NEET (UG) — 2027 PRACTICE EXAMINATION

SET 4

MOST-EXPECTED FULL SYLLABUS TEST BOOKLET

Candidate	Aamirah Fathima	**Test Booklet Set**	4
Time Allowed	3 hours 20 minutes (200 minutes)	**Maximum Marks**	720
Total Questions	180 (all compulsory)	**Marking Scheme**	+4 for correct, −1 for incorrect, 0 if not attempted
Subjects	Physics (Q.1–45) | Chemistry (Q.46–90) | Botany (Q.91–135) | Zoology (Q.136–180)		

IMPORTANT INSTRUCTIONS

1. The Test Booklet consists of **180 questions**. The maximum marks are **720**.
2. There are four parts in the question paper, viz. Physics, Chemistry, Botany and Zoology, consisting of **45 questions each**. All questions are compulsory.
3. Each question carries **4 marks**. For every correct response 4 marks will be awarded. For every incorrect response **one mark** will be deducted. No deduction is made for questions not attempted.
4. Only **one** option out of the four given against each question is correct. Darken the appropriate circle on the answer sheet with a ball point pen. More than one darkened circle will be treated as an incorrect response.
5. Use of electronic calculators, log tables, mobile phones or any other electronic device is **not permitted**.
6. Rough work is to be done on the space provided in this Test Booklet only. Do not write anything on the answer sheet other than the required entries.
7. Values of physical constants, wherever required, are to be taken as: $g = 10\ \text{m s}^{-2}$, $c = 3 \times 10^{8}\ \text{m s}^{-1}$, $N_{\text{A}} = 6.022 \times 10^{23}\ \text{mol}^{-1}$, $R = 8.314\ \text{J K}^{-1}\ \text{mol}^{-1}$.
8. The syllabus followed is the rationalised NCERT syllabus notified for NEET (UG). Deleted chapters have not been examined.
9. Do not check the answer key until the full paper has been attempted under timed conditions.

SPACE FOR ROUGH WORK

PHYSICS

1. Which of the following is NOT a unit of energy?
(1) Joule
(2) Erg
(3) Electron volt
(4) Watt

2. The zero error of a vernier callipers gives rise to
(1) Random error
(2) Systematic error
(3) Gross error
(4) No error

3. A body moves along a circular track of radius r and completes half a revolution. The distance travelled and the magnitude of displacement are respectively
(1) πr and 2r
(2) 2r and πr
(3) πr and r
(4) 2πr and 2r

4. A stone is thrown horizontally from the top of a tower. The time taken to reach the ground
(1) Increases with the horizontal speed
(2) Decreases with the horizontal speed
(3) Is independent of the horizontal speed
(4) Depends on the mass of the stone

5. A block rests on a rough table and a horizontal force smaller than the limiting friction is applied. The frictional force acting on the block is
(1) Equal to the limiting friction
(2) Equal to the applied force
(3) Zero
(4) μmg always

6. The minimum speed of a body at the highest point of a vertical circle of radius r so that the string remains taut is
(1) $\sqrt{(2gr)}$
(2) $\sqrt{(gr)}$
(3) $\sqrt{(5gr)}$
(4) $\sqrt{(gr/2)}$

7. A force $\vec{F} = (5\hat{i} + 3\hat{j})$ N produces a displacement $\vec{d} = (2\hat{i} + 4\hat{j})$ m. The work done is
(1) 10 J
(2) 12 J
(3) 22 J
(4) 30 J

8. For a conservative force, the work done in moving a body around any closed path is
(1) Maximum
(2) Zero
(3) Negative always
(4) Equal to the change in kinetic energy

9. The torque produced by a force whose line of action passes through the axis of rotation is
(1) Maximum
(2) Zero
(3) Equal to Fr
(4) Equal to Iα

10. The moment of inertia of a solid sphere of mass M and radius R about a tangent is
(1) $(2/5)MR^2$
(2) $(3/5)MR^2$
(3) $(7/5)MR^2$
(4) $(5/2)MR^2$

11. The gravitational potential energy of two masses m_1 and m_2 separated by a distance r is
(1) $+Gm_1m_2/r$
(2) $-Gm_1m_2/r$
(3) $-Gm_1m_2/r^2$
(4) Gm_1m_2r

12. An astronaut inside an orbiting space station feels weightless because
(1) Gravity is absent at that height
(2) The station and astronaut are both in free fall with the same acceleration
(3) The station is far from the earth
(4) Air resistance balances gravity

