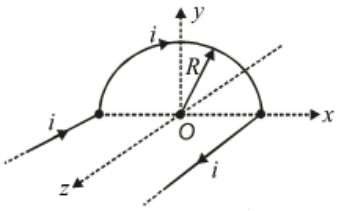
NEET 2025

Q1 Two straight long conductors *AOB* and *COD* are perpendicular to each other and carry currents i_1 and i_2. The magnitude of the magnetic induction at a point *P* at a distance d from the point *O* in a direction perpendicular to the plane *ABCD* is:



(1) $\frac{\mu_0}{2\pi d}(i_1 + i_2)$
(2) $\frac{\mu_0}{2\pi d}(i_1 - i_2)$
(3) $\frac{\mu_0}{2\pi d}(i_1^2 + i_2^2)^{1/2}$
(4) $\frac{\mu_0}{2\pi d}\left[\frac{i_1 i_2}{i_1 + i_2}\right]$

Q2 The magnetic induction at the point *O*, if the wire carries a current *i*, is:



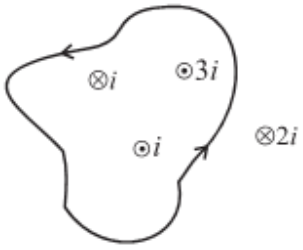
(1) $\frac{\mu_0 i}{2R}$
(2) $\frac{\mu_0 i}{2\pi R}$
(3) $\frac{\mu_0 i(\pi^2+4)^{1/2}}{4\pi R}$
(4) $\frac{\mu_0 i(\pi^2+4)}{4\pi R}$

Q3 A current of *i* ampere is flowing in an equilateral triangle of side *a*. The magnetic induction at the centroid will be:

(1) $\frac{\mu_0 i}{3\sqrt{3}\pi a}$ (2) $\frac{3\mu_0 i}{2\pi a}$
(3) $\frac{5\sqrt{2}\mu_0 i}{3\pi a}$ (4) $\frac{9\mu_0 i}{2\pi a}$

Q4 Given below are two statements:
Statement I: A charge is moving in a uniform magnetic field. The charge may experience no magnetic force.
Statement II: Kinetic energy of a charged particle moving in a uniform magnetic field may change.
In the light of the above statements, choose the *most appropriate* answer from the options given below:
(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q5 The value of $\oint \vec{B} \cdot d\vec{l}$ for the loop as shown in the figure will be;



(1) $2\mu_0 i$ (2) $3\mu_0 i$
(3) $\mu_0 i$ (4) $5\mu_0 i$

Q6 Given below are two statement: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: A charge particle is moving in a uniform magnetic field. Its time period of revolution does not depend on its speed.

Reason R: If charged particle is moving in a uniform magnetic field in a circular path of radius *r*. If speed of particle is *v*, time period of revolution is $T = \frac{2\pi r}{v}$.

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

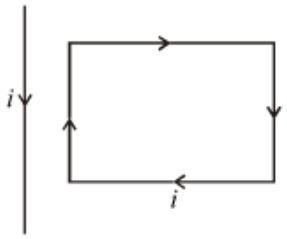
(1) A is true but R is false.

(2) A is false but R is true.

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

(4) Both A and R are true but R is NOT the correct explanation of A.

Q7 A rectangular loop carrying a current *i* is situated near a long straight wire such that the wire is parallel to one of the sides of the loop and is in the plane of the loop. If a steady current *i* is established in the wire, the loop will



(1) Rotate about an axis parallel to the wire

(2) Move away from the wire

(3) Move towards the wire

(4) Remain stationary

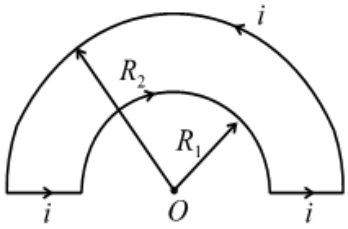
Q8 A proton and an alpha particle enter the same magnetic field which is perpendicular to their velocity. If they have same kinetic energy then ratio of radii of their circular path is:

(1) 1 : 1 (2) 1 : 2

(3) 2 : 1 (4) 1 : 4

Q9 The magnitude of magnetic field induction at the centre O in the figure shown is;

Given: R_1 = 10 cm, R_2 = 20 cm and i = 1A)



(1) $\pi \times 10^{-6}\text{Tesla}$

(2) $\frac{\pi}{2} \times 10^{-6}\text{Tesla}$

(3) $\frac{\pi}{3} \times 10^{-6}\text{Tesla}$

(4) $\frac{\pi}{6} \times 10^{-6}\ \text{Tesla}$

Q10 A charged particle with charge *q* is moving in a uniform magnetic field. If this particle makes any angle (other than 0°, 90° and 180°) with the magnetic field then its path will be:

(1) Circular

(2) Straight line

(3) Helical

(4) Parabolic

Q11 Unit of "current element" in Biot-Savart's law, for calculating magnetic field due to current at any point is:

(1) Ampere-meter (2) Ampere

(3) $\frac{\text{Ampere}}{\text{meter}}$ (4) Ampere-meter^2

Q12 An electron having a charge *e* moves with a velocity *v* in positive *x*-direction. A magnetic field acts on it in positive *y* direction. The force on the electron acts in (where outward direction is taken as positive *z*-axis).

(1) Negative direction of *y*-axis

(2) Positive direction of *y*-axis

(3) Positive direction of *z*-axis

(4) Negative direction of *z*-axis

Q13 Intensity of magnetisation (I) and magnetic intensity (*H*) are related as $I \propto H$. The proportionality constant is:

(1) Susceptibility

(2) Permeability
(3) Relative permeability
(4) permittivity

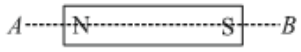
Q14 A particle of mass *m* carrying charge *q* is accelerated by a potential difference *V*. It enters perpendicularly in a region of uniform magnetic field *B* and executes circular arc of radius *R*, then $\frac{q}{m}$ equals:

(1) $\frac{2V}{B^2R^2}$ (2) $\frac{V}{2BR}$
(3) $\frac{VB}{2R}$ (4) $\frac{VB}{3R}$

Q15 The **correct** expression for Lorentz force is:

(1) $q\left[\overrightarrow{E}+\left(\overrightarrow{B}\times\overrightarrow{V}\right)\right]$
(2) $q\left[\overrightarrow{E}+\left(\overrightarrow{V}\times\overrightarrow{B}\right)\right]$
(3) $q\left(\overrightarrow{V}\times\overrightarrow{B}\right)$
(4) $q\overrightarrow{E}$

Q16 If a bar magnet is cut identically into two parts along AB as shown in figure.



Choose the **incorrect** option.
(1) Magnetic moment of each parts remains as before cutting.
(2) Pole strength gets half after cutting.
(3) Magnetic moment gets half after cutting for each part.
(4) None of these

Q17 When equal current is passed through two coils, equal magnetic field is produced at their centres. If the ratio of number of turns in the coils is 8 : 15, then the ratio of their radii will be?

(1) 1 : 1 (2) 15 : 8
(3) 8 : 15 (4) 1 : 2

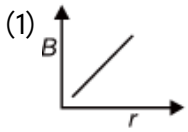
Q18 The force between two short bar magnets with magnetic moments M_1 and M_2 whose centres are *r* metres apart is 8 N when their axes are in same line. If the separation is increased to 2 *r*, the force between them is reduced to:

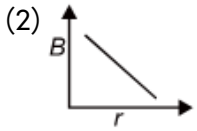
(1) 4 N (2) 2 N
(3) 1 N (4) 0.5 N

Q19 Curie law for paramagnetic material is given by:

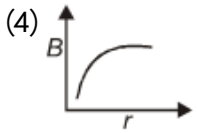
(1) $\chi \propto \frac{1}{T}$
(2) $\chi \propto T$
(3) $\chi \propto \frac{1}{T^2}$
(4) $\chi \propto T^2$

Q20 Which one of the following graphs shows the variation of magnetic induction B with distance r from a long wire carrying a current?

(1)


(2)


(3)


(4)


Q21 A large solenoid of windings of 400 turns per meter carries a current 5 A. The magnetic field at the centre of the solenoid is about;

(1) 1.2 mT (2) Zero
(3) 5.0 mT (4) 2.5 mT

Q22 Two similar coils of radius *R* are lying concentrically with their planes at right angles to each other. The currents flowing in them are *I*

and 2*I*, respectively. The resultant magnetic field at the centre will be:

(1) $\frac{\mu_0 I}{2R}$ (2) $\frac{\mu_0 I}{R}$

(3) $\frac{\sqrt{5}\mu_0 I}{2R}$ (4) $\frac{3\mu_0 I}{2R}$

Q23 Two long parallel wires are at a distance of 1 m. If both of them carry 1 ampere of current in same direction, then the force of attraction on unit length of the wires will be:

(1) 2×10^{-7} N/m

(2) 4×10^{-7} N/m

(3) 8×10^{-7} N/m

(4) 10^{-7} N/m

Q24 For a diamagnetic substance (symbols have their usual meanings)

(1) $\chi_m > 0, \mu_r > 1$

(2) $\chi_m < 0,\ \mu_r > 1$

(3) $\chi_m < 0, \mu_r < 1$

(4) $\chi_m > 0, \mu_r < 1$

Q25 If graph between magnetic susceptibility of the paramagnetic material and absolute temperature is being plotted, the graph will be:

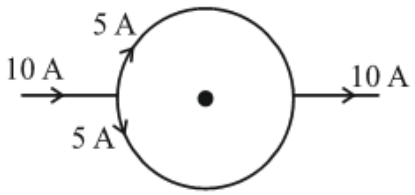
(1) straight line.

(2) circle.

(3) parabola.

(4) rectangular hyperbola.

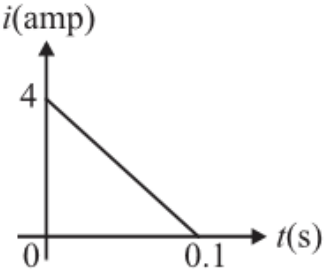
Q26 A uniform wire is bent to form a circle and current flows in it as shown in figure. If the magnetic field at the centre of the circle is *n* tesla, value of $n^2 + 2n$ is:



(1) 35 (2) 120

(3) 45 (4) 0

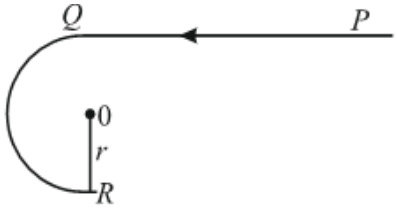
Q27 In a coil of resistance 10 Ω, the *i*(amp) induced current developed by changing magnetic flux through it, is shown in figure find a magnitude of change in flux through the coil in weber:



(1) 8 (2) 2

(3) 6 (4) 4

Q28 The magnetic induction at centre O due to the arrangement as shown in figure.



(1) $\frac{\mu_0 i}{4\pi r}\left(1+\pi\right)$

(2) $\frac{\mu_0 i}{4\pi r}$

(3) $\frac{\mu_0 i}{4\pi r}\left(1-\pi\right)$

(4) $\frac{\mu_0 i}{r}$

Q29 A bar magnet is held perpendicular to a uniform magnetic field. If the couple acting on the magnet is to be halved by rotating it, then the angle by which it is to be rotated is:

(1) 30° (2) 45°

(3) 60° (4) 90°

Q30 A long straight wire of radius *a* carries a steady current *I*. The current is uniformly distributed across its cross-sectional. Find the ratio of the magnetic field at $\frac{a}{2}$ and 2*a* from the center:

(1) 1 (2) 2

(3) 3 (4) 4

Q31 A coil in the shape of an equilateral triangle of side *L* is suspended between the pole pieces of a permanent magnet such that *B* is in plane of the coil. If due to a current *i* in the triangle a torque τ acts on it, the side *L* of the triangle is:

(1) $\frac{2}{\sqrt{3}}\left(\frac{\tau}{Bi}\right)$ (2) $2\left[\frac{\tau}{\sqrt{3}Bi}\right]^{\frac{1}{2}}$

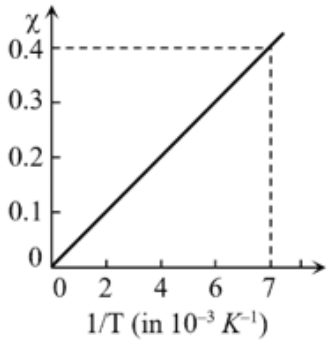
(3) $\frac{2}{\sqrt{3}}\left[\frac{\tau}{Bi}\right]^{\frac{1}{2}}$ (4) $\frac{\tau}{\sqrt{3}Bi}$

Q32 A square current carrying loop is suspended in a uniform magnetic field acting in the plane of the loop. If the force on one arm of the loop is $\overrightarrow{F}$, the net force on the remaining three arms of the loop is:

(1) $\overrightarrow{F}$ (2) $3\overrightarrow{F}$

(3) $-\overrightarrow{F}$ (4) $-3\overrightarrow{F}$

Q33 The χ – (1/*T*) graph for an alloy of paramagnetic nature is shown in figure. The curie constant is, then:



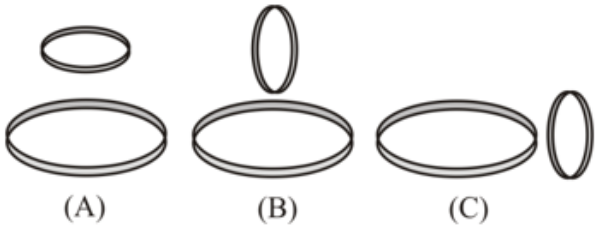
(1) 57 K

(2) 2.8×10^{-3} K

(3) 570 K

(4) 17.5×10^{-3} K

Q34 Two circular coils can be arranged in any of the three situations shown in the figure. Their mutual inductance will be;



(1) maximum in situation (A).

