ANSWER KEY & SOLUTIONS

SET 2

NEET (UG) 2027 PRACTICE EXAMINATION — TEST BOOKLET SET 2

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

KEY

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

PHYSICS — SOLUTIONS

1. (2) Torque and work
Both torque and work have dimensions $[ML^2T^{-2}]$.
[Units & Dimensions]

2. (2) 3
Leading zeros are not significant; the trailing zero after the decimal is. So 2, 5, 0 = 3.
[Errors & Significant Figures]

3. (2) 1 : 3 : 5
$s_n = (a/2)(2n - 1)$ gives 1 : 3 : 5.
[Kinematics]

4. (3) 35 m
$s_4 = (g/2)(2\times4 - 1) = 5 \times 7 = 35$ m.
[Kinematics]

5. (3) 6 N s
Impulse $= \Delta p = m(v - (-v)) = 0.15 \times 40 = 6$ N s.
[Laws of Motion]

6. (2) 4 N
$a = 10/5 = 2$ m s^{-2}; T accelerates the 2 kg block $\Rightarrow T = 2 \times 2 = 4$ N.
[Laws of Motion]

7. (3) 4000 N
$F = KE/d = (\tfrac{1}{2} \times 0.01 \times 400^2)/0.2 = 800/0.2 = 4000$ N.
[Work, Energy & Power]

8. (2) 2 rad s^{-2}
$\alpha = \tau/I = 4/2 = 2$ rad s^{-2}.
[Rotational Motion]

9. (2) √(2/5) R
$I = (2/5)MR^2 = MK^2 \Rightarrow K = \sqrt{(2/5)}\,R$.
[Rotational Motion]

10. (3) Angular velocity increases
I decreases and $L = I\omega$ is conserved, so ω increases.
[Rotational Motion]

11. (3) 22.4 km s^{-1}
$v_e = R\sqrt{(8\pi G\rho/3)} \propto R$ at constant density, so it doubles.
[Gravitation]

12. (2) Angular momentum
The gravitational force is central, so torque about the sun is zero and L stays constant.
[Gravitation]

13. (2) ½ × stress × strain
Energy density = ½ × stress × strain = ½ × Y × strain^2.
[Elasticity]

14. (2) Four times
$v_t \propto r^2$, so doubling r makes it four times.
[Fluids]

15. (4) 16 times
Stefan's law: $E \propto T^4$, so $2^4 = 16$ times.
[Thermal Properties]

16. (2) nRT ln(V_2/V_1)
For isothermal work, $W = \int P\,dV = nRT \ln(V_2/V_1)$.
[Thermodynamics]

17. (2) Zero
Internal energy is a state function; over a complete cycle $\Delta U = 0$ and $Q = W$.
[Thermodynamics]

18. (3) Absolute temperature
Average KE = (3/2)kT, independent of the nature of the gas.
[Kinetic Theory]

19. (2) Decreases
Effective g becomes (g + a), and $T = 2\pi\sqrt{(l/g_{eff})}$ decreases.
[Oscillations]

20. (2) At the extreme positions
$a = -\omega^2 x$ is largest in magnitude where $|x| = A$.
[Oscillations]

21. (2) 4
Beat frequency = $|f_1 - f_2| = 4$ Hz.
[Waves]

22. (2) Twice
$n \propto \sqrt{T}$, so a fourfold tension doubles the frequency.
[Waves]

23. (2) K times smaller
F_medium = F_vacuum/K.
[Electrostatics]

24. (2) Zero
Potential difference is zero along an equipotential surface, so $W = q\Delta V = 0$.
[Electrostatics]

25. (1) 1 μF
$1/C = 3/3 \Rightarrow C = 1$ μF.
[Capacitors]

26. (2) Decreases
More charge carriers are thermally generated, so resistivity falls.
[Current Electricity]

27. (2) 0.8 A
E_eq = 2 V, r_eq = 0.5 Ω ⇒ I = 2/(2 + 0.5) = 0.8 A.
[Current Electricity]

28. (3) 4R
Volume constant: $R \propto l^2$, so R' = 4R.
[Current Electricity]

29. (2) Zero force
$F = qvB \sin\theta = 0$ when $\theta = 0°$.
[Moving Charges & Magnetism]

30. (3) Independent of speed
$T = 2\pi m/qB$ contains no velocity term.
[Moving Charges & Magnetism]

