

ANSWER KEY & SOLUTIONS**SET 3**

NEET (UG) 2027 PRACTICE EXAMINATION – TEST BOOKLET SET 3

Candidate	Aamirah Fathima	Total Questions	180
Maximum Marks	720	Marking Scheme	+4 / –1 / 0

KEY

1	2	2	3	3	3	4	2	5	2	6	3	7	2	8	2	9	2	10	2
11	3	12	2	13	4	14	2	15	3	16	3	17	2	18	2	19	2	20	2
21	2	22	2	23	2	24	1	25	1	26	2	27	2	28	2	29	2	30	3
31	2	32	3	33	2	34	3	35	2	36	2	37	3	38	2	39	2	40	2
41	1	42	3	43	2	44	3	45	2	46	2	47	3	48	1	49	3	50	2
51	3	52	2	53	2	54	2	55	2	56	3	57	2	58	3	59	2	60	2
61	3	62	3	63	2	64	2	65	2	66	2	67	2	68	2	69	2	70	3
71	2	72	1	73	2	74	2	75	2	76	2	77	4	78	2	79	2	80	2
81	2	82	3	83	2	84	2	85	2	86	2	87	2	88	2	89	3	90	2
91	1	92	2	93	2	94	2	95	2	96	2	97	3	98	2	99	2	100	2
101	1	102	2	103	1	104	2	105	2	106	2	107	2	108	2	109	2	110	2
111	1	112	2	113	2	114	1	115	2	116	1	117	2	118	2	119	3	120	2
121	2	122	2	123	2	124	2	125	2	126	3	127	3	128	2	129	2	130	2
131	3	132	2	133	2	134	3	135	2	136	2	137	2	138	2	139	2	140	1
141	2	142	2	143	2	144	2	145	3	146	3	147	3	148	2	149	2	150	2
151	2	152	2	153	2	154	2	155	2	156	2	157	2	158	2	159	2	160	2
161	2	162	2	163	2	164	4	165	3	166	2	167	2	168	3	169	3	170	3
171	2	172	2	173	3	174	2	175	1	176	2	177	2	178	2	179	2	180	2

PHYSICS – SOLUTIONS

1. (2) $[M^{-1}L^3T^{-2}]$

From $F = Gm_1m_2/r^2$, $G = Fr^2/m^2 = [MLT^{-2}][L^2]/[M^2] = [M^{-1}L^3T^{-2}]$.

[Units & Dimensions]

2. (3) 3.1

The least precise factor has two significant figures, so the answer is rounded to two.

[Errors & Significant Figures]

3. (3) 18 m s^{-1}

$v = dx/dt = 8t + 2 = 18 \text{ m s}^{-1}$ at $t = 2 \text{ s}$.

[Kinematics]

4. (2) 30° and 60°

R is unchanged for complementary angles θ and $(90^\circ - \theta)$.

[Kinematics]

5. (2) $m(g - a)$

The normal reaction $N = m(g - a)$ when the lift accelerates downwards.

[Laws of Motion]

6. (3) 2 m s^{-1}

Momentum conservation: $4v = 0.02 \times 400 \Rightarrow v = 2 \text{ m s}^{-1}$.

[Laws of Motion]

7. (2) 1 : 2

$KE \propto$ distance fallen for free fall, so the ratio is 1 : 2.

[Work, Energy & Power]

8. (2) $MR^2/2$

By the perpendicular axis theorem, $2I_d = MR^2 \Rightarrow I_d = MR^2/2$.

[Rotational Motion]

9. (2) $\sqrt{(10gh/7)}$

$v = \sqrt{(2gh/(1 + k^2/R^2))}$ with $k^2/R^2 = 2/5$ gives $\sqrt{(10gh/7)}$.

[Rotational Motion]

10. (2) $g/4$

$g_h = g R^2/(R + h)^2 = g/4$ at $h = R$.

[Gravitation]

11. (3) 24 hours

Its period must match the earth's rotation so that it appears stationary.

[Gravitation]

12. (2) W

Breaking stress depends on material and area, not on length.