13. Steel is said to be more elastic than rubber because for the same stress steel shows
(1) Greater strain
(2) Smaller strain and hence a larger Young's modulus
(3) A lower breaking point
(4) Greater plastic deformation

14. In a hydraulic lift, the area of the larger piston is 100 times that of the smaller one. A force of 20 N on the smaller piston can lift a load of
(1) 20 N
(2) 200 N
(3) 2000 N
(4) 0.2 N

15. The nature of flow of a liquid through a pipe, whether streamline or turbulent, is decided by
(1) Bernoulli's number
(2) Reynolds number
(3) Poisson's ratio
(4) Mach number

16. According to Wien's displacement law, as the temperature of a black body increases, the wavelength corresponding to maximum emission
(1) Increases
(2) Decreases
(3) Remains the same
(4) First increases then decreases

17. The second law of thermodynamics implies that
(1) Energy can be created
(2) No heat engine can have 100% efficiency
(3) Heat flows spontaneously from cold to hot bodies
(4) Entropy always decreases

18. For an ideal gas undergoing an isothermal change, the change in internal energy is
(1) Positive
(2) Negative
(3) Zero
(4) Equal to the heat rejected

19. The mean free path of a gas molecule is
(1) Directly proportional to the number density
(2) Inversely proportional to the number density
(3) Independent of molecular diameter
(4) Proportional to the square of the pressure

20. For an ideal gas, the relation between the molar heat capacities is
(1) $C_p - C_v = R$
(2) $C_v - C_p = R$
(3) $C_p + C_v = R$
(4) $C_p C_v = R$

21. In damped harmonic motion, the amplitude of oscillation
(1) Remains constant
(2) Decreases exponentially with time
(3) Increases with time
(4) Becomes zero instantly

22. A simple pendulum is taken to the moon, where the acceleration due to gravity is one sixth that on earth. Its time period becomes
(1) Six times
(2) $\sqrt{6}$ times
(3) One sixth
(4) $1/\sqrt{6}$ times

23. Sound waves in air are
(1) Transverse and can be polarised
(2) Longitudinal and cannot be polarised
(3) Electromagnetic
(4) Transverse and cannot be polarised

24. An observer moves away from a stationary source of sound. The apparent frequency heard
(1) Increases
(2) Decreases
(3) Remains the same
(4) First increases then decreases

25. The quantisation of charge means that
(1) Charge can have any value
(2) Charge exists only as an integral multiple of e
(3) Charge can be destroyed
(4) Charge depends on the medium

26. The electric field due to an infinite plane sheet of charge density σ is
(1) σ/ε_0 and depends on distance
(2) $\sigma/2\varepsilon_0$ and independent of distance
(3) $\sigma/4\pi\varepsilon_0 r^2$
(4) Zero

27. Capacitors of 2 μF and 3 μF are connected in parallel. The equivalent capacitance is
(1) 1.2 μF
(2) 1.5 μF
(3) 5 μF
(4) 6 μF

28. While a cell is being charged, the terminal potential difference is
(1) Less than the emf
(2) Greater than the emf
(3) Equal to the emf
(4) Zero

29. With rise in temperature, the resistance of a metallic conductor
(1) Decreases
(2) Increases
(3) Remains constant
(4) Becomes zero

30. The magnetic field at the centre of a semicircular arc of radius R carrying current I is
(1) $\mu_0 I/2R$
(2) $\mu_0 I/4R$
(3) $\mu_0 I/2\pi R$
(4) $\mu_0 I/4\pi R$

31. Ampere's circuital law relates the line integral of the magnetic field around a closed loop to
(1) The magnetic flux through the loop
(2) The net current enclosed by the loop
(3) The area of the loop
(4) The emf induced

32. At the magnetic equator, the angle of dip is
(1) 0°
(2) 45°
(3) 90°
(4) 180°

33. The energy stored in an inductor of inductance L carrying a current I is
(1) LI
(2) $\frac{1}{2}LI^2$
(3) $\frac{1}{2}L^2I$
(4) LI^2

34. In an AC generator with N turns, area A, rotating with angular frequency ω in a field B, the peak emf is
(1) NAB
(2) NABω
(3) NAB/ω
(4) NABω²

35. The resonant frequency of a series LCR circuit with L = 1 H and C = 1 μF is nearly
(1) 50 Hz
(2) 159 Hz
(3) 1000 Hz
(4) 6280 Hz