(2) maximum in situation (B).

(3) maximum in situation (C).

(4) the same in all situations.

Q35 Self-induction of a solenoid is:

(1) directly proportional to current flowing through the coil.

(2) directly proportional to its length.

(3) directly proportional to area of cross-section

(4) inversely proportional to area of cross-section

Q36 A magnetic needle is kept in a non-uniform magnetic field. It experiences:

(1) A force and a torque

(2) A force but not a torque

(3) A torque but not a force

(4) Neither a force nor a torque

Q37 A magnet is parallel to a uniform magnetic field. If it is rotated by 60°, the work done is 0.8 J. How much work is done in moving it 30° further?

(1) 0.8×10^7 ergs

(2) 0.4 J

(3) 8 J

(4) 0.8 ergs

Q38 A coil having an area A_0 is placed in a magnetic field which changes from B_0 to $4B_0$ in a time interval *t*. The e.m.f. induced in the coil will be:

(1) $\frac{3A_0B_0}{t}$ (2) $\frac{4A_0B_0}{t}$

(3) $\frac{3B_0}{A_0t}$ (4) $\frac{4B_0}{A_0t}$

Q39 A copper disc of radius 0.1 m is rotated about its center with 10 rev/s in a uniform magnetic field of

0.1 T with its plane perpendicular to field. The emf induced across the radius of dis is _____.

(1) $\frac{\pi}{10}V$ (2) $\frac{\pi}{100}V$

(3) $\frac{\pi}{1000}V$ (4) Zero

Q40 A bar magnet is released at one end from rest coaxially along the axis of a very long fixed, vertical copper tube. After some time, the magnet _____.

(1) Will move with an acceleration g

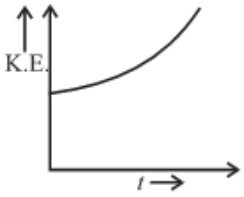
(2) Will move with almost constant speed

(3) Will stop in the tube

(4) Will oscillate

Q41 A charge particle enters in a magnetic field in a direction perpendicular to the magnetic field. Which of the following graphs show the **correct** variation of kinetic energy of the particle with time t?

(1)



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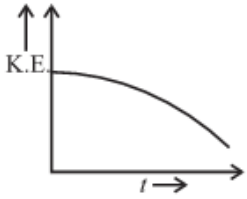

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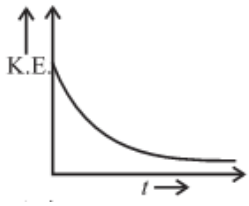
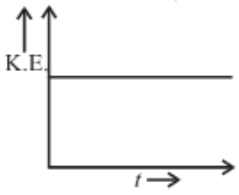


(4)

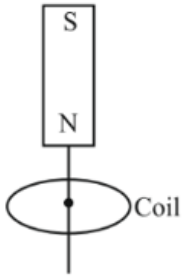


Q42 The mutual inductance between two coils is 1.25 henry. If the current in the primary changes at the rate of 80 ampere/second, then the induced e.m.f. in the secondary is:

(1) 12.5 V (2) 64.0 V

(3) 0.016 V (4) 100.0 V

Q43 A bar magnet is released along the vertical axis of the conducting coil. The acceleration of the bar magnet is:



(1) Greater than *g*

(2) Less than *g*

(3) Equal *g*

(4) Zero

Q44 A rectangular coil of 100 turns and size 0.1 m × 0.05 m is placed perpendicular to a magnetic field of 0.1 *T*. The induced e.m.f. when the field drops to 0.05 *T* in 0.05s is:

(1) 0.5 *V* (2) 1.0 *V*

(3) 1.5 *V* (4) 2.0 *V*

Q45 A proton and an α-particle enter a uniform magnetic field perpendicularly with the same speed. If proton takes 25 μ second to make 5 revolutions, then the time period for the α-particle would be:

(1) 50 μ sec (2) 25 μ sec

(3) 10 μ sec (4) 5 μ sec

Q46 The given compound is a:

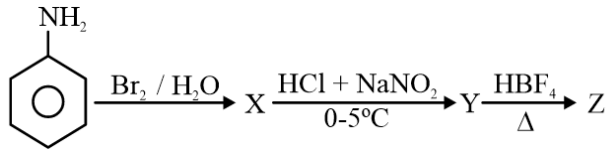
CH_2=CH–CH_2–NH–CH_3

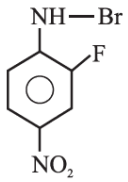
(1) primary amine

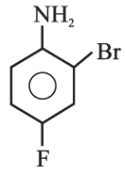
(2) secondary amine

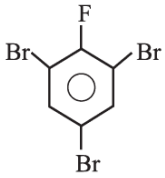
(3) tertiary amine
(4) quaternary ammonium salt

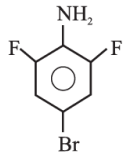
Q47 The final product (Z) in the following sequence of reaction is:



(1) 

(2) 

(3) 

(4) 

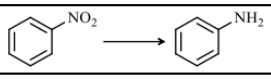
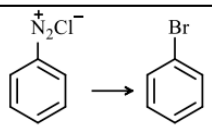
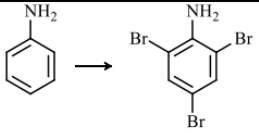
Q48 The two functional group present in a typical carbohydrate are:
(1) —OH and —COOH
(2) —CHO and —COOH
(3) $>C=O$ and $-OH$
(4) —OH and $—NH_2$

Q49 The evidence for the presence of five –OH group in open chain structure of glucose is/are:
(1) Reaction with Tollen's reagent
(2) Reaction with Fehling's solution
(3) Pentaacetyl derivative of glucose
(4) Cyanohydrin formation with HCN

Q50 The common name of 2-Methylpropan-1-ol is:
(1) 2-Methylpropan-2-ol
(2) sec-Butyl alcohol
(3) Isobutyl alcohol
(4) tert-Butyl alcohol

Q51 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: Glucose has open-chain structure.
Reason R: $-COOH$ group present at the end of chain.
In the light of the above statements, choose the **correct** answer from the options given below:
(1) A is true but R is false.
(2) A is false but R is true.
(3) Both A and R are true and R is the correct explanation of A.
(4) Both A and R are true but R is NOT the correct explanation of A.

Q52 Match the **List-I** with **List-II**.

List-I (Reaction)		**List-II (Reagent used in conversion)**	
A.		I.	$LiAlH_4$
B.	$CH_3CN \rightarrow CH_3CH_2NH_2$	II.	$Fe + HCl$
C.		III.	Br_2/H_2O
D.		IV.	Cu_2Br_2/HBr

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

Q53 Which of the following statements is **incorrect**?

(1) Primary amines show intermolecular hydrogen bonding.

(2) Secondary amines show intermolecular hydrogen bonding.

(3) Tertiary amines show intermolecular hydrogen bonding.

(4) Amines have lower boiling points as compared to those of alcohols and carboxylic acids of comparable molar masses.

Q54 C_2H_5OH reacts with HX (HCl, HBr or HI) in the presence of $ZnCl_2$ to form C_2H_5X. Its reactivity with HI, HBr and HCl follows the order:

(1) HI > HBr > HCl

(2) HCl > HBr > HI

(3) HCl > HI > HBr

(4) HBr > HCl > HI

Q55 The positive carbylamine test is given by:

1. N,N-Dimethylaniline
2. 2,4-Dimethylaniline
3. N-Methyl-*o*-methylaniline
4. *p*-Methyl benzylamine

The **correct** option is:

(1) 1 and 2 (2) 2 and 3

(3) 1 and 3 (4) 2 and 4

Q56 Name the reaction when phenol is treated with chloroform in the presence of aqueous sodium hydroxide.

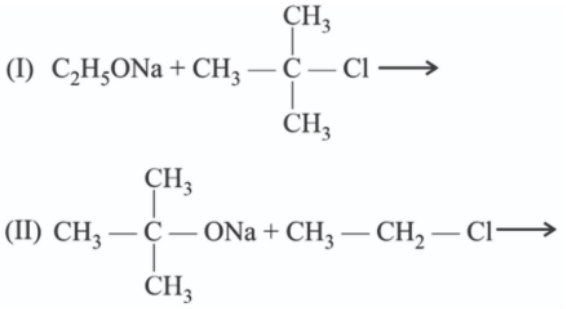
(1) Williamsons synthesis

(2) Kolbe's reaction

(3) Reimer-Tiemann reaction

(4) Sandmeyer reaction

Q57 A student tried two reactions for preparing tert-butyl ethyl ether :



Which reaction will give tert-butyl ethyl ether?

(1) Only I

(2) Only II

(3) Both I and II

(4) Neither I nor II

Q58 Which of the following alcohol has least boiling point?

(1) Butan-1-ol

(2) Butan-2-ol

(3) Isobutyl Alcohol

(4) t-Butyl Alcohol

Q59 Given below are two statements:

Statement I : Amines on reduction with $LiAlH_4$ yield amides.

Statement II : In Hoffmann-bromamide degradation reaction, the amine formed in the product contains one carbon less than that present in the amide.

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

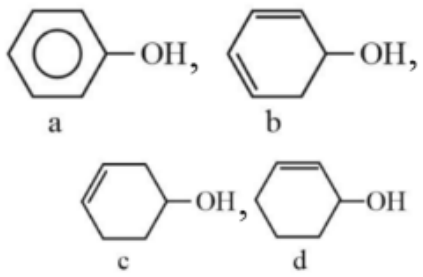
(1) Statement I is correct but Statement II is incorrect.

(2) Statement I is incorrect but Statement II is correct.

(3) Both Statement I and Statement II are correct

(4) Both Statement I and Statement II are incorrect

Q60 Decreasing order of dehydration of the following alcohols is:

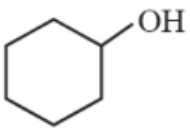


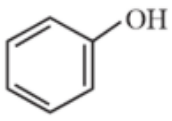
(1) a > d > b > c
(2) b > d > c > a
(3) b > a > d > c
(4) d > b > c > a

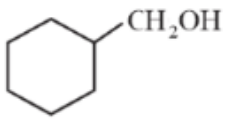
Q61 Lucas reagent is:
(1) Concentrated HCl and anhydrous $ZnCl_2$
(2) Concentrated HNO_3 and $ZnCl_2$
(3) Concentrated HCl and Fe
(4) Concentrated HNO_3 and Zn

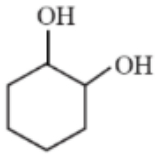
Q62 Which of the following is a non-reducing sugar?
(1) Maltose (2) Lactose
(3) Glucose (4) Sucrose

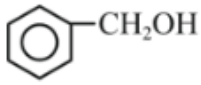
Q63 Glycerol is a:
(1) Primary alcohol
(2) Monohydric alcohol
(3) Dihydric alcohol
(4) Trihydric alcohol

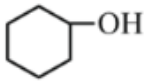
Q64 The structural formula of cyclohexyl alcohol is:
(1) 

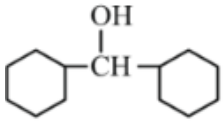
(2) 

(3) 

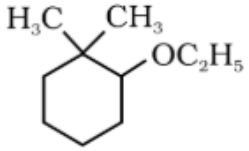
(4) 

Q65 Which of the following compounds is less acidic than phenol?
(1) 

(2) 

(3) 

(4) All of these

Q66 The **correct** IUPAC name of the following compound is:


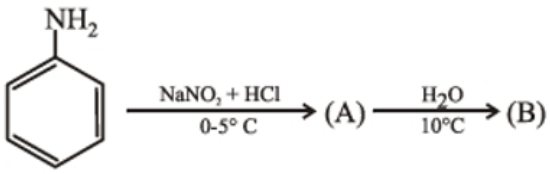
(1) 1-Ethoxy-2,2-dimethylcyclohexane
(2) 2-Ethoxy-1,1-dimethylcyclohexane
(3) 1-Ethoxy-6,6-dimethylcyclohexane
(4) 6-Ethoxy-1,1-dimethylcyclohexane

Q67 Which of the following compounds contain two hydroxy group;
(1) Catechol (2) Resorcinol
(3) Quinol (4) All of these

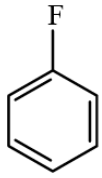
Q68 Maltose is a:
(1) oligosaccharide
(2) monosaccharide

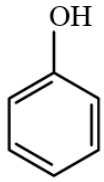
(3) disaccharide
(4) Both (1) and (3)

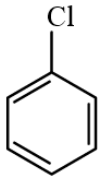
Q69

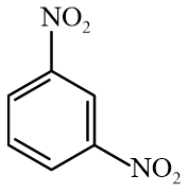


Compound B is:-

(1) 

(2) 

(3) 

(4) 

Q70 Which one of the following is laevorotatory?