[Elasticity]

13. (4) Four times

Equation of continuity: $A_1v_1 = A_2v_2 \Rightarrow v \propto 1/A$.

[Fluids]

14. (2) Inversely proportional to the radius

$h = 2T \cos\theta/rpg$, so a narrower tube gives a greater rise.

[Fluids]

15. (3) $\gamma = 3\alpha$

For an isotropic solid, $\gamma = 3\alpha$ and the areal coefficient is 2α .

[Thermal Properties]

16. (3) 800 cal

$Q = mL = 10 \times 80 = 800 \text{ cal}$; temperature stays constant during melting.

[Thermal Properties]

17. (2) Entirely increases the internal energy

Volume is constant so $W = 0$ and $Q = \Delta U$.

[Thermodynamics]

18. (2) 5

$COP = T_2/(T_1 - T_2) = 250/50 = 5$.

[Thermodynamics]

19. (2) $P = \frac{1}{3}\rho v_{rms}^2$

From kinetic theory, $P = (1/3)\rho v_{rms}^2$.

[Kinetic Theory]

20. (2) $\frac{1}{2}m\omega^2A^2$

Total energy is constant and equals the maximum kinetic energy $\frac{1}{2}m\omega^2A^2$.

[Oscillations]

21. (2) $\lambda/2$

Nodes recur every half wavelength.

[Waves]

22. (2) $\sqrt{T/\mu}$

$v = \sqrt{T/\mu}$.

[Waves]

23. (2) Never intersect one another

Two directions of field at one point are impossible, so lines never cross.

[Electrostatics]

24. (1) Zero

Potentials are scalars and the equal and opposite contributions cancel.

[Electrostatics]

25. (1) 0.01 J

$U = \frac{1}{2}CV^2 = \frac{1}{2} \times 2 \times 10^{-6} \times 10^4 = 0.01 \text{ J}$.

[Capacitors]

26. (2) Charge

The total current entering a junction equals the total current leaving it.

[Current Electricity]

27. (2) 2.4 Ω

$R = (4 \times 6)/(4 + 6) = 2.4 \Omega$.

[Current Electricity]

28. (2) The 60 W bulb glows brighter

In series the current is common and the 60 W bulb has the greater resistance, so I^2R is larger for it.

[Current Electricity]

29. (2) $5 \times 10^{-5} \text{ T}$

$B = \mu_0 I / 2\pi r = (2 \times 10^{-7} \times 5) / 0.02 = 5 \times 10^{-5} \text{ T}$.

[Moving Charges & Magnetism]

30. (3) Increasing the number of turns and the area of the coil

Sensitivity = NAB/k , so more turns or greater area raises it.

[Moving Charges & Magnetism]

31. (2) Isolated magnetic monopoles do not exist

Magnetic field lines are continuous closed loops, so as many enter as leave.

[Magnetism & Matter]

32. (3) 20 V

$\varepsilon = \Delta\Phi/\Delta t = 4/0.2 = 20 \text{ V}$.

[Electromagnetic Induction]

33. (2) Induction furnaces and electromagnetic braking

They are minimised by laminating cores but exploited in furnaces and braking systems.

[Electromagnetic Induction]

34. (3) 5 Ω

$Z = \sqrt{R^2 + (X_L - X_C)^2} = \sqrt{9 + 16} = 5 \Omega$.

[Alternating Current]

35. (2) Only a pure inductor or capacitor

The phase difference is 90° , so $\cos\phi = 0$ and no power is dissipated.

[Alternating Current]

36. (2) Mutually perpendicular

EM waves are transverse, with $E \times B$ along the direction of propagation.

[Electromagnetic Waves]

37. (3) 4 D

$P = 1/f$ (in metres) = $1/0.25 = 4 \text{ D}$.

[Ray Optics]

38. (2) f_o/f_e

The objective must have a long focal length and the eyepiece a short one.

[Ray Optics]

39. (2) $n\lambda$

Bright fringes correspond to an integral number of wavelengths.