31. (2) Parallel to B
$\tau = NIAB \sin\theta$ where θ is between the normal and B; maximum when the plane contains B.
[Moving Charges & Magnetism]

32. (3) Is inversely proportional to absolute temperature
$\chi = C/T$ for paramagnets.
[Magnetism & Matter]

33. (3) Energy
The induced effect opposes the change, so work must be done — energy is conserved.
[Electromagnetic Induction]

34. (3) 10 V
$\varepsilon = M\, dI/dt = 0.5 \times 20 = 10$ V.
[Electromagnetic Induction]

35. (2) 2.83 A
$I_{rms} = I_0/\sqrt{2} = 4/1.414 = 2.83$ A.
[Alternating Current]

36. (2) Zero
Current lags voltage by 90°, so $\cos\varphi = 0$ and average power is zero.
[Alternating Current]

37. (4) Radio waves
Radio waves occupy the long-wavelength, low-frequency end of the spectrum.
[Electromagnetic Waves]

38. (2) Real, inverted and of the same size
For u = 2f, v = 2f and m = −1.
[Ray Optics]

39. (2) 9 cm
Apparent depth = real depth/μ = 12 × 3/4 = 9 cm.
[Ray Optics]

40. (2) Coherent with a constant phase difference
A constant phase relationship is essential for a stable fringe pattern.
[Wave Optics]

41. (2) 2λ/a
The first minima lie at $\sin\theta = \pm\lambda/a$, so the full angular width is $2\lambda/a$.
[Wave Optics]

42. (2) 620 nm
$\lambda_0 = 1240/\varphi(\text{eV})$ nm = 1240/2 = 620 nm.
[Dual Nature of Matter]

43. (3) 1/8
$N = N_0(1/2)^3 = N_0/8$.
[Nuclei]

44. (3) 4.77 Å
$r_n = 0.53\ n^2$ Å = 0.53 × 9 = 4.77 Å.
[Atoms]

45. (2) Reverse bias beyond the breakdown voltage
In the Zener breakdown region the voltage stays constant while current varies.
[Semiconductors]

46. (3) 2.0
Each molecule has 4 O atoms ⇒ 0.5 × 4 = 2 mol of oxygen atoms.
[Some Basic Concepts]

47. (2) 1.33 mol
H_2 is limiting: 2 mol H_2 × (2 NH_3/3 H_2) = 1.33 mol.
[Some Basic Concepts]

48. (4) 4.761 Å
$r_n = 0.529\ n^2$ Å = 0.529 × 9 = 4.761 Å.
[Structure of Atom]

49. (3) n = 3, l = 3, m = +1
l can take values 0 to (n − 1), so l = 3 is impossible when n = 3.
[Structure of Atom]

50. (2) Cl
Small size and high electron–electron repulsion in F make Cl's value the most negative.
[Classification & Periodicity]

51. (2) Group 15, period 3
Five valence electrons in the third shell ⇒ group 15, period 3.
[Classification & Periodicity]

52. (3) T-shaped
sp^3d with three bond pairs and two lone pairs in equatorial positions gives a T-shape.
[Chemical Bonding]

53. (2) Intermolecular hydrogen bonding
Strong H-bonding between HF molecules requires extra energy to break.
[Chemical Bonding]

54. (2) sp^2 hybridised
Each carbon forms three sigma bonds and one pi bond ⇒ sp^2.
[Chemical Bonding]

55. (2) $BF_3 > NH_3 > H_2O$
BF_3 120°, NH_3 107°, H_2O 104.5° — lone pairs progressively compress the angle.
[Chemical Bonding]

56. (3) Zero
By convention $\Delta_f H°$ of an element in its reference state is zero.
[Thermodynamics]

57. (3) Temperature
Intensive properties do not depend on the amount of substance.
[Thermodynamics]

58. (2) Shifts the equilibrium forward
Le Chatelier: the system shifts towards the side with fewer gaseous moles.
[Equilibrium]

59. (2) Common ion effect
Added Cl^- suppresses the dissociation equilibrium of AgCl.
[Equilibrium]

60. (2) HPO_4^{2-}
A conjugate base is formed by removing one proton.
[Equilibrium]

61. (3) Disproportionation
Chlorine goes from 0 to −1 and to +1 simultaneously.
[Redox Reactions]