(1) Glucose (2) Sucrose
(3) Fructose (4) Maltose

Q71 Acetone combines with ethylene glycol in dry HCl gas to generate:

(1) hemiacetals
(2) cyclic ketals
(3) cyclic acetals
(4) acetals

Q72 The reducing agent used in the Stephen reduction is:

(1) Sn/HCl
(2) Zn/HCl
(3) $SnCl_2$/HCl
(4) Na – Hg/alcohol

Q73 Primary alcohols react with Copper at 573 K to form:

(1) Aldehyde
(2) Ketone
(3) Carboxylic acid
(4) Alkene

Q74 Given below are two statement: one is labelled as Assertion A and the other is labelled as Reason R:

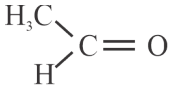
Assertion A: Ketones react with ethylene glycol in presence of p-toluene sulphonic acid to form acetal.

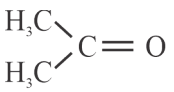
Reason R: Ketals are hydrolysed back to ketones by aqueous alkali.

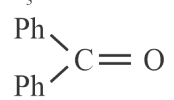
In the light of the above statements, choose the **correct** answer from the options given below:

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

Q75 The **correct** order of reactivity of phenylmagnesium bromide with the following compounds is:

(I) 

(II) 

(III) 

(1) III > II > I
(2) II > I > III

(3) I > III > II
(4) I > II > III

Q76 Match **List-I** with **List-II.**

List-I		List-II	
(A)	Hoffmann Degradation	(I)	Conc. KOH, Δ
(B)	Clemmensen reduction	(II)	$CHCl_3$, $NaOH/H_3O^+$
(C)	Cannizzaro reaction	(III)	Br_2, NaOH
(D)	Reimer-Tiemann Reaction	(IV)	Zn.Hg/HCl

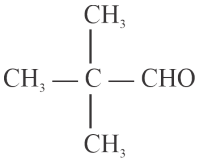
Choose the **correct** answer from the options given below:
(1) A-III, B-IV, C-I, D-II
(2) A-III, B-IV, C-II, D-I
(3) A-II, B-I, C-III, D-IV
(4) A-II, B-IV, C-I, D-III

Q77 The product P in following reaction is:

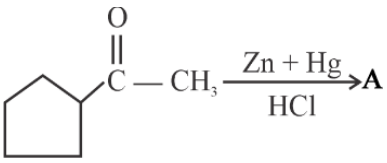
(1) 2-Phenylpropanoic acid
(2) Benzoic acid
(3) 2-Phenylethanoic acid
(4) Phenylmethanoic acid

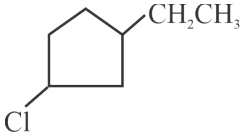
Q78 Which of the following reagent will perform the following reduction?
$CH_3 — CH = CH — CHO \rightarrow CH_3—CH = CH — CH_2OH$
(1) $LiAlH_4$
(2) PCC
(3) $KMnO_4$
(4) $Mg/Hg + H_2O$

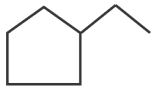
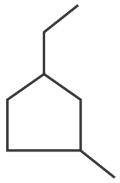
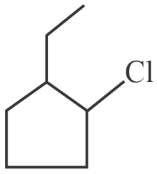
Q79 CO_2 on reaction with CH_3MgBr followed by H_2O gives:
(1) ethane.
(2) propionic acid.
(3) acetic acid.
(4) formic acid.

Q80 Which of the following would undergo aldol condensation?
(1) CCl_3CHO
(2) 
(3) CH_3CH_2CHO
(4) HCHO

Q81



Identify (A) in the above reaction.
(1) 

(2) 
(3) 
(4) 

Q82 Cannizzaro's reaction is an example of:
(1) Redox reaction
(2) Disproportionation
(3) Both (1) and (2)
(4) Only Oxidation

Q83 O_3 reacts with $CH_2{=}CH_2$ to form ozonide. Ozonide on treatment with Zn — H_2O gives:

(1) Ethylene oxide

(2) Formaldehyde

(3) Ethylene glycol

(4) Ethyl alcohol

Q84 Which of the following compounds will react with $NaHCO_3$ solution to give sodium salt and carbon dioxide:

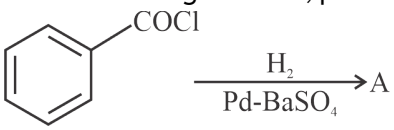
(1) Phenol

(2) n-Hexanol

(3) Acetic acid

(4) Both (1) and (2)

Q85 In the following reaction, product A is:



(1) C_6H_5CHO

(2) C_6H_5OH

(3) $C_6H_5COCH_3$

(4) C_6H_5Cl

Q86 Phenol is treated with bromine water and shaken well. The white precipitate formed during the process is of:

(1) m-Bromophenol

(2) 2,4-Dibromophenol

(3) 2,4,6-Tribromophenol

(4) A mixture of o-bromophenol and p-bromophenol

Q87 Given below are two statement: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Ketones are less acidic than carboxylic acids.

Reason R: Ketones lack the acidic hydrogen atom present in the carboxyl group of carboxylic acids.

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

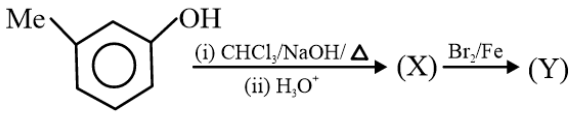
(1) A is true but R is false.

(2) A is false but R is true.

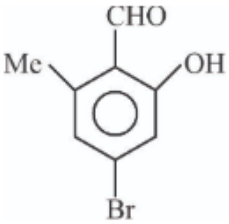
(3) Both A and R are true and R is the correct explanation of A.

(4) Both A and R are true but R is not the correct explanation of A.

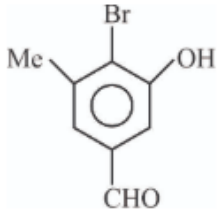
Q88 The product (Y) of the following sequence of reactions would be



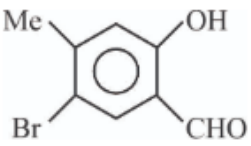
(1)



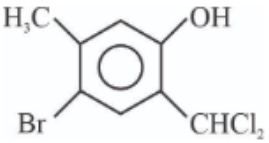
(2)



(3)



(4)



Q89 The **correct** order of acidic strength among the following is;

(I) H_2O

(II) CH_3CH_2OH
(III) Phenol
(IV) para-Chlorophenol
(1) (III) > (IV) > (II) > (I)
(2) (IV) > (III) > (I) > (II)
(3) (IV) > (III) > (II) > (I)
(4) (I) > (II) > (IV) > (III)

Q90 When vapours of a secondary alcohol is passed over heated copper at 573 K, the product formed is:
(1) a carboxylic acid.
(2) an aldehyde.
(3) a ketone.
(4) an alkene.

Q91 In the *Antirrhinum* species, a red-flowered plant was crossed with a white-flowered plant, producing pink flowers in the F_1 generation. When F_1 plants were selfed, what was the expected genotypic ratio in the F_2 generation?
(1) 3:1 (2) 1:2:1
(3) 1:2 (4) 2:1:2

Q92 Among the following identify the recessive trait of pea plant studied by Mendel.
(1) Tall height of plant
(2) Green pod colour
(3) Axial flower position
(4) Wrinkled seed shape

Q93 How many colour-based characters were studied by Mendel in pea plant for his experiments?
(1) One (2) Two
(3) Three (4) Four

Q94 The production of gametes by the parents, the formation of the zygotes, the F_1 and F_2 plants can be understood from a diagram called:
(1) genetic maps.
(2) Punnett square.
(3) genotype.
(4) karyotype.

Q95 Among the following which cross represents the test cross.
(1) TT × Tt
(2) TT × TT
(3) Tt × tt
(4) Tt × Tt

Q96 In Morgan's experiments on linkage, the genes for white eye and miniature wing in *Drosophila* showed recombination per cent of:
(1) 1.3. (2) 37.2.
(3) 62.8. (4) 80.5.

Q97 Match the **List-I** with **List-II.**

List-I		**List-II**	
(A)	Gregor Mendel	(I)	Mapped gene positions on chromosomes using recombination frequencies
(B)	Thomas Hunt Morgan	(II)	Noted the behaviour of chromosomes was parallel to the behaviour of genes
(C)	Walter Sutton and Theodore Boveri	(III)	Proposed the laws of inheritance in living organisms
(D)	Alfred Sturtevant	(IV)	Discovered the basis for the variation that sexual reproduction produced

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

Q98 In Mendel's dihybrid cross, how many offspring out of 16 in the F_2 generation show non-parental combinations of characters?

(1) Twelve (2) Nine
(3) Six (4) Ten

Q99 During monohybrid cross, Mendel obtained F_2 generation by:

(1) crossing F_1 plant with a true breed.
(2) self-pollinating dominant plant that had homozygous genotype.
(3) self-pollinating F_1 plants.
(4) crossing F_1 plant with a true breed dominant plant that had homozygous genotype.

Q100 In the case of _____ the F_1 generation resembles both parents.

(1) dominance
(2) incomplete dominance
(3) co-dominance
(4) polygenic inheritance

Q101 ABO blood groups are controlled by the gene:

(1) *I*. (2) *O*.
(3) *A*. (4) *B*.

Q102 How many different types of gametes are produced by a pea plant with genotype RrYy?

(1) Ten (2) Four
(3) Six (4) Eight

Q103 Given below are two statements:

Statement I: In case of human, during spermatogenesis among males, two types of gametes are produced.

Statement II: In humans, 50 per cent of the total sperm produced carry the X- chromosome and the rest 50 per cent has Y-chromosome besides the autosomes.

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

(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q104 In a typical monohybrid cross conducted by Mendel between homozygous tall and dwarf pea plants, the F_2 generation showed genotypic ratio as:

(1) 1:1.
(2) 1:2:1.
(3) 2:1.
(4) 1:3:1.

Q105 For the experimental verification of the chromosomal theory of inheritance, Morgan worked with:

(1) pea plant.
(2) honey bees.
(3) fruit flies.
(4) dog flower.

Q106 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Mutation that arises due to the change in many base pairs of DNA is known as point mutation.

Reason R: Deletions and insertions of base pairs of DNA, causes frame-shift mutations.

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

(1) A is true but R is false.
(2) A is false but R is true.
(3) Both A and R are true and R is the correct explanation of A.

(4) Both A and R are true but R is NOT the correct explanation of A.

Q107 Genotype(s) of pea plant with large starch grain is/are:
(1) BB only.
(2) BB and Bb.
(3) Bb only.
(4) Bb and bb.

Q108 Genes which code for a pair of contrasting traits are known as:
(1) factors. (2) alleles.
(3) homozygous. (4) heterozygous.

Q109 In the Mendel's dihybrid cross, the genotype of round and yellow pea seed can be represented by all of the following, **except:**
(1) RRYY. (2) RRYy.
(3) RrYy. (4) RRyy.

Q110 Theoretically, the modified allele of a gene could be responsible for production of:
(1) the normal/less efficient enzyme.
(2) a non-functional enzyme.
(3) no enzyme at all.
(4) All of these

Q111 Given below are two statements:
Statement I: Dominance is not an autonomous feature of a gene or the product.
Statement II: Dominance depends as much on the gene product and the production of a particular phenotype.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q112 When a single gene may produce more than one effect then it is called:
(1) complete dominance.
(2) pleiotropy.
(3) co-dominance.
(4) incomplete dominance.

Q113 A classic example for pleiotropy is:
(1) human skin colour.
(2) range of possible heights in human beings.
(3) phenylketonuria.
(4) ABO blood grouping of human.

Q114 Henking identified the X-body in:
(1) insects. (2) humans.
(3) birds. (4) pea plants.

Q115 The type of sex determination found in *Drosophila* is:
(1) XO type.
(2) XY type.
(3) ZW type.
(4) haplodiploid type.

Q116 _____ is the degree by which progeny differ from their parents.
(1) Genetics (2) Variation
(3) Linkage (4) Recombination

Q117 *Drosophila melanogaster* complete its life cycle in about:
(1) two days.
(2) two weeks.
(3) two months.
(4) two years.

Q118 Identify the **correct** statement(s) from the following.

A. The cross between TT and tt is a monohybrid cross.
B. In a dissimilar pair of factors one member of the pair dominates (dominant) the other (recessive).
C. The chemical and physical factors that induce mutations are known as mutagens.
D. UV radiations cannot cause mutations in organisms.
(1) A, B and C (2) A, B and D
(3) C and D only (4) A and C only

Q119 Physical association of two genes is termed:
(1) recombination.
(2) linkage.
(3) sex determination
(4) mutation.

Q120 The darkest skin colour in humans will have the genotype:
(1) AABBcc (2) AaBbCc
(3) AaBBCc (4) AABBCC

Q121 In honey bees, males have _____ the number of chromosomes than that of a female.
(1) double (2) half
(3) one third (4) one fourth

Q122 Female heterogamety in sex determination is seen in:
(1) birds. (2) grasshopper.
(3) honey bees. (4) humans.

Q123 Given below are two statements:
Statement I: Genetics deals with the inheritance, as well as the variation of characters from parents to offspring.
Statement II: Inheritance is the process by which characters are passed on from parent to progeny.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q124 In the case of co-dominance the F_1 generation resembles:
(1) dominant parent only.
(2) recessive parent only.
(3) both the parents.
(4) in between the two parents.