[Wave Optics]

40. (2) The refractive index of the medium

$\tan i_B = \mu$, and at this angle the reflected ray is completely plane polarised.

[Wave Optics]

41. (1) $12.27/\sqrt{V} \text{ \AA}$

$\lambda = h/\sqrt{2meV} = 12.27/\sqrt{V} \text{ \AA}$.

[Dual Nature of Matter]

42. (3) Is independent of mass number

$R = R_0 A^{1/3}$, so volume $\propto A$ and density stays nearly constant.

[Nuclei]

43. (2) Balmer series, visible

Transitions ending at $n = 2$ form the Balmer series, which lies in the visible region.

[Atoms]

44. (3) 100 Hz

Both halves of the input cycle are used, so the output pulses at twice the input frequency.

[Semiconductors]

45. (2) Electrons

Pentavalent dopants donate free electrons, which become the majority carriers.

[Semiconductors]

46. (2) 0.2 M

0.1 mol in 0.5 L gives 0.2 mol L⁻¹.

[Some Basic Concepts]

47. (3) 44 g

1 mol C gives 1 mol CO₂ = 44 g.

[Some Basic Concepts]

48. (1) [Ar]3d⁹4s⁰

Cu is [Ar]3d¹⁰4s¹; losing two electrons (4s first) leaves 3d⁹.

[Structure of Atom]

49. (3) 2

Radial nodes = $n - l - 1 = 3 - 0 - 1 = 2$.

[Structure of Atom]

50. (2) The 2p electron of boron is more easily removed than the paired 2s electron of beryllium

Be has a stable filled 2s² configuration and its electron is more tightly held.

[Classification & Periodicity]

51. (3) Fluorine

Fluorine has the highest electronegativity, 4.0 on the Pauling scale.

[Classification & Periodicity]

52. (2) NH₄⁺

The lone pair of NH₃ is donated to H⁺, forming a coordinate bond.

[Chemical Bonding]

53. (2) The bond moments and the lone pair moment act in the same direction

In NF₃ the bond moments oppose the lone pair moment, reducing the resultant.

[Chemical Bonding]

54. (2) Zero

Two bonding and two antibonding electrons give BO = $(2 - 2)/2 = 0$.

[Chemical Bonding]

55. (2) Smaller cation with high charge and larger anion

A small, highly charged cation polarises a large anion strongly.

[Chemical Bonding]

56. (3) Positive

$\Delta S_{\text{total}} > 0$ for a spontaneous change in an isolated system.

[Thermodynamics]

57. (2) Volume, giving ΔU

The rigid vessel keeps volume constant, so the heat measured is ΔU .

[Thermodynamics]

58. (3) Basic

The salt of a weak acid and strong base hydrolyses to give OH⁻ ions.

[Equilibrium]

59. (2) Products predominate at equilibrium

K is the ratio of product to reactant activities at equilibrium.

[Equilibrium]

60. (2) Weak electrolytes

It relates the dissociation constant to the degree of dissociation of a weak electrolyte.

[Equilibrium]

61. (3) M/5

Mn goes from +7 to +2, a five-electron change.

[Redox Reactions]

62. (3) CN⁻

Nucleophiles are electron-rich species that donate a lone pair.

[Organic Chemistry – Basic Principles]

63. (2) 3° > 2° > 1°

Hyperconjugation and the inductive effect stabilise the more substituted radical.

[Organic Chemistry – Basic Principles]

64. (2) 2-Chlorobutane

C-2 of 2-chlorobutane carries four different groups, making it a chiral centre.

[Organic Chemistry – Basic Principles]

65. (2) Ethane

Decarboxylation at the anode gives methyl radicals that dimerise to ethane.

[Hydrocarbons]

66. (2) HBr only

Only the H-Br bond has suitable bond energy for the free radical chain mechanism.

[Hydrocarbons]

67. (2) $(4n + 2)$ π electrons in a planar cyclic system

Planarity, cyclic delocalisation and $(4n + 2)$ π electrons are all required.

[Hydrocarbons]

68. (2) Directly proportional to its partial pressure

$p = K_H x$, so more pressure dissolves more gas.