62. (3) $–NO_2$
The nitro group withdraws electrons by both –I and –R effects.
[Organic Chemistry – Basic Principles]

63. (2) 3
n-Pentane, isopentane and neopentane.
[Organic Chemistry – Basic Principles]

64. (1) Simple distillation
Simple distillation suffices when boiling points differ appreciably and neither decomposes.
[Organic Chemistry – Basic Principles]

65. (3) n-Butane
Two ethyl units couple to give a symmetrical alkane with four carbons.
[Hydrocarbons]

66. (4) But-1-yne
Only terminal alkynes have an acidic sp C–H hydrogen.
[Hydrocarbons]

67. (3) Nitrobenzene
The strongly deactivating nitro group also forms a complex with $AlCl_3$.
[Hydrocarbons]

68. (2) Mole fraction of solute
Raoult's law for a non-volatile solute: $(P^\circ - P)/P^\circ = x_2$.
[Solutions]

69. (3) Calcium chloride
$\pi = iCRT$ and $CaCl_2$ has the highest van't Hoff factor, $i = 3$.
[Solutions]

70. (2) Can displace hydrogen from dilute acids
Metals with negative standard reduction potentials are stronger reducing agents than H_2.
[Electrochemistry]

71. (2) The number of ions per unit volume decreases
Conductivity is measured per unit volume, which now contains fewer ions.
[Electrochemistry]

72. (2) Order can be zero or fractional
Order is experimental and may be fractional or zero; molecularity is a whole number ≥ 1.
[Chemical Kinetics]

73. (2) A straight line with negative slope
$[A] = [A]_0 - kt$, a straight line of slope $-k$.
[Chemical Kinetics]

74. (2) Providing an alternative path of lower activation energy
The catalyst lowers Ea; ΔH and K remain unchanged.
[Chemical Kinetics]

75. (3) +6
$x + 4(-2) = -2 \Rightarrow x = +6$.
[d- and f-Block Elements]

76. (2) Cr^{2+}
Cr^{2+} readily loses an electron to attain the stable half-filled t_2g^3 configuration of Cr^{3+}.
[d- and f-Block Elements]

77. (2) Hard and chemically inert with high melting points
Small atoms trapped in the lattice make the compounds hard, high melting and inert.
[d- and f-Block Elements]

78. (1) $[Pt(NH_3)_2Cl_2]$
The square planar MA_2B_2 complex exists as cis (cisplatin) and trans forms.
[Coordination Compounds]

79. (2) Square planar and diamagnetic
Strong-field CN^- pairs the $3d^8$ electrons, giving dsp^2 square planar with no unpaired electrons.
[Coordination Compounds]

80. (3) Hexadentate ligand
EDTA binds through two nitrogen and four oxygen donor atoms.
[Coordination Compounds]

81. (2) But-2-ene
Saytzeff's rule favours the more substituted, more stable alkene.
[Haloalkanes & Haloarenes]

82. (2) The C–Cl bond has partial double bond character due to resonance
Resonance shortens and strengthens the C–Cl bond, making displacement difficult.
[Haloalkanes & Haloarenes]

83. (2) 3° > 2° > 1°
The reaction is E1 and follows carbocation stability.
[Alcohols, Phenols & Ethers]

84. (2) Methyl bromide and sodium tert-butoxide
The SN2 step needs an unhindered primary halide, so the bulky group must come from the alkoxide.
[Alcohols, Phenols & Ethers]

85. (3) Methanal
Only aldehydes without an α-hydrogen disproportionate in concentrated alkali.
[Aldehydes, Ketones & Carboxylic Acids]

86. (1) Aldehydes and ketones
Aldehydes reduce Tollens' reagent to give a silver mirror; ketones do not.
[Aldehydes, Ketones & Carboxylic Acids]

87. (2) α-carbon
Carboxylic acids with an α-hydrogen are halogenated at the α-position using X_2/red P.
[Aldehydes, Ketones & Carboxylic Acids]

88. (2) Distinguish primary, secondary and tertiary amines
Benzenesulphonyl chloride gives an alkali-soluble product with 1°, an insoluble one with 2°, and no reaction with 3° amines.
[Amines]

89. (2) Benzenediazonium chloride
Diazotisation must be carried out at low temperature to keep the diazonium salt stable.
[Amines]

90. (2) Hydrogen bonds
Hydrogen bonds between backbone C=O and N–H groups hold the α-helix and β-sheet.
[Biomolecules]