Q125 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: Based upon observations on dihybrid crosses Mendel proposed a second set of generalisations that we call Mendel's Law of Segregation.
Reason R: Dihybrid crosses are crosses between plants differing in two traits.
In the light of the above statements, choose the **correct** answer from the options given below:
(1) A is true but R is false.
(2) A is false but R is true.
(3) Both A and R are true and R is the correct explanation of A.
(4) Both A and R are true but R is NOT the correct explanation of A.

Q126 Male heterogamety is found in:
(1) birds.
(2) *Drosophila*.
(3) human beings.
(4) Both (2) and (3).

Q127 Identify the trait of pea plant which was **not** expressed in F_1 generation but expressed in F_2 generation of Mendel's monohybrid cross.
(1) Yellow pod colour
(2) Inflated pod shape
(3) Axial flower position
(4) Round seed shape

Q128 _____ used chromosome movement to explain Mendel's laws.
(1) Sutton and Boveri
(2) Correns and von Tschermak
(3) Morgan and de Vries
(4) de Vries and Correns

Q129 What could be genotype of an offspring having human blood group B?
(1) $I^A I^B$ (2) $I^A i$
(3) $i i$ (4) $I^B i$

Q130 A classic example for polygenic trait is:
(1) flower colour in pea plant.
(2) range of possible heights in human beings.
(3) phenylketonuria.
(4) sex determination in human beings.

Q131 Match the **List-I** with **List-II**.

List-I		List-II	
(A)	Number of chromosomes in female honey bees	(I)	46
(B)	Number of chromosomes in male honey bees	(II)	32
(C)	Total number of chromosomes in a normal human cell	(III)	44
(D)	Number of autosomes in a normal human cell	(IV)	16

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

Q132 Phenotypic ratio of F_2 generation of a dihybrid cross studied by Mendel was obtained:
(1) 1:4:5:3. (2) 9:3:3:1.
(3) 1:3:5:4. (4) 3:9:1:3.

Q133 In 1900, three scientists (de Vries, Correns and von Tschermak) independently rediscovered Mendel's results on the inheritance of:
(1) division.
(2) characters.
(3) chromosome movement.
(4) gene pairs.

Q134 _____ is a phenomenon which results in alteration of DNA sequences and results in changes in the genotype and the phenotype of an organism.
(1) Mutation
(2) Sex-determination
(3) Pleiotropy
(4) Polygenic inheritance

Q135 How many true-breeding pea plant varieties did Mendel select for his experiments?
(1) Five (2) Fourteen
(3) Eleven (4) Nine

Q136 How many diseases given in the box are transmitted by inhalation of droplets/aerosols released by an infected person?

Ascariasis, Pneumonia, Malaria, Typhoid

(1) Four (2) Three
(3) Two (4) One

Q137 Immature lymphocytes differentiate in:
(1) liver and spleen.
(2) bone marrow and thyroid.
(3) thymus and bone marrow.
(4) spleen and thymus.

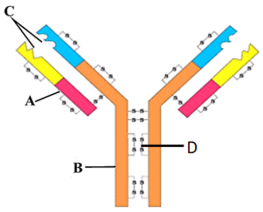
Q138 Which of the following diseases is an auto-immune disorder?

(1) Liver cirrhosis
(2) Gout
(3) Hepatitis
(4) Rheumatoid arthritis

Q139 Which of the following body organs is affected in elephantiasis disease?

(1) Lymphatic vessels of upper limbs.
(2) Lymphatic vessels of lower limbs.
(3) Blood vessels of hands.
(4) Skin between fingers.

Q140 Observe the below given diagram of an antibody molecule. Which of the following labelled part A, B, C and D acts as an antigen binding site?



(1) A (2) B
(3) C (4) D

Q141 Identify the plant given below.

(1) Flowering branch of *Datura*
(2) Leaves of *Cannabis sativa*
(3) Leaves of opium poppy plant
(4) *Erythroxylum coca* plant

Q142 Match **List-I** with **List-II.**

List-I		**List-II**	
(A)	IgE	(I)	Biological Response modifier
(B)	Ringworm	(II)	Antibody involved in allergic reactions
(C)	Saliva in mouth	(III)	Fungal disease
(D)	α-interferon	(IV)	Physiological barrier

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

(1) A-III, B-II, C-I, D-IV
(2) A-II, B-III, C-IV, D-I
(3) A-III, B-II, C-IV, D-I
(4) A-III, B-I, C-II, D-IV

Q143 MRI uses strong magnetic field and ____ radiations to detect pathological and physiological changes.

Choose the option which fills the blank **correctly**.

(1) X-ray
(2) non-ionising
(3) gamma rays
(4) both (1) and (3)

Q144 Given below are two statements:

Statement I: An anamnestic response of acquired immunity is of low intensity.

Statement II: In a biopsy, a small sample of the suspected tissue is excised, cut into thin sections, stained, and subsequently analyzed under a microscope by a pathologist.

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

(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q145 Ravi is suspected to be suffering from acquired immunodeficiency syndrome. Which diagnostic technique will you recommend for its detection?

(1) WIDAL (2) ELISA

(3) MRI (4) Ultrasound

Q146 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Cancer cells show uncontrolled growth.

Reason R: Cancer cells show property of contact inhibition.

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

(1) A is true but R is false.

(2) A is false but R is true.

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

(4) Both A and R are true but R is not the correct explanation of A.

Q147 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: An antibody is represented as H_2L_2.

Reason R: Each antibody molecule has four peptide chains, two small called light chains and two longer called heavy chains.

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

(1) A is true but R is false.

(2) A is false but R is true.

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

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

Q148 Match **List-I** with **List-II.**

List-I		**List-II**	
(A)	Heroin	(I)	Physiological barriers
(B)	Oncogenic viruses	(II)	Decreases concentration of haembound oxygen
(C)	HCl in stomach	(III)	Depressant
(D)	Smoking	(IV)	Cancer causing viruses

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

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

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

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

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

Q149 Carrier for amoebiasis is:

(1) *Entamoeba histolytica.*

(2) mosquito.

(3) houseflies.

(4) *Plasmodium vivax.*

Q150 Sustained high fever (39° to 40°C) and intestinal perforation in severe cases is a symptom of which of the following diseases?

(1) Malaria

(2) Typhoid

(3) Cholera

(4) Common cold

Q151 If females administer anabolic steroids, all of the following symptoms is observed, **except**:

(1) abnormal menstruation.

(2) excessive hair growth.

(3) enlargement of clitoris.

(4) reduction of size of the testicles.

Q152 The chemical test that is mainly used for diagnosis of typhoid is _____.

Choose the option which fills the blank **correctly**.

(1) ELISA Test (2) blood test

(3) PCR Test (4) Widal Test

Q153 Withdrawal syndrome occurs when regular dose of drugs/alcohol is abruptly discontinued. This is characterised by how many of the symptoms given in the box?

Anxiety, Nausea, Shakiness, Sweating

(1) One (2) Two
(3) Three (4) Four

Q154 Read the following statements **(A-E).**

A. When ready-made antibodies are directly given to protect the body against foreign agents, it is called active immunity.

B. In severe cases of pneumonia, the lips and finger nails may turn yellowish in colour.

C. The cell-mediated immune response is carried out by T-lymphocytes.

D. Colostrum contains IgG antibodies.

E. Tissue matching, blood group matching are essential before undertaking any graft/transplant.

Which of the following statements are **incorrect**?

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

Q155 The treatment of AIDS is mediated by:

(1) anti-fungal drugs.
(2) anti-pyretics.
(3) anti-helminthic drugs.
(4) anti-retroviral drugs.

Q156 Which of the following is a pair of viral diseases?

(1) Common cold and AIDS
(2) Dysentery and common cold
(3) Typhoid and tuberculosis
(4) Ringworm and AIDS

Q157 Which of the following statements is **incorrect** w.r.t smack?

(1) It is chemically diethyl morphine.
(2) It is a white, odourless, bitter, crystalline compound.
(3) It is generally taken by snorting or injection.
(4) It slows down body functions.

Q158 Given below are two statements:

Statement I: There is always a time-lag between the infection and appearance of AIDS symptoms.

Statement II: The thymus keeps increasing in size with age.

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

(1) Statement I is correct but Statement II is incorrect.
(2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct.
(4) Both Statement I and Statement II are incorrect.

Q159 Which of the following chemicals are released by mast cells in response to allergens?

(1) Serotonin
(2) Anti-histamines
(3) Histamines
(4) Both (1) and (3)

Q160 Method/technique utilising X-rays to generate three dimensional image of the internal organs of an object is:

(1) MRI
(2) ELISA
(3) computed tomography.
(4) biopsy.

Q161 The substance produced by a cell in viral infection that can protect other cells from further viral infection is:

(1) serotonin. (2) colostrum.
(3) interferon. (4) histamine.

Q162 Read the following statements **(A-D).**

A. The B cells themselves do not secrete antibodies but help T-cells to produce them.

B. Skin on our body is the main barrier which prevents entry of the micro-organisms.

C. *Entamoeba histolytica* is a protozoan parasite in the liver of human beings.

D. Mary Mallon was an asymptomatic carrier of *Salmonella typhi* and unknowingly spread typhoid for years through the food she prepared.

Which of the following statements are **incorrect**?

(1) A and B only (2) C and D only

(3) A and C only (4) B and D only

Q163 Given below are a few symptoms.

A. Internal bleeding

B. Muscular pain

C. Fever

D. Anemia

E. Blockage of intestinal passage

Identify the **correct** disease associated with these symptoms.

(1) Typhoid

(2) Ascariasis

(3) Malaria

(4) Pneumonia

Q164 The enzyme responsible for converting the RNA genome of HIV into DNA in macrophages is:

(1) restriction endonuclease.

(2) DNA ligase.

(3) DNA polymerase.

(4) reverse transcriptase.

Q165 In the context of lymphoid tissue, MALT constitutes about _____ of all the lymphoid tissue in human body.

Choose the option which fills the blank **correctly**.

(1) 25% (2) 60%

(3) 50% (4) 90%

Q166 Which of the following statements is **incorrect** w.r.t spleen?

(1) It is a primary lymphoid organ.

(2) It mainly contains lymphocytes and phagocytes.

(3) It has a large reservoir of erythrocytes.

(4) It acts as a filter of the blood by trapping blood-borne microorganisms.

Q167 Which of the following drugs is obtained from the below given plant?

(1) Marijuana (2) Heroin

(3) Cocaine (4) Smack

Q168 In higher vertebrates, the immune system can distinguish self-cells and non-self cells. If this property is lost then it leads to:

(1) allergic response.

(2) graft rejection.

(3) autoimmune disease.

(4) active immunity.

Q169 A drug that is commonly to treat mental illness is:

(1) amphetamine.

(2) benzodiazepines.

(3) heroin.

(4) Both (1) and (2)

Q170 Transmission of HIV-infection does **not** occurs by:

(1) sexual contact with infected person.

(2) transfusion of contaminated blood and blood products.

(3) sitting together.

(4) infected mother to her child through placenta.

Q171 The alveoli of lungs are infected in:

(1) pneumonia. (2) common cold.

(3) diphtheria. (4) ascariasis.

Q172 The appearance of dry, scaly lesions on various parts of the body such as the skin, nails, and scalp is caused by all of the following, **except**:

(1) *Microsporum.*

(2) *Trichophyton.*

(3) Roundworms.

(4) *Epidermophyton.*

Q173 ____ are the drugs which bind to specific receptors present in our central nervous system and gastrointestinal tract.

Fill in the blank with the **correct** option.

(1) Cannabinoids (2) Opioids

(3) Coca alkaloids (4) Barbiturates

Q174 Which of the following cells acts as a HIV factory?

(1) Monocytes (2) Macrophages

(3) Erythrocytes (4) B-lymphocytes

Q175 Using recombinant DNA technology, the hepatitis B vaccine is produced from _____.

Fill in the blank with the **correct** option.

(1) Bacteria (2) Virus

(3) Yeast (4) Helminth

Q176 During the life cycle of *Plasmodium*, in which of the following gametocytes are formed?

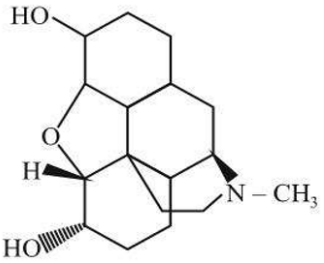
(1) Erythrocytes of human blood

(2) Salivary glands of mosquitoes

(3) Hepatocytes of humans

(4) Gut of *Anopheles* mosquito

Q177 The chemical compound whose chemical structure is given below is obtained from which plant?



(1) *Papaver somniferum*

(2) *Erythroxylum coca*

(3) *Atropa belladonna*

(4) *Cannabis sativa*

Q178 Select the **mismatch** option w.r.t mode of transmission.

(1) Dengue and chikungunya - *Aedes* mosquito

(2) *Microsporum* and *Epidermophyton* - Acquired from bite of *Culex* mosquito

(3) Common cold and diphtheria - Droplet infection

(4) Ascariasis and amoebiasis - Faeco-oral route

Q179 Which of the following are examples of ionising-radiation carcinogens?