[Solutions]

69. (2) A maximum boiling azeotrope

Stronger solute-solvent interaction lowers vapour pressure and raises boiling point.

[Solutions]

70. (3) 3 F

$\text{Al}^{3+} + 3\text{e}^- \rightarrow \text{Al}$ requires three faradays per mole.

[Electrochemistry]

71. (2) Aqueous KOH

Concentrated aqueous KOH carries the ions between the porous carbon electrodes.

[Electrochemistry]

72. (1) Zero

Rate $\propto [\text{A}]^0$ means the rate is independent of that concentration.

[Chemical Kinetics]

73. (2) $[\text{A}]_0/2k$

For $[\text{A}] = [\text{A}]_0 - kt$, half the initial concentration is consumed at $t = [\text{A}]_0/2k$.

[Chemical Kinetics]

74. (2) d-d electronic transitions

Absorption of visible light promotes an electron between split d orbitals.

[d- and f-Block Elements]

75. (2) Ce

Ce^{4+} attains the stable xenon core configuration and is a good oxidising agent.

[d- and f-Block Elements]

76. (2) Cr^{3+}

Orange $\text{Cr}_2\text{O}_7^{2-}$ is reduced to green Cr^{3+} , a six-electron change.

[d- and f-Block Elements]

77. (4) CO

CO is the strongest field ligand of those listed.

[Coordination Compounds]

78. (2) Ionisation isomers

They give different ions in solution because the ligand and counter ion are exchanged.

[Coordination Compounds]

79. (2) +3 and 6

Oxalate is bidentate, so three of them give a coordination number of six.

[Coordination Compounds]

80. (2) Inversion of configuration

Backside attack by the nucleophile causes Walden inversion.

[Haloalkanes & Haloarenes]

81. (2) Phosgene

Oxidation gives poisonous carbonyl chloride, COCl_2 .

[Haloalkanes & Haloarenes]

82. (3) 2,4,6-Tribromophenol

The strongly activating -OH group leads to a white precipitate of the tribromo derivative.

[Alcohols, Phenols & Ethers]

83. (2) A ketone

Secondary alcohols are oxidised to ketones, which resist further oxidation.

[Alcohols, Phenols & Ethers]

84. (2) Propane

Zn-Hg with concentrated HCl reduces the carbonyl group completely to CH_2 .

[Aldehydes, Ketones & Carboxylic Acids]

85. (2) $\text{HCHO} > \text{CH}_3\text{CHO} > \text{CH}_3\text{COCH}_3$

Alkyl groups increase both steric hindrance and electron density at the carbonyl carbon.

[Aldehydes, Ketones & Carboxylic Acids]

86. (2) Methane

Decarboxylation removes CO_2 and leaves a hydrocarbon with one carbon less.

[Aldehydes, Ketones & Carboxylic Acids]

87. (2) $3^\circ > 2^\circ > 1^\circ > \text{NH}_3$

Without solvation, only the inductive effect operates, so basicity rises with substitution.

[Amines]

88. (2) Aliphatic primary amines

Aryl halides do not undergo the required nucleophilic substitution with phthalimide.

[Amines]

89. (3) Glycogen

Glycogen is a highly branched glucose polymer stored in liver and muscle.

[Biomolecules]

90. (2) Scurvy

Ascorbic acid is required for collagen synthesis; its lack causes bleeding gums.

[Biomolecules]

91. (1) Species, genus, family, order, class, phylum, kingdom

Family lies between genus and order in the taxonomic hierarchy.

[The Living World]

92. (2) Saprophytic protists forming a plasmodium

Under suitable conditions they aggregate into a multinucleate plasmodium.

[Biological Classification]

93. (2) Chemosynthetic autotrophs

They oxidise inorganic substances and use the released energy to make ATP.

[Biological Classification]

94. (2) Mycobiont

The mycobiont provides shelter, water and minerals; the algal phycobiont makes food.

[Biological Classification]

95. (2) Selaginella and Salvinia

These pteridophytes produce two kinds of spores, a precursor to seed habit.