91. (2) Contrasting characters arranged in couplets
Each step of a key offers a couplet of contrasting statements, one of which is accepted.
[The Living World]

92. (4) Habitat and geographical range
The criteria were cell structure, thallus organisation, nutrition, reproduction and phylogeny.
[Biological Classification]

93. (2) Archaebacteria
Archaebacteria have a distinctive cell wall that allows them to live in extreme habitats.
[Biological Classification]

94. (2) Consist of free RNA without a protein coat
T. O. Diener discovered viroids as free RNA of low molecular weight causing potato spindle tuber disease.
[Biological Classification]

95. (2) Live on land but need water for sexual reproduction
Their motile antherozoids require a film of water to reach the archegonium.
[Plant Kingdom]

96. (2) Nitrogen-fixing cyanobacteria
Coralloid roots harbour nitrogen-fixing cyanobacteria such as Anabaena.
[Plant Kingdom]

97. (2) Rhizophora
Mangrove plants develop negatively geotropic breathing roots in marshy soil.
[Morphology of Flowering Plants]

98. (2) The main axis continuing to grow with flowers borne laterally in acropetal order
In racemose types the growth of the main axis is indefinite.
[Morphology of Flowering Plants]

99. (3) Drupe
Drupes develop from monocarpellary superior ovaries with a stony endocarp.
[Morphology of Flowering Plants]

100. (2) Alternating formation of spring wood and autumn wood
Seasonal variation in cambial activity gives light spring wood and dark autumn wood.
[Anatomy of Flowering Plants]

101. (2) Dumb-bell shaped
Monocot grasses have dumb-bell shaped guard cells; dicots have bean-shaped ones.
[Anatomy of Flowering Plants]

102. (4) Xylem parenchyma
Xylem parenchyma is the only living component; it stores food and helps in radial conduction.
[Anatomy of Flowering Plants]

103. (2) Singer and Nicolson
Singer and Nicolson (1972) described lipids as a fluid bilayer with proteins floating in it.
[Cell: The Unit of Life]

104. (2) Ribosomal RNA synthesis
The nucleolus is a non-membrane-bound region actively synthesising rRNA.
[Cell: The Unit of Life]

105. (1) Stacks of thylakoids
Each granum is a stack of disc-shaped thylakoids where light reactions occur.
[Cell: The Unit of Life]

106. (2) A zwitterion
Both the amino and carboxyl groups are ionised, giving a dipolar zwitterion.
[Biomolecules]

107. (3) Phosphate group
Nucleoside = base + sugar; nucleotide = base + sugar + phosphate.
[Biomolecules]

108. (2) S phase
DNA content doubles during the synthesis phase while chromosome number stays the same.
[Cell Cycle & Cell Division]

109. (3) Anaphase
Sister chromatids separate and are pulled poleward in anaphase.
[Cell Cycle & Cell Division]

110. (2) Water
Hill showed isolated chloroplasts evolve O_2 in the presence of an electron acceptor, without CO_2.
[Photosynthesis]

111. (1) A proton gradient across the thylakoid membrane
Protons accumulate in the thylakoid lumen and flow out through ATP synthase.
[Photosynthesis]

112. (2) The rate is determined by the factor present in the smallest amount
The pace of the process is set by the factor nearest its minimum value.
[Photosynthesis]

113. (2) A lower CO_2 compensation point and no photorespiration
The C_4 pump concentrates CO_2 in bundle sheath cells, so photorespiration is negligible.
[Photosynthesis]

114. (2) Cytoplasm
The EMP pathway is entirely cytoplasmic and yields a net gain of 2 ATP.
[Respiration in Plants]

115. (2) Mitochondrial matrix
Pyruvate dehydrogenase acts in the matrix, releasing CO_2 and reducing NAD^+.
[Respiration in Plants]

116. (3) Cytokinin
Cytokinins promote cell division and delay ageing of leaves.
[Plant Growth & Development]

117. (1) Ethylene
Ethylene, a gaseous hormone, hastens ripening, senescence and abscission.
[Plant Growth & Development]

118. (3) Sporopollenin
Sporopollenin resists high temperature and enzymes, so pollen fossilises well.
[Sexual Reproduction in Flowering Plants]

119. (2) Geitonogamy
Geitonogamy is functionally cross pollination but genetically similar to autogamy.
[Sexual Reproduction in Flowering Plants]