36. A choke coil is preferred to a resistor for controlling current in an AC circuit because it
(1) Is cheaper
(2) Reduces current without dissipating power
(3) Increases the power factor to unity
(4) Produces more heat

37. Displacement current arises because of
(1) A steady conduction current
(2) A time varying electric field
(3) A constant magnetic field
(4) Motion of free charges only

38. Optical fibres transmit light by making use of
(1) Dispersion
(2) Total internal reflection
(3) Diffraction
(4) Polarisation

39. Myopia, or short-sightedness, is corrected by using
(1) A convex lens
(2) A concave lens
(3) A cylindrical lens
(4) A bifocal lens

40. According to Huygens' principle, every point on a wavefront acts as
(1) A source of secondary wavelets
(2) A point of destructive interference
(3) A polarising centre
(4) A focus of the wave

41. In Young's double slit experiment, if the separation between the slits is doubled, the fringe width becomes
(1) Twice
(2) Half
(3) Four times
(4) Unchanged

42. In the photoelectric effect, increasing the intensity of incident light while keeping the frequency constant increases
(1) The maximum kinetic energy of photoelectrons
(2) The number of photoelectrons emitted per second
(3) The threshold frequency
(4) The work function

43. Rutherford's alpha particle scattering experiment established the existence of
(1) The electron
(2) A small dense positively charged nucleus
(3) The neutron
(4) Energy quantisation

44. A photodiode is always operated in
(1) Forward bias
(2) Reverse bias
(3) Zero bias
(4) Breakdown region

45. In a light emitting diode, light is emitted when
(1) Electrons are accelerated in the depletion layer
(2) Electrons and holes recombine near the junction under forward bias
(3) The diode is reverse biased
(4) The junction is heated

46. The number of moles of a gas occupying 11.2 litres at STP is
(1) 0.25 (2) 0.5
(3) 1.0 (4) 2.0

47. The percentage of nitrogen by mass in ammonium nitrate, NH_4NO_3, is
(1) 17.5% (2) 28%
(3) 35% (4) 46.7%

48. Atoms having the same mass number but different atomic numbers are called
(1) Isotopes (2) Isobars
(3) Isotones (4) Isoelectronic species

49. Heisenberg's uncertainty principle is expressed as
(1) $\Delta x \cdot \Delta p \geq h/4\pi$ (2) $\Delta x \cdot \Delta p = h$
(3) $\Delta x/\Delta p \geq h/2\pi$ (4) $\Delta x \cdot \Delta v \geq h$

50. The correct order of decreasing atomic radius is
(1) Na > Mg > Al > Si (2) Si > Al > Mg > Na
(3) Mg > Na > Si > Al (4) Al > Si > Na > Mg

51. Lithium resembles magnesium in many of its properties. This is an example of
(1) Isomorphism (2) Diagonal relationship
(3) Lanthanoid contraction (4) Allotropy

52. The hybridisation and geometry of PCl_5 are
(1) sp^3, tetrahedral (2) sp^3d, trigonal bipyramidal
(3) sp^3d^2, octahedral (4) sp^2, trigonal planar

53. The correct order of carbon–carbon bond length is
(1) C≡C < C=C < C–C (2) C–C < C=C < C≡C
(3) C=C < C≡C < C–C (4) All are equal

54. In the carbonate ion, all three carbon–oxygen bonds are of equal length because of
(1) sp^3 hybridisation (2) Resonance
(3) Hydrogen bonding (4) Ionic character

55. o-Nitrophenol is more volatile than p-nitrophenol because o-nitrophenol has
(1) Intermolecular hydrogen bonding
(2) Intramolecular hydrogen bonding
(3) A higher molecular mass
(4) Greater symmetry

56. At equilibrium, the Gibbs energy change of a reaction is
(1) Maximum (2) Zero
(3) Always negative (4) Equal to ΔH

57. The enthalpy of neutralisation of a strong acid with a strong base is nearly constant at -57.1 kJ mol^{-1} because
(1) All acids are equally strong
(2) The reaction is always between H^+ and OH^- to form water
(3) Salts have equal lattice energy
(4) Water is a weak electrolyte

58. Adding a catalyst to a system at equilibrium
(1) Shifts the equilibrium forward
(2) Shifts the equilibrium backward
(3) Does not shift the equilibrium but helps it to be attained faster
(4) Increases the equilibrium constant