[Plant Kingdom]

96. (2) Starch and cellulose

Green algae store starch and have a cellulose wall with an inner cellulosic layer.

[Plant Kingdom]

97. (3) Alstonia

More than two leaves arise at each node in Alstonia.

[Morphology of Flowering Plants]

98. (2) Solanaceae

Solanaceae has a syncarpous bicarpellary ovary with axile placentation and epipetalous stamens.

[Morphology of Flowering Plants]

99. (2) Rhizome

A rhizome is a horizontal underground stem with nodes, internodes and scale leaves.

[Morphology of Flowering Plants]

100. (2) Exarch

Protoxylem lies towards the periphery in roots and towards the centre in stems.

[Anatomy of Flowering Plants]

101. (1) Phellem, phellogen and phelloderm

Cork cambium (phellogen) cuts off cork outside and secondary cortex inside.

[Anatomy of Flowering Plants]

102. (2) Dead with thick lignified walls

They provide mechanical strength and occur as fibres and sclereids.

[Anatomy of Flowering Plants]

103. (1) Invaginations of the plasma membrane

They help in cell wall formation, DNA replication, respiration and secretion.

[Cell: The Unit of Life]

104. (2) Packaging, modification and dispatch of materials

Materials enter at the convex cis face and leave from the concave trans face.

[Cell: The Unit of Life]

105. (2) Positively charged due to lysine and arginine

Basic residues let histones bind the negatively charged DNA backbone.

[Cell: The Unit of Life]

106. (2) Transferases

Transferases carry out group transfer reactions.

[Biomolecules]

107. (2) β -1,4

The β -1,4 linkage gives cellulose its straight, tightly packed fibres.

[Biomolecules]

108. (2) DNA replicates once and there are two successive nuclear divisions

A single S phase is followed by meiosis I and meiosis II.

[Cell Cycle & Cell Division]

109. (2) Cell plate formation

A cell plate grows from the centre outwards because of the rigid cell wall.

[Cell Cycle & Cell Division]

110. (2) Photosystem II

The oxygen evolving complex on the inner side of PS II splits water.

[Photosynthesis]

111. (1) ATP only

Electrons cycle back to PS I, so no NADPH or O₂ is produced.

[Photosynthesis]

112. (2) RuBisCO

RuBisCO has both carboxylase and oxygenase activity.

[Photosynthesis]

113. (2) Open at night and close during the day

Night opening minimises water loss; CO₂ is stored as malic acid until daytime.

[Photosynthesis]

114. (1) 3 NADH, 1 FADH₂ and 1 GTP

Three NAD⁺ and one FAD are reduced, with one substrate level phosphorylation.

[Respiration in Plants]

115. (2) Ethanol and CO₂

Pyruvate decarboxylase and alcohol dehydrogenase convert pyruvate to ethanol.

[Respiration in Plants]

116. (1) Auxin produced at the shoot apex

Removing the apical bud releases the lateral buds from auxin inhibition.

[Plant Growth & Development]

117. (2) Speed up the malting process

GA₃ hastens malting of barley by promoting hydrolytic enzyme synthesis.

[Plant Growth & Development]

118. (2) Microspores from the pollen mother cell by meiosis

Each diploid microspore mother cell gives a tetrad of haploid microspores.

[Sexual Reproduction in Flowering Plants]

119. (3) Porogamy

Porogamy is the commonest route of pollen tube entry.

[Sexual Reproduction in Flowering Plants]

120. (2) Syngamy and triple fusion

One male gamete fuses with the egg and the other with the two polar nuclei.

[Sexual Reproduction in Flowering Plants]

121. (2) False fruits

The thalamus, not the ovary alone, contributes to the fleshy edible part.

[Sexual Reproduction in Flowering Plants]

122. (2) The two alleles of a gene separate during gamete formation

Each gamete receives only one of the two alleles, without blending.

[Principles of Inheritance]

123. (2) Polygenic inheritance

Several genes contribute additively, giving a continuous range of phenotypes.