120. (2) Self-incompatibility
Self-incompatibility prevents pollen from germinating on the stigma of the same flower.
[Sexual Reproduction in Flowering Plants]

121. (1) Perisperm
Black pepper and beet retain perisperm in the mature seed.
[Sexual Reproduction in Flowering Plants]

122. (2) 1 : 2 : 1
Incomplete dominance makes the genotypic and phenotypic ratios identical.
[Principles of Inheritance]

123. (2) Morgan in Drosophila
Morgan found that genes on the same chromosome do not assort independently.
[Principles of Inheritance]

124. (3) X-linked recessive
A carrier female transmits the trait to half her sons.
[Principles of Inheritance]

125. (1) A and B only
Offspring receive I^A or I^B from one parent and i from the other, giving group A or B.
[Principles of Inheritance]

126. (1) 10 bp and 3.4 nm
Each turn spans 3.4 nm and contains about 10 base pairs 0.34 nm apart.
[Molecular Basis of Inheritance]

127. (2) A promoter, structural gene and terminator
The promoter and terminator flank the structural gene and define the unit.
[Molecular Basis of Inheritance]

128. (3) It is overlapping
The code is non-overlapping; each base belongs to only one codon.
[Molecular Basis of Inheritance]

129. (2) Repetitive satellite DNA (VNTR)
Variable number tandem repeats show high degrees of polymorphism between individuals.
[Molecular Basis of Inheritance]

130. (4) Body weight of an individual
Populations have statistical attributes; body weight is an individual character.
[Organisms & Populations]

131. (2) Intrinsic rate of natural increase
r is the difference between per capita birth and death rates.
[Organisms & Populations]

132. (2) Fragmentation, leaching, catabolism, humification, mineralisation
Detritivores fragment the detritus first; humus is finally mineralised to release nutrients.
[Ecosystem]

133. (2) Lichens
Lichens secrete acids that weather the rock and build the first soil.
[Ecosystem]

134. (4) Ex situ conservation
The fourth member of the quartet is co-extinction, not conservation.
[Biodiversity & Conservation]

135. (3) 8.1%
India is one of the twelve mega-diversity countries with about 8.1% of global species.
[Biodiversity & Conservation]

136. (1) Porifera
Flagellated collar cells line the spongocoel and generate the water current in sponges.
[Animal Kingdom]

137. (2) Cnidarians
Cnidoblasts on the tentacles of cnidarians contain stinging nematocysts.
[Animal Kingdom]

138. (3) Annelida
The annelid body is divided into similar segments both externally and internally.
[Animal Kingdom]

139. (2) An air bladder
Without a swim bladder, Chondrichthyes would sink if they stopped swimming.
[Animal Kingdom]

140. (3) Cardiac muscle
These communication junctions let cardiac fibres contract as a single unit.
[Structural Organisation in Animals]

141. (2) Biting and chewing type
The cockroach has a labrum, mandibles, maxillae, labium and hypopharynx for chewing.
[Structural Organisation in Animals]

142. (2) The diaphragm contracts and thoracic volume increases
Contraction of the diaphragm and external intercostals enlarges the thorax and lowers intrapulmonary pressure.
[Breathing & Exchange of Gases]

143. (2) Damage to alveolar walls reducing the respiratory surface
Cigarette smoking is a major cause; alveolar walls break down and gas exchange area falls.
[Breathing & Exchange of Gases]

144. (3) 104 mm Hg
Alveolar pO_2 is 104 mm Hg against 40 mm Hg in deoxygenated blood, driving diffusion.
[Breathing & Exchange of Gases]

145. (2) Ventricular depolarisation
The P wave is atrial depolarisation, QRS ventricular depolarisation and T ventricular repolarisation.
[Body Fluids & Circulation]

146. (3) All blood groups
Group O red cells carry neither A nor B antigen, so O is the universal donor.
[Body Fluids & Circulation]

147. (2) Lacking RBCs and large plasma proteins
Lymph is a colourless fluid with lymphocytes but no erythrocytes or large proteins.
[Body Fluids & Circulation]

148. (2) 125 mL per minute
125 mL per minute amounts to about 180 litres of filtrate per day.
[Excretory Products]

149. (2) Juxtaglomerular apparatus
A fall in glomerular blood flow stimulates the JGA to release renin.
[Excretory Products]