59. The pH of a 0.01 M solution of hydrochloric acid is
(1) 1 (2) 2
(3) 12 (4) 14

60. According to the Lewis concept, BF_3 is
(1) An acid because it accepts an electron pair
(2) A base because it donates an electron pair
(3) Neutral
(4) An acid because it donates a proton

61. In the reaction $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$
(1) Zinc is reduced (2) Copper is oxidised
(3) Zinc is the reducing agent (4) Sulphate is oxidised

62. Homolytic fission of a covalent bond produces
(1) Carbocations (2) Carbanions
(3) Free radicals (4) Ions of opposite charge

63. Butan-1-ol and butan-2-ol are
(1) Chain isomers
(2) Position isomers
(3) Functional isomers
(4) Metamers

64. The technique used to purify a solid whose solubility differs greatly in hot and cold solvent is
(1) Distillation
(2) Crystallisation
(3) Sublimation
(4) Steam distillation

65. Catalytic hydrogenation of ethene in the presence of finely divided nickel gives
(1) Ethane
(2) Ethyne
(3) Ethanol
(4) Ethanal

66. Baeyer's reagent, used to test unsaturation, is
(1) Bromine water
(2) Cold dilute alkaline $KMnO_4$
(3) Acidified $K_2Cr_2O_7$
(4) Tollens' reagent

67. Oxidation of toluene with hot acidic $KMnO_4$ gives
(1) Benzaldehyde
(2) Benzoic acid
(3) Benzyl alcohol
(4) Phenol

68. Which of the following concentration terms is independent of temperature?
(1) Molarity
(2) Normality
(3) Molality
(4) Volume percentage

69. The depression in freezing point of a solution is proportional to
(1) The mole fraction of solvent
(2) The molality of the solution
(3) The molarity of the solvent
(4) The vapour pressure of the solute

70. The function of a salt bridge in a galvanic cell is to
(1) Supply electrons to the cathode
(2) Maintain electrical neutrality and complete the circuit
(3) Increase the cell emf
(4) Prevent the flow of ions

71. The limiting molar conductivity of a weak electrolyte such as acetic acid is obtained by
(1) Extrapolating the Λm versus $\sqrt{c}$ plot
(2) Applying Kohlrausch's law of independent migration of ions
(3) Direct measurement at infinite dilution
(4) Measuring the pH

72. For a reaction with rate = k[A][B], doubling the concentration of both A and B changes the rate by a factor of
(1) 2
(2) 3
(3) 4
(4) 8

73. For most chemical reactions, a rise in temperature of 10 K near room temperature
(1) Halves the rate
(2) Roughly doubles the rate
(3) Leaves the rate unchanged
(4) Increases the rate ten times

74. The spin-only magnetic moment of Ti^{3+} ($3d^1$) is
(1) 0 BM
(2) 1.73 BM
(3) 2.83 BM
(4) 3.87 BM

75. Transition metals have high melting and boiling points mainly because of
(1) Ionic bonding
(2) Strong metallic bonding involving d electrons
(3) Hydrogen bonding
(4) van der Waals forces

76. The intense purple colour of the permanganate ion arises from
(1) A d–d transition
(2) Charge transfer from oxygen to manganese
(3) Unpaired d electrons
(4) Lattice defects

77. In Werner's theory, the secondary valency of a metal corresponds to its
(1) Oxidation state
(2) Coordination number
(3) Atomic number
(4) Charge on the complex

78. The hybridisation of $[Cr(NH_3)_6]^{3+}$ and its number of unpaired electrons are
(1) sp^3d^2, 3
(2) d^2sp^3, 3
(3) d^2sp^3, 0
(4) sp^3, 1

79. Cis-platin, used in the treatment of cancer, is
(1) trans-$[Pt(NH_3)_2Cl_2]$
(2) cis-$[Pt(NH_3)_2Cl_2]$
(3) $[Pt(NH_3)_4]Cl_2$
(4) $K_2[PtCl_4]$

80. An SN1 reaction at a chiral carbon generally gives
(1) A single inverted product
(2) A racemic mixture
(3) Only the retained product
(4) No reaction

81. The Finkelstein reaction involves treating an alkyl chloride with
(1) NaI in dry acetone
(2) $AgNO_2$ in ethanol
(3) Zn dust
(4) Alcoholic KOH

82. Reaction of methanal with a Grignard reagent followed by hydrolysis gives
(1) A primary alcohol
(2) A secondary alcohol
(3) A tertiary alcohol
(4) A carboxylic acid