A. X-rays

B. Gamma rays

C. UV rays

D. Viral oncogenes

E. Tobacco smoke

(1) A, C and D only

(2) A and B only

(3) A, B and D only

(4) B, D and E only

Q180 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Cocaine has a potent stimulating action on central nervous system.

Reason R: Cocaine interferes with the transport of the neuro transmitter acetylcholine.

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

(1) A is true but R is false.

(2) A is false but R is true.

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

(4) Both A and R are true but R is not the correct explanation of A.

NEET (2025)

Practice Test - 12

DURATION : 180 Minutes | **M. MARKS : 720**

Topics Covered

Physics :	Moving Charges and Magnetism (Complete Chapter), Magnetism and Matter (Complete Chapter), Electromagnetic Induction (Complete Chapter)
Chemistry :	Aldehydes, Ketones and Carboxylic Acids (Complete Chapter), Amines (Complete Chapter), Biomolecules (Complete Chapter), Alcohols, Phenols and Ethers
Biology :	**(Botany):** Principle of Inheritance and Variation: Introduction, Mendel's Laws of Inheritance, Inheritance of One Gene, Exceptions to Mendelian Principles, Inheritance of Two Gene, Two Genes Interaction (w.r.t Post-Mendelism),polygenic inheritance and pleiotropy, Sex Determination, Mutation **(Zoology):** Human Health and Diseases: Introduction, Protozoan Disease, Immunity, Innate immunity, Acquired immunity, Lymphoid organs, Immunisation, Vaccination, Transplantation, Allergy, Autoimmunity, Immunodeficiency disorders, Cancer, Drug abuse, Alcohol abuse

General Instructions:

1. Immediately fill in the particulars on this page of the test booklet.
2. The test is of **180 minutes** duration and the Test Booklet contains **180** multiple choice questions (four options with a single correct answer) from **Physics, Chemistry and Biology (Botany and Zoology)**. **45** questions in each subject
3. The test booklet consists of **180** questions. The maximum marks are **720**.
4. There is only **one correct** response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. inside the examination room/hall.
7. Use of white fluid for correction is **not permissible** on the **Answer Sheet**.
8. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the candidates are allowed to take away this Test Booklet with them.

Answer Key

Q1 (3)
Q2 (3)
Q3 (4)
Q4 (1)
Q5 (2)
Q6 (3)
Q7 (2)
Q8 (1)
Q9 (2)
Q10 (3)
Q11 (1)
Q12 (4)
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Q106 (2)
Q107 (1)
Q108 (2)
Q109 (4)
Q110 (4)
Q111 (3)
Q112 (2)

Q113 (3)

Q114 (1)

Q115 (2)

Q116 (2)

Q117 (2)

Q118 (1)

Q119 (2)

Q120 (4)

Q121 (2)

Q122 (1)

Q123 (3)

Q124 (3)

Q125 (2)

Q126 (4)

Q127 (1)

Q128 (1)

Q129 (4)

Q130 (2)

Q131 (4)

Q132 (2)

Q133 (2)

Q134 (1)

Q135 (2)

Q136 (4)

Q137 (3)

Q138 (4)

Q139 (2)

Q140 (3)

Q141 (1)

Q142 (2)

Q143 (2)

Q144 (2)

Q145 (2)

Q146 (1)

Q147 (3)

Q148 (4)

Q149 (3)

Q150 (2)

Q151 (4)

Q152 (4)

Q153 (4)

Q154 (1)

Q155 (4)

Q156 (1)

Q157 (1)

Q158 (1)

Q159 (4)

Q160 (3)

Q161 (3)

Q162 (3)

Q163 (2)

Q164 (4)

Q165 (3)

Q166 (1)

Q167 (1)

Q168 (3)

Q169 (4)

Q170 (3)

Q171 (1)

Q172 (3)

Q173 (2)

Q174 (2)

Q175 (3)

Q176 (1)

Q177 (1)

Q178 (2)

Q179 (2)

Q180 (1)

Hints & Solutions

Q1 Text Solution:

(3)

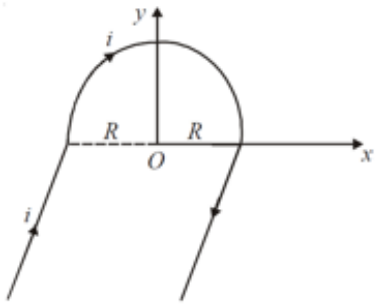
$\Rightarrow \overrightarrow{B} = \overrightarrow{B}_1 + \overrightarrow{B}_2$

$\overrightarrow{B} = \frac{\mu_0 i_1}{2\pi d}\hat{i} - \frac{\mu_0 i_2}{2\pi d}\hat{j}$

$\left|\overrightarrow{B}\right| = \frac{\mu_0}{2\pi d}\sqrt{i_1^2 + i_2^2}$

Q2 Text Solution:

(3)



Due to straight wires $\overrightarrow{B}_1$ at *O*

$B_1 = \frac{\mu_0 i}{4\pi R}\left(-\hat{j}\right) + \frac{\mu_0 i}{4\pi R}\left(-\hat{j}\right)$

$= -\frac{\mu_0 i}{2\pi R}\hat{j}$

Due to semicircle

$\overrightarrow{B}_2 = -\frac{\mu_0 i}{4R}\hat{k}$

Net

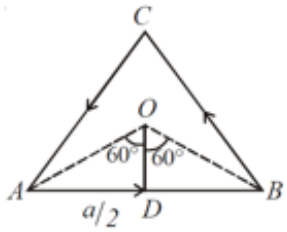
$\overrightarrow{B}_2 = \overrightarrow{B}_1 + \overrightarrow{B}_2 = \sqrt{\left(\frac{\mu_0 i}{2\pi R}\right)^2 + \left(\frac{\mu_0 i}{4R}\right)^2}$

$= \frac{\mu_0 i}{2R}\sqrt{\frac{1}{\pi^2} + \frac{1}{4}}$

$= \frac{\mu_0 i}{2R(2\pi)}\sqrt{\pi^2 + 4}$

Q3 Text Solution:

(4)



O is centroid and using the Δ *OAD* distance

OD = $\frac{a}{2\sqrt{3}}$

By all the three sides *AB*, *BC* and *CA*, direction of magnetic field produced will be same and outward to the plane of paper.

So,

$B_{\text{total}} = 3\left[\frac{\mu_0 i}{4\pi\left(\frac{a}{2\sqrt{3}}\right)}\left(\sin 60^\circ + \sin 60^\circ\right)\right]$

$= \frac{9\mu_0 i}{2\pi a}$

Q4 Text Solution:

(1)

If velocity of the charge particle is parallel to magnetic field then particle will not experience any force.

Magnetic force is perpendicular to velocity so speed does not change. Therefore kinetic energy does not change.

Q5 Text Solution:

(2)

According to Ampere Circuital Law-

$\int \overrightarrow{B} \cdot d\overrightarrow{l} = \mu_0 l_{\text{inside}} = \mu_0 (4i - i) = 3\mu_0 i$

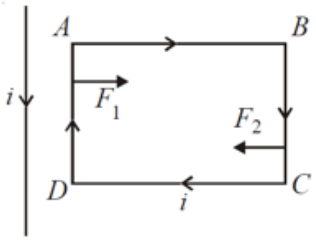
Q6 Text Solution:

(3)

$r = \frac{mv}{Bq}, T = \frac{2\pi r}{v}$, T is independent of speed of the particle.

Q7 Text Solution:

(2)



Force on *AB* and *CD* will be cancelled out and for *AD* and *BC*

$F_1 > F_2$

$\Rightarrow$ Loop moves away from wire.

Q8 Text Solution:

(1)

$r = \frac{\sqrt{2mk}}{qB}$ here k is same, so $r \propto \frac{\sqrt{m}}{q}$

So $\frac{r_p}{r_\alpha} = \sqrt{\frac{m_p}{m_\alpha}} \times \frac{q_\alpha}{q_p} = \sqrt{\frac{1}{4}} \times \frac{2}{1} = 1:1$

Q9 Text Solution:

(2)

$B_{\text{centre}} = \frac{\mu_0 i}{4}\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$

Q10 Text Solution:

(3)

Velocity has two components, one along magnetic field and other perpendicular to magnetic field, due to which helical motion will take place.

Q11 Text Solution:

(1)

Current element = *i dl*

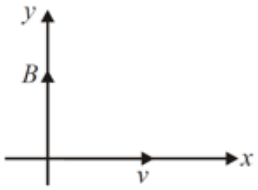
Q12 Text Solution:

(4)

$\overrightarrow{F} = -e\left(\overrightarrow{v} \times \overrightarrow{B}\right)$

So using right hand thumb rule

will be in –*z* direction.



Q13 Text Solution:

(1)

$I = \chi H,$ where χ is called magnetic susceptibility.

Q14 Text Solution:

(1)

$R = \frac{\sqrt{2mk}}{qB} = \frac{\sqrt{2mqV}}{qB}$

$\Rightarrow R = \frac{\sqrt{2V}}{B}\sqrt{\frac{m}{q}} \Rightarrow \frac{q}{m} = \frac{2V}{R^2B^2}$

Q15 Text Solution:

(2)

$$\overrightarrow{F} = q\left[\overrightarrow{E} + \left(\overrightarrow{v} \times \overrightarrow{B}\right)\right]$$

Q16 Text Solution:

(1)

Magnetic moment = pole strength × length

Q17 Text Solution:

(3)

$B_1 = B_2$

$\frac{\mu_0 n_1 i}{2r_1} = \frac{\mu_0 n_2 i}{2r_2}$

$\frac{n_1}{n_2} = \frac{8}{15} = \frac{r_1}{r_2}$

Q18 Text Solution:

(4)

As F $\propto \frac{1}{r^4}$ and *r* becomes twice, therefore, *F* becomes $\frac{1}{2^4} = \frac{1}{16}$ times $\quad \therefore \frac{1}{16} \times 8 = 0.5\ N.$

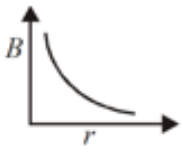
Q19 Text Solution:

(1)

$\chi \propto \frac{1}{T}$, according to curie law.

Q20 Text Solution:

(3)



$B = \frac{\mu_0 i}{2\pi r}$

$B \propto \frac{1}{r}$

Q21 Text Solution:

(4)

$B = \mu_0\ nI$

$B = 4\pi \times 10^{-7} \times 400 \times 5 = 2.5\ mT$

Q22 **Text Solution:**

(3)

$B = \sqrt{\left(\frac{\mu_0 I}{2R}\right)^2 + \left(\frac{\mu_0 (2I)}{2R}\right)^2}$

$= \frac{\mu_0 I}{2R}\sqrt{1+4} = \frac{\sqrt{5}\mu_0 I}{2R}$

Q23 **Text Solution:**

(1)

$f = \frac{\mu_0 i_1 i_2}{2\pi d} = \frac{4\pi \times 10^{-7} \times 1 \times 1}{2\pi \times 1}$

= 2 × 10^{-7} N/m

Q24 **Text Solution:**

(3)

For diamagnetic substance $\chi_m < 0$ and $\mu_r < 1$

Q25 **Text Solution:**

(4)

$\chi = \frac{C}{T}$, according to Curie law.

Q26 **Text Solution:**

(4)

$B = \frac{\mu_0 I \alpha}{4\pi r}$

Q27 **Text Solution:**

(2)

The charge through the coil = area of current-time (i – t) graph

$q = \frac{1}{2} \times 0.1 \times 4 = 0.2\ C$

$q = \frac{\Delta\phi}{R}$ $\quad \because$ Change in flux (Df) = $q \times R$

$q = 0.2 = \frac{\Delta\phi}{10}$

$\Delta\phi$ = 2 weber

Q28 **Text Solution:**

(1)

$B_1 = \frac{\mu_0}{4\pi}\frac{i}{r}\left[\sin\alpha + \sin\beta\right]$

$= \frac{\mu_0}{4\pi}\frac{i}{r}, \qquad \alpha = \frac{\pi}{2}, \ \ \beta = 0$

$B_2 = \frac{\mu_0}{4\pi}\frac{i(\pi)}{r} \qquad B_{net} = B_1 + B_2$

Q29 **Text Solution:**

(3)

$\tau = MB\sin 90^\circ$

$\tau = MB \qquad \text{and } \tau' = MB\sin\theta$

$\frac{MB}{2} = MB\sin\theta \quad \sin\theta = \frac{1}{2}, \ \ \theta = 30^\circ$

$\alpha = 90^\circ - \theta = 90^\circ - 30^\circ = 60^\circ$

Q30 **Text Solution:**

(1)

$B = \frac{\mu_0 ir}{2\pi R^2}$ r < R

$B = \frac{\mu_0 i}{2\pi r} \qquad r \geq R$

Q31 **Text Solution:**

(2)

$\tau = MB$

$\tau = i\left(\frac{\sqrt{3}}{4}L^2\right)B$

Q32 **Text Solution:**

(3)

$\overrightarrow{F}_{net} = 0$

Q33 **Text Solution:**

(1)

$\chi = \frac{c}{T}, \ \ \chi$ is susceptibility

$\chi = m \ \left(\frac{1}{T}\right)$

$\tan\theta = m = \frac{0.4}{7\times10^{-3}} = 57 \text{ K}$

Q34 **Text Solution:**

(1)

The mutual inductance between two coils depends on their degree of flux linkage, *i.e.*, the fraction of flux linked with one coil which is also linked to the other coil. Here, the two coils in arrangement (a) are placed with their planes parallel. This will allow maximum flux linkage.