150. (2) The loop of Henle and vasa recta
Their parallel, oppositely flowing arrangement maintains the medullary osmotic gradient.
[Excretory Products]

151. (3) A band
The A band, corresponding to the myosin filament, retains its length.
[Locomotion & Movement]

152. (2) An autoimmune disorder affecting the neuromuscular junction
Autoantibodies block neuromuscular transmission, causing fatigue and muscle weakness.
[Locomotion & Movement]

153. (3) Ball and socket joint
The shoulder joint permits movement in all planes.
[Locomotion & Movement]

154. (2) Release of neurotransmitter by fusion of synaptic vesicles with the presynaptic membrane
Ca^{2+} influx triggers exocytosis of the transmitter into the synaptic cleft.
[Neural Control & Coordination]

155. (2) Dura mater, arachnoid, pia mater
The tough dura lies outermost and the delicate pia adheres to the brain surface.
[Neural Control & Coordination]

156. (2) Rod cells
Rods contain rhodopsin, a derivative of vitamin A, and function in dim light.
[Neural Control & Coordination]

157. (2) Iodine
Without iodine the thyroid cannot make T_3 and T_4, and the gland enlarges.
[Chemical Coordination]

158. (2) Binding to membrane receptors and generating second messengers such as cAMP
Their receptors are on the cell surface; steroid hormones instead enter the cell.
[Chemical Coordination]

159. (1) Differentiation of T lymphocytes
The thymus secretes thymosin, promoting cell-mediated immunity and antibody production.
[Chemical Coordination]

160. (2) Spermiogenesis
Spermiation is the later release of sperms from the Sertoli cells into the lumen.
[Human Reproduction]

161. (2) A surge of LH
The LH surge around day 14 causes rupture of the Graafian follicle.
[Human Reproduction]

162. (4) Follicle stimulating hormone
FSH is a gonadotropin from the anterior pituitary.
[Human Reproduction]

163. (2) Trophoblast
The outer trophoblast layer makes contact with the endometrium during implantation.
[Human Reproduction]

164. (3) Determining the sex of the foetus
The statutory ban aims to prevent female foeticide.
[Reproductive Health]

165. (1) Six months after parturition
Ovulation and the menstrual cycle usually do not occur during intense lactation up to six months.
[Reproductive Health]

166. (2) A non-steroidal oral pill taken once a week
Developed at CDRI Lucknow, it has few side effects and high contraceptive value.
[Reproductive Health]

167. (2) Chemical evolution of life
Electric discharge in a reducing atmosphere of CH_4, NH_3, H_2 and water vapour produced amino acids.
[Evolution]

168. (2) Adaptive radiation
From one seed-eating ancestor many beak forms evolved to exploit different niches.
[Evolution]

169. (3) Reptiles and birds
It had feathers and a beak like a bird but teeth and a long tail like a reptile.
[Evolution]

170. (2) Homology and divergent evolution
The same basic anatomical plan is adapted to different functions.
[Evolution]

171. (2) Contaminated water, vegetables and soil carrying eggs
Eggs passed in faeces contaminate soil and water and are ingested.
[Human Health & Disease]

172. (4) Antibody production against a specific antigen
Antigen-specific antibody responses belong to acquired immunity.
[Human Health & Disease]

173. (2) IgA
Colostrum secreted during the first days of lactation is rich in IgA.
[Human Health & Disease]

174. (1) Metastasis
Metastasis is the most feared property of malignant tumours.
[Human Health & Disease]

175. (2) Cannabis sativa
Flower tops, leaves and resin of Cannabis sativa yield marijuana, hashish and ganja.
[Human Health & Disease]

176. (2) Anode, because DNA is negatively charged
The phosphate backbone makes DNA negatively charged.
[Biotechnology – Principles]

177. (2) Ethidium bromide and exposure to UV radiation
Bright orange bands appear under UV light after ethidium bromide staining.
[Biotechnology – Principles]

178. (2) Sparged stirred tank bioreactor
Sparging supplies air without shearing, giving better oxygen transfer than a simple stirrer.
[Biotechnology – Principles]

179. (3) Provitamin A (β-carotene)
It was engineered to combat vitamin A deficiency.
[Biotechnology – Applications]

180. (2) Producing A and B chains separately in E. coli and joining them by disulphide bonds
The two chains were produced separately and then combined to form functional human insulin.
[Biotechnology – Applications]