83. The Reimer–Tiemann reaction converts phenol into
(1) Picric acid
(2) Salicylaldehyde
(3) Salicylic acid
(4) Anisole

84. Fehling's solution can be used to distinguish between
(1) Ethanal and propanone
(2) Ethanol and methanol
(3) Benzene and toluene
(4) Ethanoic acid and methanoic acid

85. The aldol condensation product of two molecules of ethanal is
(1) 3-Hydroxybutanal
(2) But-2-enal only
(3) Butane-1,3-diol
(4) Butanoic acid

86. The correct order of acidic strength among the following substituted benzoic acids is
(1) p-Methoxybenzoic acid > benzoic acid > p-nitrobenzoic acid
(2) p-Nitrobenzoic acid > benzoic acid > p-methoxybenzoic acid
(3) Benzoic acid > p-nitrobenzoic acid > p-methoxybenzoic acid
(4) All are equally acidic

87. Aniline is a weaker base than ammonia because
(1) Of steric hindrance
(2) The lone pair on nitrogen is delocalised into the benzene ring
(3) Nitrogen is sp^3 hybridised
(4) Of intramolecular hydrogen bonding

88. Benzenediazonium chloride couples with phenol in mildly alkaline medium to give
(1) A red azo dye
(2) An orange azo dye
(3) Nitrobenzene
(4) Benzoic acid

89. Which of the following is present in RNA but not in DNA?
(1) Adenine
(2) Guanine
(3) Uracil
(4) Cytosine

90. Denaturation of a protein destroys its
(1) Primary structure
(2) Secondary and tertiary structure
(3) Peptide bonds
(4) Amino acid sequence

BOTANY

91. A collection of preserved plant specimens mounted on sheets, arranged according to a system of classification, is a
(1) Botanical garden
(2) Herbarium
(3) Museum
(4) Zoological park

92. A comma shaped bacterium is described as
(1) Coccus
(2) Bacillus
(3) Vibrio
(4) Spirillum

93. Euglenoids are unusual because they
(1) Have a cellulose cell wall
(2) Have a protein-rich pellicle and are mixotrophic
(3) Are strictly parasitic
(4) Lack flagella

94. Rhizopus belongs to the class Phycomycetes and is characterised by
(1) Septate hyphae and ascospores
(2) Coenocytic aseptate hyphae and zygospores
(3) Basidiospores
(4) Conidia only

95. In bryophytes, the dominant and independent phase of the life cycle is the
(1) Sporophyte
(2) Gametophyte
(3) Protonema only
(4) Zygote

96. Pollination in Pinus is brought about by
(1) Insects
(2) Water
(3) Wind
(4) Birds

97. Reticulate venation is characteristically found in
(1) Monocot leaves
(2) Dicot leaves
(3) Ferns only
(4) Gymnosperm needles

98. Flowers of Liliaceae are typically
(1) Trimerous with a superior ovary
(2) Pentamerous with an inferior ovary
(3) Tetramerous with a superior ovary
(4) Trimerous with an inferior ovary

99. The seed of pea is
(1) Endospermic
(2) Non-endospermic
(3) Perispermic
(4) Albuminous

100. In a dicot stem, the complete ring of vascular cambium is formed from
(1) Only intrafascicular cambium
(2) Only interfascicular cambium
(3) Intrafascicular plus newly formed interfascicular cambium
(4) The pericycle alone

101. Lenticels in the bark of a woody stem help in
(1) Water absorption
(2) Gaseous exchange
(3) Food storage
(4) Support

102. Collenchyma is characterised by
(1) Dead cells with uniformly lignified walls
(2) Living cells with cellulose and pectin thickening at the corners
(3) Cells with no wall thickening
(4) Cells with silica deposits

103. The statement 'omnis cellula e cellula', that new cells arise from pre-existing cells, was given by
(1) Schleiden
(2) Schwann
(3) Rudolf Virchow
(4) Robert Hooke

104. Lysosomes are described as suicidal bags because they contain
(1) Oxidative enzymes at alkaline pH
(2) Hydrolytic enzymes active at acidic pH
(3) Respiratory pigments
(4) Photosynthetic pigments

105. The centriole shows a characteristic arrangement of microtubule triplets described as
(1) 9 + 2
(2) 9 + 0 with a cartwheel structure
(3) 5 + 2
(4) 11 + 0

106. The bond formed between the carboxyl group of one amino acid and the amino group of another is a
(1) Glycosidic bond
(2) Peptide bond
(3) Ester bond
(4) Phosphodiester bond