Q35 **Text Solution:**

(3)

$L = \mu_0 N^2 A/l$

Q36 **Text Solution:**

(1)

A force a torque act on a magnetic needle kept in a non-uniform magnetic filed.

Q37 **Text Solution:**

(1)

Conceptual

Q38 **Text Solution:**

(1)

Conceptual

Q39 **Text Solution:**

(2)

$\varepsilon = \frac{1}{2} B\omega R^2$, $R = 0.1$ m, B = 0.1T,

$\omega = 20\pi$(rad/s)

$\varepsilon = \frac{1}{2}(0.1)(0.1)^2(20\pi)$

$= \frac{\pi}{100} V$

Q40 **Text Solution:**

(2)

Since the tube is very long the force on magnet due to induced current will continue to oppose its motion till it acquires a constant speed.

Q41 **Text Solution:**

(4)

The change in K.E. is equal to work done by net force which is zero because the magnetic force is perpendicular to velocity. K.E. remains constant.

Q42 **Text Solution:**

(4)

$e = M\frac{di}{dt} = 1.25 \times 80 = 100 \text{ V}$

Q43 **Text Solution:**

(2)

Conceptual

Q44 **Text Solution:**

(1)

$e = \frac{d\phi}{dt} = \frac{d}{dt}(NBA) = NA\frac{dB}{dt}$

$= 100 \times 0.1 \times 0.05 \times \left(\frac{0.1-0.05}{0.05}\right) = 0.5\ V$

Q45 **Text Solution:**

(3)

Time taken by proton to make one revolution

$= \frac{25}{5} = 5\mu \text{ sec.}$

As $T = \frac{2\pi m}{qB};\ so \frac{T_2}{T_1} = \frac{m_2}{m_1} \times \frac{q_1}{q_2}$

or $T_2 = T_1\frac{m_2 q_1}{m_1 q_2} = \frac{5\times 4m_1}{m_1} \times \frac{q}{2q} = 10\mu \text{ sec.}$

Q46 Text Solution:

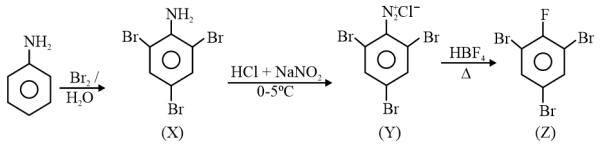
(2)

$CH_2 = CH - CH_2 - NH - CH_3$

(*N*-Methylprop-2-en-1-amine) contains the functional group –NH hence, it is an unsaturated aliphatic secondary amine.

Q47 Text Solution:

(3)



Q48 Text Solution:

(3)

$>C = O$ and $-OH$

[New NCERT Class 11th Page No. 221]

Q49 Text Solution:

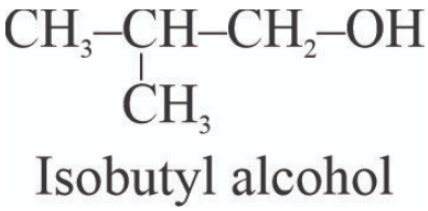
(3)

Pentacetyl derivative of glucose show the evidence for the five –OH group.

[New NCERT Class 12th Page No. 284]

Q50 Text Solution:

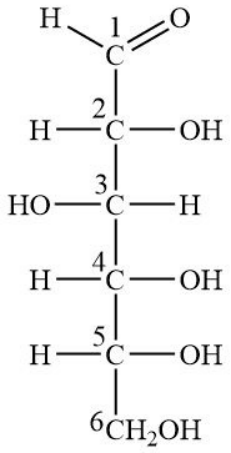
(3)



[New NCERT Class 12th Page No. 194]

Q51 Text Solution:

(1)



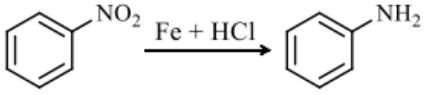
(Glucose)

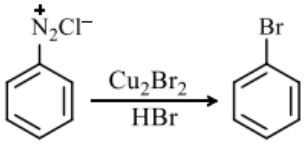
As in above structure its clearly shown that structure of glucose is **OPEN CHAIN.**

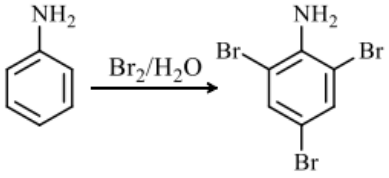
- Also one end of glucose is $-\mathrm{CHO}$ group and another end $-\mathrm{CH_2\,OH}$.

Q52 Text Solution:

(1)

- 

- $CH_3CN \xrightarrow{LiAlH_4} CH_3CH_2NH_2$
- 

- 

Q53 Text Solution:

(3)

Tertiary amines does not show intermolecular hydrogen bonding as they do not have any

hydrogen atoms directly attached to the nitrogen atom.

Q54 Text Solution:

(1)

The reactivity of halogen acids (HI, HBr, HCl) with ethanol (C_2H_5OH) in the presence of zinc chloride $(ZnCl_2)$ follows the order: HI > HBr > HCl. HI is the strongest acid among the three followed by HBr and then HCl. Stronger acids are more readily available to donate protons making them more reactive.

[New NCERT 12th Page No. 208]

Q55 Text Solution:

(4)

The carbylamine test is given by primary amine in which it is converted into isocyanide.

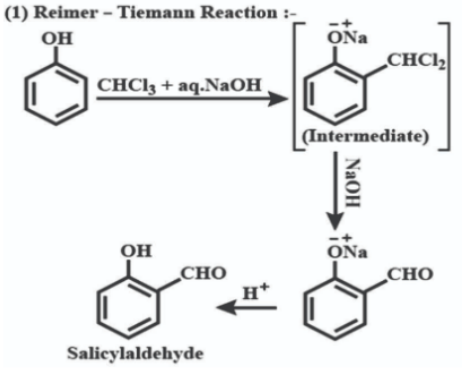
2,4-Dimethyl aniline and p-methyl benzylamine both are primary amines. Primary amines do give a positive carbylamine test.

[New NCERT 12th Page No. 271]

Q56 Text Solution:

(3)

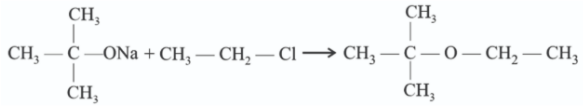
When phenol is treated with Chloroform in the presence of base that is NaOH (Sodium Hydroxide), an aldehyde group (–CHO) is introduced at the ortho position of the benzene ring leading to the formation of o-Hydroxybenzaldehyde also known as Salicylaldehyde. This reaction is popularly known as the Reimer-Tiemann's Reaction.



[New NCERT 12th Page No. 000]

Q57 Text Solution:

(2)



[New NCERT Class 12th Page No. 215]

Q58 Text Solution:

(4)

t-Butyl Alcohol has least boiling point due to least surface area.

[New NCERT Class 12th Page No. 204]

Q59 Text Solution:

(2)

The amides on reduction with $LiAlH_4$ yield amines.

Q60 Text Solution:

(2)

Dehydration of alcohol is directly proportional to the stability of carbocation.

[New NCERT Class Page No. 208]

Q61 Text Solution:

(1)

Lucas reagent is a solution of anhydrous zinc chloride $(ZnCl_2)$ in concentrated hydrogen chloride(HCl). It is used to distinguish between primary, secondary, and tertiary alcohols based on their reactivity.

[New NCERT Class 12th Page No. 208]

Q62 Text Solution:

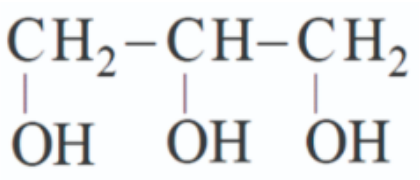
(4)

Reducing Sugar : Maltose, Lactose, Glucose

Non-Reducing Sugar : Sucrose

Q63 Text Solution:

(4)

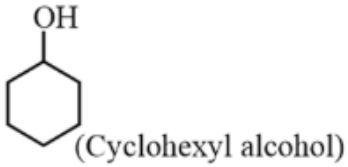


Propane – 1, 2, 3, - triol

[New NCERT Class 12th Page No. 194]

Q64 Text Solution:

(1)



[New NCERT Class 12th Page No. 194]

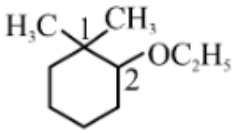
Q65 Text Solution:

(4)

Due to resonance stabilisation of phenoxide ion, phenols are more acidic than alcohols.

Q66 Text Solution:

(2)



2-Ethoxy-1,1-dimethylcyclohexane

Q67 Text Solution:

(4)

All compound contain two hydroxy group.

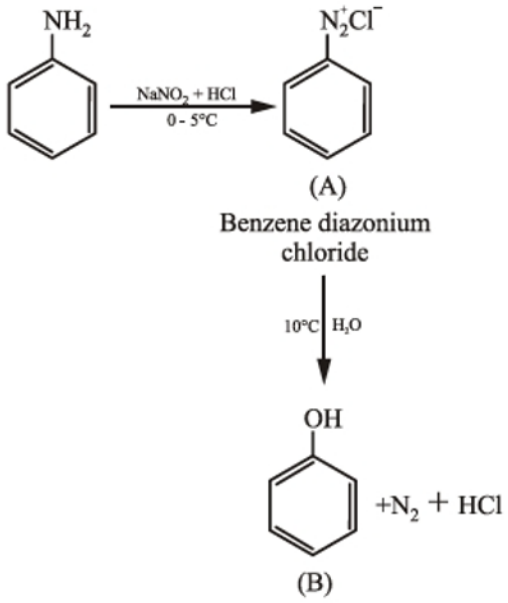
Q68 Text Solution:

(4)

Maltose is a oligosaccharide and disaccharide.

Q69 Text Solution:

(2)



Q70 Text Solution:

(3)

Fructose is laevorotatory in nature.

Q71 Text Solution:

(2)

Dihydric alcohols, such as ethylene glycol, react immediately with aldehydes and ketones to generate cyclic acetals and cyclic ketals, respectively. Ethylene glycol ketals are another name for cyclic ketals.

Therefore, option (2) is the correct answer.

Q72 Text Solution:

(3)

$SnCl_2$/HCl is used in Stephen's reaction.

[New NCERT Class Page No. 232]

Q73 Text Solution:

(1)

$$RCH_2OH \xrightarrow{Cu,\ 573K} RCHO$$

[New NCERT Class 12th Page No. 210]

Q74 Text Solution:

(2)

- In the presence of p-toluene sulphonic acid, acetone and ethylene glycol react to produce hemiketal.
- Ketones react with one equivalent of monohydric alcohol in the presence of dry hydrogen chloride to yield hemi ketals.
- Ketones react with two equivalent of monohydric alcohol in the presence of dry hydrogen chloride to give ketals.

Aqueous mineral acids may hydrolyse acetals and ketals to produce the corresponding aldehydes and ketones, respectively.

Q75 Text Solution:

(4)

Aldehydes are more reactive towards nucleophilic addition reactions as compared to ketones due to steric factors.

[New NCERT Class 12th Page No. 236]

Q76 Text Solution:

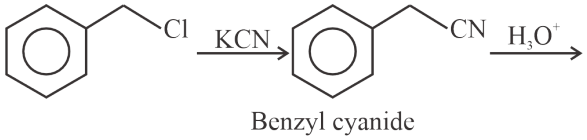
(1)

Hoffmann Degradation	Br_2, NaOH
Clemmensen reduction	Zn.Hg/HCl
Cannizzaro reaction	Conc. KOH, Δ
Reimer-Tiemann Reaction	$CHCl_3$, NaOH/H_3O+

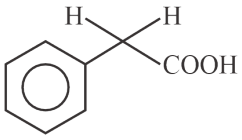
Q77 Text Solution:

(3)

Reaction sequence is as follows:



Benzyl cyanide



2-phenylethanoic acid

[New NCERT Class 12th Page No. 246]

Q78 Text Solution:

(1)

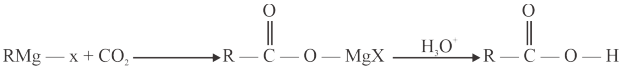
$LiAlH_4$ will reduce -CHO into $-CH_2OH$ but it will not reduce the conjugated double bond.

[New NCERT 12th Page No. 238]

Q79 Text Solution:

(3)

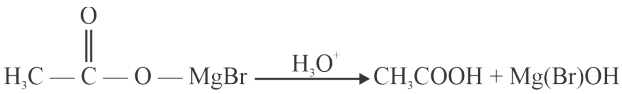
- Carbonation of Grignard reagent is the reaction of Grignard reagent with carbon dioxide. So, when carbon dioxide reacts with organometallic reagents (Grignard reagents), We are familiar with the attack of R anion on carbonyl groups, i.e., an acid salt is formed. This acid salt is further hydrolyzed in the presence of acid to form a carboxylic acid. These acids can then be used for various purposes.