[Principles of Inheritance]

124. (2) Glutamic acid by valine at position 6 of the β chain

A single base change GAG → GTG alters the sixth amino acid of β-globin.

[Principles of Inheritance]

125. (2) 45, XO

The affected female is sterile, with rudimentary ovaries and no secondary sexual characters.

[Principles of Inheritance]

126. (3) Meselson and Stahl

They used ¹⁵N labelling and caesium chloride density gradient centrifugation.

[Molecular Basis of Inheritance]

127. (3) A single RNA polymerase

One RNA polymerase, with the help of sigma and rho factors, makes mRNA, tRNA and rRNA.

[Molecular Basis of Inheritance]

128. (2) Reads the codon on mRNA at one end and carries the amino acid at the other

Crick postulated an adaptor that links the nucleotide language to the amino acid language.

[Molecular Basis of Inheritance]

129. (2) UAA, UAG, UGA

These three codons signal the end of translation and code for no amino acid.

[Molecular Basis of Inheritance]

130. (2) Two closely related species competing for the same limiting resource cannot coexist indefinitely

The competitively inferior species is eventually eliminated.

[Organisms & Populations]

131. (3) An expanding population

A large proportion of pre-reproductive individuals means the population will grow.

[Organisms & Populations]

132. (2) Unidirectional

Energy enters as sunlight and is progressively lost as heat; it is never reused.

[Ecosystem]

133. (2) Standing crop

Standing state refers instead to the amount of inorganic nutrients present.

[Ecosystem]

134. (3) In the tropics

Tropical regions have been relatively undisturbed, have constant environments and more solar energy.

[Biodiversity & Conservation]

135. (2) Ex situ conservation

Ex situ conservation protects organisms or their propagules outside the natural habitat.

[Biodiversity & Conservation]

136. (2) Pseudocoelomate

The body cavity is not lined by mesoderm on all sides, so it is a pseudocoelom.

[Animal Kingdom]

137. (2) Mollusca

The molluscan buccal cavity contains a file-like radula for feeding.

[Animal Kingdom]

138. (2) Moist skin without scales and a three-chambered heart

Frogs respire through moist skin as well as lungs and have a three-chambered heart.

[Animal Kingdom]

139. (2) Ornithorhynchus

The duck-billed platypus is an oviparous prototherian mammal.

[Animal Kingdom]

140. (1) Simple squamous

A single layer of flat cells allows rapid diffusion of gases.

[Structural Organisation in Animals]

141. (2) Colourless and does not carry oxygen

Haemolymph is colourless; the tracheal system supplies oxygen directly to tissues.

[Structural Organisation in Animals]

142. (2) 500 mL

Roughly 500 mL of air is inspired or expired in a normal quiet breath.

[Breathing & Exchange of Gases]

143. (2) Red blood cells

It catalyses the rapid interconversion of CO₂ and water with carbonic acid inside RBCs.

[Breathing & Exchange of Gases]

144. (2) Medulla oblongata

A pneumotaxic centre in the pons moderates the medullary rhythm centre.

[Breathing & Exchange of Gases]

145. (3) 5 L per minute

Cardiac output = $70 \times 72 \approx 5040$ mL $\approx$ 5 L per minute.

[Body Fluids & Circulation]

146. (3) 120 days

Worn out RBCs are destroyed in the spleen, the graveyard of RBCs.

[Body Fluids & Circulation]

147. (3) 140/90 mm Hg

Persistent readings of 140/90 mm Hg or above indicate hypertension.

[Body Fluids & Circulation]

148. (2) Bony fishes and aquatic amphibians

Ammonia is highly toxic but easily removed where water is abundant.

[Excretory Products]

149. (2) Juxtamedullary nephrons

Juxtamedullary nephrons and their vasa recta maintain the concentration gradient.

[Excretory Products]

150. (2) Vasodilation and fall in blood pressure

ANF acts as a check on the renin-angiotensin mechanism.

[Excretory Products]

151. (2) Troponin on the actin filament

Ca²⁺ binding to troponin shifts tropomyosin and exposes the myosin binding sites.