107. Phospholipids of the cell membrane are described as amphipathic because they have
(1) Only hydrophobic regions
(2) Both hydrophilic head and hydrophobic tail regions
(3) Only hydrophilic regions
(4) No charged groups

108. Cells that have exited the cell cycle and remain metabolically active without dividing are said to be in
(1) S phase
(2) G_2 phase
(3) G_0 or quiescent stage
(4) Prophase

109. Terminalisation of chiasmata is completed during
(1) Zygotene
(2) Pachytene
(3) Diakinesis
(4) Anaphase I

110. Chlorophyll a is called the primary pigment because
(1) It absorbs all wavelengths
(2) It is the reaction centre pigment that finally traps and converts light energy
(3) It is the most abundant lipid
(4) It is present only in PS I

111. In non-cyclic photophosphorylation, electrons flow from
(1) PS I to PS II
(2) Water to PS II to PS I to $NADP^+$
(3) NADPH to water
(4) PS II back to PS II

112. The three phases of the Calvin cycle in correct order are
(1) Reduction, carboxylation, regeneration
(2) Carboxylation, reduction, regeneration
(3) Regeneration, reduction, carboxylation
(4) Carboxylation, regeneration, reduction

113. In most plants, the light saturation point for photosynthesis occurs at about
(1) 1% of full sunlight
(2) 10% of full sunlight
(3) 50% of full sunlight
(4) 100% of full sunlight

114. In the electron transport system, the final acceptor of electrons is
(1) NAD^+
(2) FAD
(3) Oxygen
(4) Cytochrome c

115. Respiration is described as an amphibolic pathway because it
(1) Only breaks down molecules
(2) Involves both catabolism and anabolism
(3) Occurs only in the dark
(4) Produces only ATP

116. When growth is plotted against time, the resulting curve is typically
(1) Linear
(2) Sigmoid
(3) Exponential throughout
(4) Hyperbolic

117. The regaining of the capacity to divide by a permanent, differentiated cell is called
(1) Differentiation
(2) Dedifferentiation
(3) Redifferentiation
(4) Senescence

118. In a typical ovule, the functional megaspore is usually the
(1) Micropylar one
(2) Chalazal one
(3) Middle one
(4) All four remain functional

119. Pollen grains of which plant are a well known cause of allergy?
(1) Wheat
(2) Parthenium
(3) Rice
(4) Mango

120. Coconut water represents
(1) Cellular endosperm
(2) Free nuclear endosperm
(3) Perisperm
(4) Nucellus

121. Emasculation is necessary in artificial hybridisation when the female parent bears
(1) Unisexual flowers
(2) Bisexual flowers
(3) Only male flowers
(4) Cleistogamous flowers

122. A cross of an F_1 hybrid with its homozygous recessive parent is called a
(1) Back cross
(2) Test cross
(3) Reciprocal cross
(4) Dihybrid cross

123. Phenylketonuria, in which a single gene affects several traits, is an example of
(1) Pleiotropy
(2) Polygenic inheritance
(3) Codominance
(4) Multiple allelism

124. The chromosomal theory of inheritance was proposed by
(1) Mendel
(2) Sutton and Boveri
(3) Morgan
(4) Bateson

125. Klinefelter's syndrome corresponds to the karyotype
(1) 45, XO
(2) 47, XXY
(3) 47, XYY
(4) 46, XX

126. According to Chargaff's rule, in double stranded DNA
(1) A + T = G + C
(2) A = G and T = C
(3) A = T and G = C
(4) A + G = T + C only in RNA

127. A typical nucleosome contains DNA of about
(1) 100 base pairs
(2) 200 base pairs
(3) 500 base pairs
(4) 1000 base pairs

128. In eukaryotes, the removal of introns and joining of exons in hnRNA is called
(1) Capping
(2) Tailing
(3) Splicing
(4) Termination

129. One of the goals of the Human Genome Project was to determine the sequence of about
(1) 3.3 million base pairs
(2) 33 million base pairs
(3) 3164.7 million base pairs
(4) 31647 million base pairs

130. The cuckoo laying eggs in the nest of a crow is an example of
(1) Mutualism
(2) Brood parasitism
(3) Commensalism
(4) Predation

131. The population density of a tiger reserve is commonly estimated from
(1) Direct counting of individuals
(2) Pug marks and faecal pellets
(3) Biomass measurement
(4) Percentage cover

132. The annual net primary productivity of the whole biosphere is approximately
(1) 17 billion tons
(2) 170 billion tons
(3) 1700 billion tons
(4) 55 billion tons