- Grignard reagents react with carbon dioxide in two stages, in the first stage, we will get an addition of the Grignard reagent to the carbon dioxide. Dry carbon dioxide is bubbled through a solution of the Grignard reagent in ethoxyethane. So, when methyl magnesium bromide is treated with carbon dioxide, we know that carbon dioxide has two C=O bonds. The anion attacks the carbon and forms an

acid salt. carbon dioxide gets added to the methyl magnesium bromide in the reaction.

- The product is then hydrolysed or it is reacted with water in the presence of a dilute acid. Typically, we add dilute sulphuric acid or dilute hydrochloric acid to the solution formed by the reaction with the carbon dioxide.
- A carboxylic acid is produced with one more carbon than the original Grignard reagent. In this case, acetic acid is formed as the product.



So, when methyl magnesium bromide is treated with carbon dioxide and hydrolysed, the product is Acetic acid.

[New NCERT Class 12th Page No. 246]

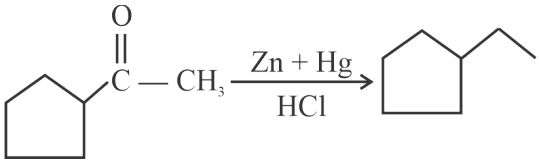
Q80 Text Solution:

(3)

Primary condition for Aldol condensation the aldehydes and ketones must contain alpha (α) - hydrogen.

Q81 Text Solution:

(2)



Clemmensen reduction

Q82 Text Solution:

(3)

In the Cannizzaro reaction, an aldehyde undergoes self-oxidation and reduction in the presence of a strong base to form a carboxylic acid and an alcohol. This reaction is a type of disproportionation reaction because one molecule of the aldehyde is simultaneously oxidized while another molecule is reduced. The disproportionation reaction is a type of redox reaction.

[New NCERT Class 12th Page No. 242]

Q83 Text Solution:

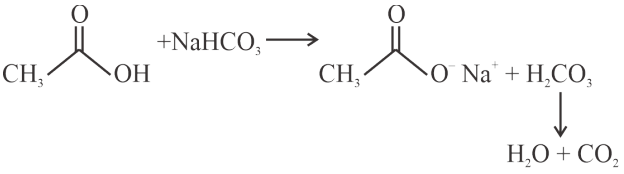
(2)

Ethene, on reductive ozonolysis forms methanal.

[New NCERT Class 12th Page No. 231]

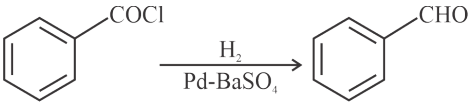
Q84 Text Solution:

(3)



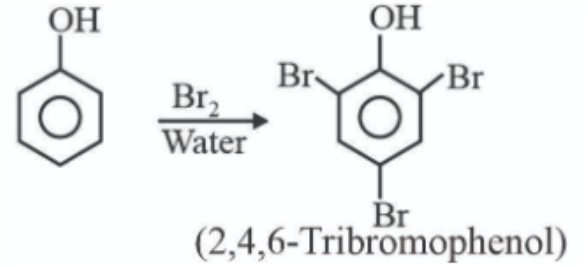
Q85 Text Solution:

(1)



Q86 Text Solution:

(3)



[New NCERT Class 12th Page No. 212]

Q87 Text Solution:

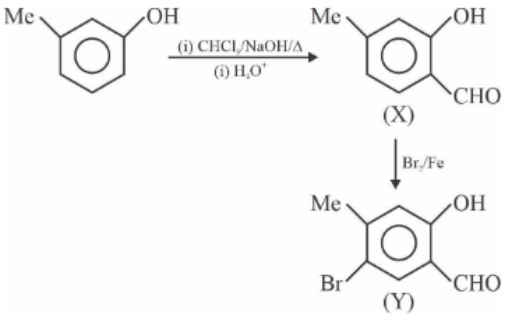
(3)

Carboxylic acids have a distinct acidic hydrogen atom directly bonded to the oxygen of the carboxyl group. Ketones lack this acidic hydrogen, making them less acidic than carboxylic acids.

[New NCERT Class 12th Page NO. 231]

Q88 Text Solution:

(3)



Q89 Text Solution:

(2)

The order of acidity is

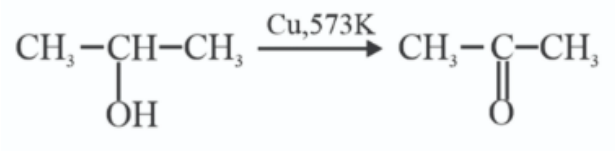
Ethanol < Water < Phenol < para-Chlorophenol.

The phenoxide ion formed after removing a proton is stabilised by resonance, whereas the ethoxide lon formed after removing a proton is destabilised by the +I Effect of the C_2H_5 group. As a result, phenol is a stronger acid than ethanol. On the other hand, ethanol is a weaker acid than water because the electron releasing C_2H_5 group in ethanol increases the electron density on oxygen and thus the polarity of the OH bond in ethanol decreases, resulting in decreasing acidic strength.

Q90 Text Solution:

(3)

The reaction described is a dehydrogenation reaction where a molecule loses hydrogen atoms. In the presence of heated copper (Cu) as a catalyst, a secondary alcohol undergoes dehydrogenation to form a ketone.



[New NCERT Class 12th Page No. 210]

Q91 Text Solution:

(2)

When the F_1 plant of *Antirrhinum* species was self pollinated the F_2 resulted in the ratio 1 (RR) Red: 2 (Rr) Pink: 1 (rr) White.

[New NCERT Class 12th Page No. 60]

Q92 Text Solution:

(4)

Wrinkled seed shape of the pea plant is a recessive trait studied by Mendel.

[New NCERT Class 12th Page No. 55]

Q93 Text Solution:

(3)

S.No.	Characters	Contrasting Traits
1.	Stem height	Tall/dwarf
2.	Flower colour	Violet/white
3.	Flower position	Axial/terminal
4.	Pod shape	Inflated/constricted
5.	Pod colour	Green/ yellow
6.	Seed shape	Round/ wrinkled
7.	Seed colour	Yellow/green

[New NCERT Class 12th Page No. 55]

Q94 Text Solution:

(2)

The production of gametes by the parents, the formation of the zygotes, the F_1 and F_2 plants can be understood from a diagram called Punnett Square.

[New NCERT Class 12th Page No. 57]

Q95 Text Solution:

(3)

Mendel crossed the tall plant from F1 with a dwarf plant. This he called a test cross. In a typical test cross an organism showing a dominant phenotype (and whose genotype is to be determined) is crossed with the recessive parent instead of self-crossing.

[New NCERT Class 12th Page No. 58]

Q96 Text Solution:

(2)

Morgan and his group found that even when genes were grouped on the same chromosome, some genes were very tightly linked (showed very low recombination) while others were loosely linked (showed higher recombination). For example he found that the genes white and yellow were very tightly linked and showed only 1.3 per cent recombination while white and miniature wing showed 37.2 per cent recombination.

[New NCERT Class 12th Page No. 67]

Q97 Text Solution:

(3)

Gregor Mendel	Proposed the laws of inheritance in living organisms
Thomas Hunt Morgan	Discovered the basis for the variation that sexual reproduction produced
Walter Sutton and Theodore Boveri	Noted the behaviour of chromosomes was parallel to the behaviour of genes
Alfred Sturtevant	Mapped gene positions on chromosomes using recombination frequencies

[New NCERT Class 12th Page No. 54, 67]

Q98 Text Solution:

(3)

In F_2 generation of Mendel's dihybrid cross, the phenotypic ratio obtained was 9:3:3:1. Out of 16 offsprings 9 + 1 = 10 offsprings were of parental combinations and 3 + 3 = 6 were non-parental combination of characters.

[New NCERT Class 12th Page No. 63]

Q99 Text Solution:

(3)

During monohybrid cross, Mendel obtained F_2 generation by self-pollinating F_1 plants.

[New NCERT Class 12th Page No. 58]

Q100 Text Solution:

(3)

In the case of co-dominance the F_1 generation resembles both parents.

[New NCERT Class 12th Page No. 61]

Q101 Text Solution:

(1)

ABO blood groups are controlled by the gene *I*.

[New NCERT Class 12th Page No. 61]

Q102 Text Solution:

(2)

The Punnett square can be effectively used to understand the independent segregation of the two pairs of genes during meiosis and the production of eggs and pollen in the F_1 RrYy plant. The four types are RY, Ry, rY and ry each with a frequency of 25 per cent or 1/4th of the total gametes produced.

[New NCERT Class 12th Page No. 63]

Q103 Text Solution:

(3)

- During spermatogenesis among males, two types of gametes are produced.
- 50 per cent of the total sperm produced carry the X-chromosome and the rest 50 per cent has Y-chromosome besides the autosomes.

[New NCERT Class 12th Page No. 71]

Q104 Text Solution:

(2)

In a typical monohybrid cross conducted by Mendel between true-breeding tall and dwarf plants, the F_2 generation showed genotypic ratio as, 1:2:1.

[New NCERT Class 12th Page No. 57]

Q105 Text Solution:

(3)

Experimental verification of the chromosomal theory of inheritance by Thomas Hunt Morgan and his colleagues, led to discovering the basis for the variation that sexual reproduction produced. Morgan worked with the tiny fruit flies, *Drosophila melanogaster* which were found very suitable for such studies.

[New NCERT Class 12th Page No. 67]

Q106 Text Solution:

(2)

Mutation also arise due to change in a single base pair of DNA. This is known as point mutation. A classical example of such a mutation is sickle cell anemia. Deletions and insertions of base pairs of DNA, causes frame-shift mutations.

[New NCERT Class 12th Page No. 72]

Q107 Text Solution:

(1)

Starch synthesis in pea seeds is controlled by one gene. It has two alleles (B and b). Starch is synthesised effectively by BB homozygotes and therefore, large starch grains are produced. In contrast, bb homozygotes have lesser efficiency in starch synthesis and produce smaller starch grains. After maturation of the seeds, BB seeds are round and the bb seeds are wrinkled. Heterozygotes produce round seeds, and so B seems to be the dominant allele. But, the starch grains produced are of intermediate size in Bb seeds.

[New NCERT Class 12th Page No. 62]

Q108 Text Solution:

(2)

Genes which code for a pair of contrasting traits are known as alleles.

[New NCERT Class 12th Page No. 56]

Q109 Text Solution:

(4)

The genotype of round and green pea seed can be represented by RRyy.

[New NCERT Class 12th Page No. 63]

Q110 Text Solution:

(4)

Theoretically, the modified allele could be responsible for production of:

(i) the normal/less efficient enzyme, or
(ii) a non-functional enzyme, or
(iii) no enzyme at all

[New NCERT Class 12th Page No. 60]

Q111 Text Solution:

(3)

- Dominance is not an autonomous feature of a gene or the product.
- Dominance depends as much on the gene product and the production of a particular phenotype.

[New NCERT Class 12th Page No. 62]

Q112 Text Solution:

(2)

A single gene product may produce more than one effect is called pleiotropy.

[New NCERT Class 12th Page No. 69]

Q113 Text Solution:

(3)

The underlying mechanism of pleiotropy in most cases is the effect of a gene on metabolic pathways which contribute towards different phenotypes. An example of this is the disease phenylketonuria, which occurs in humans.

[New NCERT Class 12th Page No. 69]

Q114 Text Solution:

(1)

Henking identified the X-body in insects.

[New NCERT Class 12th Page No. 69]

Q115 Text Solution:

(2)

In human beings and in *Drosophila* the males have one X and one Y chromosome, whereas females have a pair of X-chromosomes besides autosomes. Therefore, the sex determining mechanism is XY type.

[New NCERT Class 12th Page No. 70]

Q116 Text Solution:

(2)

Variation is the degree by which progeny differ from their parents.

[New NCERT Class 12th Page No. 53]

Q117 Text Solution:

(2)

Drosophila melanogaster complete their life cycle in about two weeks, and a single mating could produce a large number of progeny flies.

[New NCERT Class 12th Page No. 67]

Q118 Text Solution:

(1)

Mutation is a phenomenon which results in alteration of DNA sequences and consequently results in changes in the genotype and the phenotype of an organism. UV radiations can cause mutations in organisms – it is a mutagen.

[New NCERT Class 12th Page No. 72]

Q119 Text Solution:

(2)

Physical association of two genes is termed as linkage.

[New NCERT Class 12th Page No. 67]

Q120 Text Solution:

(4)

The genotype with all the dominant alleles (AABBCC) will have the darkest skin colour and that with all the recessive alleles (aabbcc) will have the lightest skin colour.

[New NCERT Class 12th Page No. 30]

Q121 Text Solution:

(2)

In honey bees, males have half the number of chromosomes than that of a female. The females are diploid having 32 chromosomes and males are haploid, i.e., having 16 chromosomes. This is called as haplodiploid sex-determination system.

[New NCERT Class 12th Page No. 71]

Q122 Text Solution:

(1)

Female heterogamety in sex determination is seen in birds.

[New NCERT Class 12th Page No. 71]

Q123 Text Solution:

(3)

Genetics deals with the inheritance, as well as the variation of characters from parents to offspring. Inheritance is the process by which characters are passed on from parent to progeny; it is the basis of heredity.

[New NCERT Class 12th Page No. 53]

Q124 Text Solution:

(3)

In the case of co-dominance the F_1 generation resembles both parents.