[Locomotion & Movement]

152. (2) Decreased levels of oestrogen

Reduced oestrogen after menopause lowers bone mass and mineral content.

[Locomotion & Movement]

153. (2) Two pairs

The last two of the twelve pairs are not attached ventrally at all.

[Locomotion & Movement]

154. (2) Cochlea

It rests on the basilar membrane and converts sound vibrations into nerve impulses.

[Neural Control & Coordination]

155. (2) Increases heart rate and dilates pupils

The sympathetic division prepares the body for emergency, or fight-or-flight, responses.

[Neural Control & Coordination]

156. (2) An afferent neuron

Afferent (sensory) neurons carry impulses towards the central nervous system.

[Neural Control & Coordination]

157. (2) Raises blood calcium by bone resorption

PTH is a hypercalcemic hormone; calcitonin has the opposite effect.

[Chemical Coordination]

158. (2) Adrenal medulla

These catecholamines mediate the fight-or-flight response.

[Chemical Coordination]

159. (2) Antidiuretic hormone

Without ADH, the kidney fails to reabsorb water and large volumes of dilute urine are passed.

[Chemical Coordination]

160. (2) About 2-2.5 °C lower than body temperature

Sperm production requires a temperature lower than the core body temperature.

[Human Reproduction]

161. (2) Is completed during embryonic development

No new primary oocytes are formed after birth; they remain arrested in prophase I.

[Human Reproduction]

162. (2) Only after the entry of the sperm

Fertilisation triggers completion of meiosis II, releasing a second polar body.

[Human Reproduction]

163. (2) Antibodies, especially IgA

The first milk secreted after childbirth confers passive immunity.

[Human Reproduction]

164. (4) Genital herpes

Viral STIs such as genital herpes, hepatitis B and HIV cannot be fully cured.

[Reproductive Health]

165. (3) Hormone releasing IUDs

These intrauterine devices release hormones that make the uterus unsuitable for implantation.

[Reproductive Health]

166. (2) Fallopian tube

Embryos up to 8 blastomeres go into the fallopian tube (ZIFT); later stages go into the uterus (IUT).

[Reproductive Health]

167. (2) Inheritance of acquired characters

Lamarck proposed that use and disuse produce heritable change, an idea later rejected.

[Evolution]

168. (3) Random mating in a large population

Equilibrium is maintained precisely when mating is random and no evolutionary force acts.

[Evolution]

169. (3) Disruptive selection

Disruptive selection splits the population into two peaks.

[Evolution]

170. (3) 1400 cc

Neanderthals had brains of about 1400 cc and lived in east and central Asia.

[Evolution]

171. (2) The Widal test

Salmonella typhi infection is classically diagnosed by the Widal test.

[Human Health & Disease]

172. (2) Wuchereria bancrofti

The filarial worms block the lymphatic vessels of the lower limbs.

[Human Health & Disease]

173. (3) IgE

IgE triggers release of histamine and serotonin from mast cells.

[Human Health & Disease]

174. (2) Active immunity with memory cells

The vaccine antigen generates antibodies and memory B and T cells.

[Human Health & Disease]

175. (1) Diacetylmorphine, a depressant

It is obtained by acetylation of morphine and slows down body functions.

[Human Health & Disease]

176. (2) Tetracycline resistance

Insertional inactivation of tetracycline resistance is used to select recombinants.

[Biotechnology - Principles]

177. (2) Transfers T-DNA of its Ti plasmid into plant cells

The tumour-inducing plasmid delivers DNA into the host plant genome.

[Biotechnology - Principles]

178. (2) Divalent calcium ions

Treatment with CaCl_2 followed by a brief heat shock allows DNA uptake.

[Biotechnology - Principles]

179. (2) cry IAc and cry IIAb

cry IAb controls corn borer while cry IAc and cry IIAb act against cotton bollworms.

[Biotechnology - Applications]

180. (2) Human alpha-lactalbumin

Her milk contained human alpha-lactalbumin, making it nutritionally more balanced for infants.

[Biotechnology - Applications]