133. The phosphorus cycle is described as a
(1) Gaseous cycle
(2) Sedimentary cycle
(3) Hydrological cycle
(4) Perfect cycle

134. The rivet popper hypothesis, comparing species to rivets in an aeroplane, was given by
(1) David Tilman
(2) Paul Ehrlich
(3) Alexander von Humboldt
(4) Robert May

135. The number of species so far described and named by taxonomists is about
(1) 0.5 million
(2) 1.7 to 1.8 million
(3) 7 million
(4) 20 million

ZOOLOGY

136. The tissue level of body organisation appears first in
(1) Porifera
(2) Cnidaria
(3) Platyhelminthes
(4) Annelida

137. Adult echinoderms show
(1) Bilateral symmetry
(2) Radial symmetry
(3) No symmetry
(4) Spherical symmetry

138. Reptiles are characterised by
(1) Moist glandular skin
(2) Dry cornified skin with epidermal scales
(3) Feathers
(4) Hair and mammary glands

139. Pneumatic bones and air sacs connected to the lungs are found in
(1) Amphibians
(2) Reptiles
(3) Birds
(4) Mammals

140. Which of the following is a connective tissue?
(1) Blood
(2) Ciliated epithelium
(3) Cardiac muscle
(4) Nerve tissue

141. The heart of a frog is
(1) Two chambered
(2) Three chambered
(3) Four chambered
(4) Absent

142. The volume of air remaining in the lungs even after a forcible expiration is the
(1) Tidal volume
(2) Inspiratory reserve volume
(3) Expiratory reserve volume
(4) Residual volume

143. The percentage of oxygen transported in blood in combination with haemoglobin is about
(1) 7%
(2) 20%
(3) 70%
(4) 97%

144. The duration of one cardiac cycle in a normal adult is about
(1) 0.4 s
(2) 0.8 s
(3) 1.2 s
(4) 2.0 s

145. The normal platelet count in human blood is about
(1) 5000 to 8000 per mm^3
(2) 1.5 to 3.5 lakh per mm^3
(3) 5 million per mm^3
(4) 50 to 100 per mm^3

146. Double circulation in mammals means that blood
(1) Passes through the heart once per complete circuit
(2) Passes through the heart twice per complete circuit
(3) Never returns to the heart
(4) Flows only through the lungs

147. The cells of the inner visceral layer of Bowman's capsule with filtration slits are called
(1) Podocytes
(2) Juxtaglomerular cells
(3) Mesangial cells
(4) Macula densa

148. Accumulation of urea in the blood is known as
(1) Uremia
(2) Ketonuria
(3) Glycosuria
(4) Renal calculi

149. Smooth muscles are
(1) Striated and voluntary
(2) Non-striated and involuntary
(3) Striated and involuntary
(4) Non-striated and voluntary

150. Red muscle fibres differ from white fibres in having
(1) Less myoglobin and fewer mitochondria
(2) Abundant myoglobin and mitochondria, relying on aerobic respiration
(3) No blood supply
(4) Only anaerobic metabolism

151. Muscular dystrophy is
(1) An autoimmune disorder
(2) A genetic disorder causing progressive degeneration of skeletal muscle
(3) Caused by calcium excess
(4) An infection of muscle tissue

152. The rising phase of an action potential is caused by
(1) Efflux of K^+
(2) Influx of Na^+
(3) Influx of Cl^-
(4) Efflux of Ca^{2+}

153. Hunger, thirst and body temperature are regulated by the
(1) Cerebrum
(2) Hypothalamus
(3) Cerebellum
(4) Medulla

154. The blind spot of the human eye is the region where
(1) Cones are most densely packed
(2) The optic nerve leaves the eye and photoreceptors are absent
(3) Rods are most abundant
(4) The lens focuses light

155. The secretion of hormones from the anterior pituitary is controlled by
(1) The posterior pituitary
(2) Hypothalamic releasing and inhibiting hormones
(3) The pineal gland
(4) The adrenal medulla

156. Melatonin, which regulates the diurnal rhythm of the body, is secreted by the
(1) Thymus
(2) Pineal gland
(3) Thyroid
(4) Pancreas

157. Glucagon acts on the liver to
(1) Promote glycogenesis
(2) Stimulate glycogenolysis and raise blood glucose
(3) Increase glucose uptake by cells
(4) Lower blood glucose