[New NCERT Class 12th Page No. 61]

Q125 Text Solution:

(2)

- Based upon observations on dihybrid crosses (crosses between plants differing in two traits) Mendel proposed a second set of

generalisations that we call Mendel's Law of Independent Assortment.

- Dihybrid crosses are crosses between plants differing in two traits.

[New NCERT Class 12th Page No. 64]

Q126 Text Solution:

(4)

In human beings and *Drosophila* the mechanism of sex determination is of XY type. In these cases males produce two different types of gametes, some gametes with X-chromosome and some with Y-chromosome. Such types of sex determination mechanism is designated to be the example of male heterogamety.

[New NCERT Class 12th Page No. 70]

Q127 Text Solution:

(1)

Recessive trait of pea plant such as yellow pod colour was not visible in F_1 generation but only in F_2 generation of Mendel's monohybrid cross.

[New NCERT Class 12th Page No. 63]

Q128 Text Solution:

(1)

Sutton and Boveri noted that the behaviour of chromosomes was parallel to the behaviour of genes and used chromosome movement to explain Mendel's laws.

[New NCERT Class 12th Page No. 65]

Q129 Text Solution:

(4)

Genotype of an offspring having human blood group B will be I^B *i.*

[New NCERT Class 12th Page No. 61]

Q130 Text Solution:

(2)

In humans we don't just have tall or short people as two distinct alternatives but a whole range of possible heights. Such traits are generally controlled by three or more genes and are thus called as polygenic traits.

[New NCERT Class 12th Page No. 69]

Q131 Text Solution:

(4)

Number of chromosomes in female honey bees	32
Number of chromosomes in male honey bees	16
Total number of chromosomes in a normal human cell	46
Number of autosomes in a normal human cell	44

[New NCERT Class 12th Page No. 71]

Q132 Text Solution:

(2)

round yellow	round green	wrinkled yellow	wrinkled green
9	3	3	1

[New NCERT Class 12th Page No. 64]

Q133 Text Solution:

(2)

In 1900, three scientists (de Vries, Correns and von Tschermak) independently rediscovered Mendel's results on the inheritance of characters.

[New NCERT Class 12th Page No. 65]

Q134 Text Solution:

(1)

Mutation is a phenomenon which results in alteration of DNA sequences and results in changes in the genotype and the phenotype of an organism.

[New NCERT Class 12th Page No. 63]

Q135 Text Solution:

(2)

Mendel selected fourteen true-breeding pea plant varieties for his experiments, as pairs which were similar except for one character with contrasting traits.

[New NCERT Class 12th Page No. 54]

Q136 Text Solution:

(4)

- Malaria is a vector borne disease.
- Typhoid is food and water borne disease.

[New NCERT Class 12th Page No. 130]

Q137 Text Solution:

(3)

Immature lymphocytes differentiate in thymus and bone marrow.

[New NCERT Class 12th Page No. 153]

Q138 Text Solution:

(4)

Rheumatoid arthritis which affects many people in our society is an auto-immune disease.

[New NCERT Class 12th Page No. 137]

Q139 Text Solution:

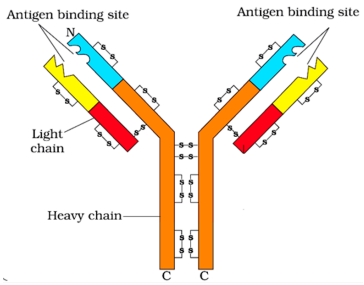
(2)

- In elephantiasis or filariasis disease, lymphatic vessels of the lower limbs are affected.
- The genital organs are also often affected, resulting in gross deformities.

[New NCERT Class 12th Page No. 133]

Q140 Text Solution:

(3)



Structure of an antibody molecule

[New NCERT Class 12th Page No. 135]

Q141 Text Solution:

(1)

The above diagram is the flowering branch of *Datura* which has hallucinogenic properties.

[New NCERT Class 12th Page No. 143]

Q142 Text Solution:

(2)

IgE	Antibody involved in allergic reactions
Ringworm	Fungal disease
Saliva in mouth	Physiological barrier
α-interferon	Biological Response modifie

[New NCERT Class 12th Page No. 133, 134, 135]

Q143 Text Solution:

(2)

MRI uses strong magnetic field and non-ionising radiations to detect pathological and physiological changes.

[New NCERT Class 12h Page No. 157]

Q144 Text Solution:

(2)

- When our body encounters a pathogen for the first time it produces a response called primary response which is of low intensity.
- Subsequent encounter with the same pathogen elicits a highly intensified secondary or anamnestic response.

[New NCERT Class 12th Page No. 135]

Q145 Text Solution:

(2)

- ELISA test (Enzyme-linked immune-sorbent Assay) is done to diagnose AIDS.
- ELISA is a technique which can detect and even quantitate extremely small amount of

proteins antibodies or antigens with the help of enzymes.

[New NCERT Class 12th Page No. 140]

Q146 Text Solution:

(1)

- Normal cells exhibit contact inhibition, where contact with other cells limits their growth.
- Cancer cells lose this property, leading to uncontrolled division and the formation of tumors.

[New NCERT Class 11th Page No. 141]

Q147 Text Solution:

(3)

Each antibody molecule has four peptide chains, two small called light chains and two longer called heavy chains. Hence an antibody is represented as H_2L_2.

[New NCERT Class 12th Page No. 135]

Q148 Text Solution:

(4)

Heroin	Depressant
Oncogenic viruses	Cancer causing viruses
HCl in stomach	Physiological barriers
Smoking	Decreases concentration of haembound oxygen

[New NCERT Class 12th Page No. 142]

Q149 Text Solution:

(3)

Carrier for amoebiasis is houseflies.

[New NCERT Class 12th Page No. 148]

Q150 Text Solution:

(2)

Sustained high fever (39° to 40°C), weakness, stomach pain, constipation, headache and loss of appetite are some of the common symptoms of typhoid. Intestinal perforation and death may occur in severe cases.

[New NCERT Class 12th Page No. 130]

Q151 Text Solution:

(4)

- The side-effects of the use of anabolic steroids in females include masculinisation (features like males), increased aggressiveness, mood swings, depression, abnormal menstrual cycles, excessive hair growth on the face and body, enlargement of clitoris, deepening of voice.
- Reduction of size of testicles occurs in males.

[New NCERT Class 12th Page No. 146]

Q152 Text Solution:

(4)

Typhoid fever could be confirmed by Widal test.

[New NCERT Class 12th Page No. 131]

Q153 Text Solution:

(4)

- Withdrawal syndrome occurs when regular dose of drugs/alcohol is abruptly discontinued.
- This is characterised by anxiety, shakiness, nausea and sweating, whereas immediate adverse effects of drugs and alcohol abuse are manifested in the form of reckless behaviour, vandalism and violence.

[New NCERT Class 12th Page No. 145]

Q154 Text Solution:

(1)

- Colostrum provides passive immunity.
- When ready-made antibodies are directly given to protect the body against foreign agents, it is called passive immunity.

- In severe cases of pneumonia, the lips and finger nails may turn grey to bluish in colour.
- The yellowish fluid colostrum secreted by mother during the initial days of lactation has abundant antibodies (IgA) to protect the infant.

[New NCERT Class 12th Page No. 131, 136]

Q155 Text Solution:

(4)

- HIV treatment involves taking medicine that reduces the amount of HIV in your body. HIV medicine is called antiretroviral therapy (ART).
- There is no complete cure for HIV.
- But with proper medical care, it can be properly managed.
- Most people can get the virus under control within six months of routine ART medications.

[New NCERT Class 12th Page No. 140]

Q156 Text Solution:

(1)

Common cold and AIDS are viral diseases. Dysentery, typhoid, tuberculosis are bacterial diseases while ringworm is fungal.

[New NCERT Class 12th Page No.131]

Q157 Text Solution:

(1)

Heroin commonly called smack is chemically diacetylmorphine which is a white, odourless, bitter crystalline compound.

[New NCERT Class 12th Page No. 142]

Q158 Text Solution:

(1)

The thymus is quite large at the time of birth but keeps reducing in size with age and by the time puberty is attained it reduces to a very small size.

[New NCERT Class 12th Page No. 137 & 138]

Q159 Text Solution:

(4)

- Allergy is due to the release of chemicals like histamine and serotonin from the mast cells.
- The use of drugs like anti-histamine, adrenalin and steroids quickly reduce the symptoms of allergy.

[New NCERT Class 12th Page No. 137]

Q160 Text Solution:

(3)

Computed tomography uses X-rays to generate a three-dimensional image of the internals of an object.

[New NCERT Class 12th Page No. 141]

Q161 Text Solution:

(3)

Interferons are the proteins secreted by virus infected cells to protect non-infected cells from further viral infection

[New NCERT Class 12th Page No. 135]

Q162 Text Solution:

(3)

- The T-cells themselves do not secrete antibodies but help B cells to produce them.
- *Entamoeba histolytica* is a protozoan parasite in the large intestine of human beings.

[New NCERT Class 12th Page No. 132]

Q163 Text Solution:

(2)

Symptoms of ascariasis include internal bleeding, muscular pain, fever, anemia and blockage of the intestinal passage.

[New NCERT Class 12th Page No. 133]

Q164 Text Solution:

(4)

HIV, a retrovirus, has an RNA genome, and it uses the enzyme reverse transcriptase to convert its RNA into DNA.

[New NCERT Class 12th Page No. 140]

Q165 Text Solution:

(3)

In the context of lymphoid tissue, MALT constitutes about 50% of all the lymphoid tissue in human body.

[New NCERT Class 12th Page No. 154]

Q166 Text Solution:

(1)

Spleen is a secondary lymphoid organ.

[New NCERT Class 12th Page No. 138]

Q167 Text Solution:

(1)

Leaves of *Cannabis sativa*

[New NCERT Class 12th Page No. 143]

Q168 Text Solution:

(3)

- Sometimes, due to genetic and other unknown reasons, the body attacks self-cells.
- This results in damage to the body and is called auto-immune disease.

[New NCERT Class 12th Page No. 137]

Q169 Text Solution:

(4)

Drugs like barbiturates, amphetamines, benzodiazepines, and other similar drugs, that are used as medicines to help patients cope with mental illnesses like depression and insomnia.

[New NCERT Class 12th Page No. 143]

Q170 Text Solution:

(3)

Transmission of HIV-infection generally occurs by:

- sexual contact with infected person,
- by transfusion of contaminated blood and blood products,
- by sharing infected needles as in the case of intravenous drug abusers and
- from infected mother to her child through placenta.

[New NCERT Class 12th Page No. 138]

Q171 Text Solution:

(1)

Bacteria like *Streptococcus pneumoniae* and *Haemophilus influenzae* are responsible for the disease pneumonia in humans which infects the alveoli (air filled sacs) of the lungs.

[New NCERT Class 12th Page No. 131]

Q172 Text Solution:

(3)

Microsporum, Trichophyton, and *Epidermophyton* are all types of fungi that can cause dermatophytosis, commonly known as ringworm, which affects the skin, nails, and scalp. Roundworms (nematodes) are parasitic worms that typically infect the intestines.

[New NCERT Class 12th Page No. 133]

Q173 Text Solution:

(2)

Opioids are the drugs, which bind to specific opioid receptors present in our central nervous system and gastrointestinal tract.

[New NCERT Class 12th Page No. 142]

Q174 Text Solution:

(2)

The macrophages acts like a HIV factory.

[New NCERT Class 12th Page No. 138]

Q175 Text Solution:

(3)

Hepatitis B vaccine is produced from yeast using recombinant DNA technology.

[New NCERT Class 12th Page No.136]

Q176 Text Solution:

(1)

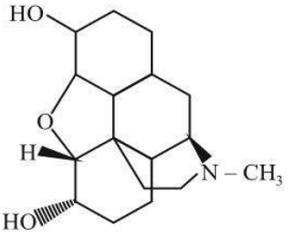
Gametocytes, the sexual stage of *Plasmodium*, are formed within the human host's bloodstream. They develop within the erythrocytes (red blood cells).

In salivary glands of mosquito mature infective stage (sporozoites) are found, the *plasmodium* reproduces asexually in liver cells(hepatocytes) while fertilisation and development take place in the mosquito's gut.

[New NCERT Class 12th Page No. 131, 132]

Q177 Text Solution:

(1)



The chemical compound whose chemical structure is given below is obtained from *Papaver somniferum*

[New NCERT Class 12th Page No.142]

Q178 Text Solution:

(2)

Microsporum and *Epidermophyton* are fungal pathogens responsible for causing fungal infections of the skin, hair, and nails, these infections are not transmitted through the bite of mosquitoes, such as *Culex* mosquitoes. Instead, they are typically transmitted through direct contact with infected skin or surfaces.

[New NCERT Class 12th Page No. 133]

Q179 Text Solution:

(2)

Transformation of normal cells into cancerous neoplastic cells may be induced by physical, chemical or biological agents. These agents are called carcinogens. Ionising radiations like X-rays and gamma rays and non-ionizing radiations like UV cause DNA damage leading to neoplastic transformation.

[New NCERT Class 12th Page No. 141]

Q180 Text Solution:

(1)

- Cocaine has a potent stimulating action on central nervous system, producing a sense of euphoria and increased energy.
- It interferes with the transport of the neuro-transmitter dopamine.

[New NCERT Class 12th Page No. 143]