158. Aldosterone acts mainly on the renal tubules to
(1) Promote reabsorption of Na^+ and water
(2) Promote excretion of Na^+
(3) Increase glucose reabsorption
(4) Decrease blood volume

159. Which of the following is NOT a male accessory gland?
(1) Seminal vesicle
(2) Prostate gland
(3) Bulbourethral gland
(4) Bartholin's gland

160. In a 28-day menstrual cycle, the secretory phase corresponds to days
(1) 1 to 5
(2) 6 to 13
(3) 15 to 28
(4) 13 to 15

161. The acrosome of a sperm is derived from the
(1) Mitochondria
(2) Golgi apparatus
(3) Nucleus
(4) Centriole

162. The amniotic fluid surrounding the foetus mainly serves to
(1) Supply nutrition
(2) Protect the foetus from mechanical shock
(3) Carry out gas exchange
(4) Remove nitrogenous waste

163. Vasectomy involves
(1) Removal of the testes
(2) Cutting and tying the vas deferens
(3) Blocking the fallopian tube
(4) Removing the prostate

164. A major cause of the population explosion in India is
(1) An increased death rate
(2) A rapid decline in maternal and infant mortality rates
(3) Reduced life expectancy
(4) A falling number of people in the reproductive age group

165. Apart from preventing conception, condoms also
(1) Increase fertility
(2) Protect against sexually transmitted infections
(3) Regulate the menstrual cycle
(4) Act as a spermicide

166. The idea that life arose from non-living organic molecules through chemical evolution was proposed by
(1) Louis Pasteur
(2) Oparin and Haldane
(3) Charles Darwin
(4) Ernst Haeckel

167. Sweet potato and potato provide an example of
(1) Homology
(2) Analogy
(3) Vestigial organs
(4) Atavism

168. The rapid appearance of antibiotic resistant bacteria demonstrates
(1) Lamarckian inheritance
(2) Evolution occurring in the present time by natural selection
(3) Genetic drift only
(4) Artificial selection

169. The correct evolutionary sequence is
(1) Homo habilis, Australopithecus, Homo erectus, Homo sapiens
(2) Australopithecus, Homo habilis, Homo erectus, Homo sapiens
(3) Homo erectus, Homo habilis, Australopithecus, Homo sapiens
(4) Australopithecus, Homo erectus, Homo habilis, Homo sapiens

170. Embryological support for evolution as proposed by Ernst Haeckel was later disproved by
(1) Charles Darwin
(2) Karl Ernst von Baer
(3) Hugo de Vries
(4) Alfred Wallace

171. Amoebiasis, or amoebic dysentery, is caused by
(1) Entamoeba histolytica
(2) Plasmodium vivax
(3) Trypanosoma
(4) Giardia

172. In pneumonia, the alveoli become filled with fluid, leading to
(1) Increased oxygen uptake
(2) Severe problems in respiration
(3) Excess urine formation
(4) Loss of appetite only

173. Rejection of a transplanted organ is mainly due to
(1) Humoral immunity
(2) Cell-mediated immunity involving T lymphocytes
(3) Innate immunity
(4) Passive immunity

174. Which of the following is used in the treatment of cancer to activate the immune system?
(1) Insulin
(2) Alpha interferon
(3) Penicillin
(4) Adrenaline

175. Anabolic steroids are misused by some athletes because they
(1) Reduce anxiety only
(2) Increase muscle strength and aggressiveness
(3) Improve eyesight
(4) Act as painkillers

176. In the name of the restriction enzyme EcoRI, the letter 'R' denotes
(1) The genus
(2) The species
(3) The strain of the bacterium
(4) The order of isolation

177. A gene that helps identify transformants by eliminating non-transformants is called
(1) A reporter gene
(2) A selectable marker
(3) A structural gene
(4) A promoter

178. Separation and purification of a product after the completion of a biosynthetic stage is termed
(1) Upstream processing
(2) Downstream processing
(3) Fermentation
(4) Transformation

179. Very early detection of HIV infection in a suspected patient is possible by
(1) Blood smear examination
(2) Polymerase chain reaction
(3) Widal test
(4) Mantoux test

180. The organisation that makes decisions on the validity of GM research in India is
(1) ICMR
(2) GEAC
(3) CSIR
(4) WHO

ANSWER RECORDING SHEET

Write 1, 2, 3 or 4 against each question number. Leave blank if not attempted. Score: (correct × 4) − (wrong × 1).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60

61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180

SPACE FOR ROUGH WORK