# NEET (UG)

Sample Question Paper - 4

Full Mock Test | 200 Questions | Time: 3 Hours | Max. Marks: 720

**Important Instructions:**

1. There are 200 questions. Attempt only 180 questions. Each question carries 4 marks.
2. For each correct response: +4 marks. For each incorrect response: -1 mark. Unattempted: 0 marks.
3. Section A has 35 questions (compulsory). Section B has 15 questions (attempt only 10).
4. Maximum marks: 720. Use Blue/Black ballpoint pen only.

## PHYSICS

### SECTION A

**Q.1. The unit of electric charge is:**

(A) Coulomb
(B) Ampere
(C) Volt
(D) Ohm

**Q.2. Newton's first law defines:**

(A) Inertia
(B) Force
(C) Acceleration
(D) Velocity

**Q.3. A concave mirror of focal length 15 cm forms a real image at 30 cm. Object distance is:**

(A) 30 cm
(B) 15 cm
(C) 60 cm
(D) 45 cm

**Q.4. Which phenomenon is associated with interference of light?**

(A) Thin film colours
(B) Shadow formation
(C) Twinkling of stars
(D) Mirages

**Q.5. The SI unit of pressure is:**

(A) Pascal
(B) Newton
(C) Bar
(D) Atmosphere

**Q.6. Transformer works on principle of:**

(A) Mutual induction

(B) Self-induction
(C) Electromagnetic induction
(D) Electrostatics

**Q.7. Energy of a photon is E = hv. Here h is:**

(A) Planck's constant
(B) Boltzmann constant
(C) Gas constant
(D) Avogadro number

**Q.8. The range of projectile is maximum at angle:**

(A) 45 degrees
(B) 30 degrees
(C) 60 degrees
(D) 90 degrees

**Q.9. The Bohr model applies to:**

(A) Hydrogen-like (one electron) atoms
(B) All atoms
(C) Only hydrogen
(D) Noble gases

**Q.10. In a series circuit, current through all components is:**

(A) Same
(B) Different
(C) Zero
(D) Infinite

**Q.11. A positively charged rod is brought near a neutral conductor. The near end becomes:**

(A) Negatively charged
(B) Positively charged
(C) Neutral
(D) Depends on material

**Q.12. The work done by gravity on a body moving horizontally:**

(A) Zero
(B) mgh
(C) mg
(D) mgh^2

**Q.13. If a spring is compressed by x, potential energy stored is:**

(A) (1/2)kx^2
(B) kx^2
(C) kx
(D) (1/2)kx

**Q.14. A body rotates with constant angular velocity. Its tangential acceleration is:**

(A) Zero

(B) Maximum
(C) Variable
(D) Non-zero

**Q.15. Speed of sound in a gas increases with:**

(A) Temperature
(B) Density
(C) Pressure alone
(D) Molecular mass

**Q.16. Capacitance of a parallel plate capacitor is:**

(A) Proportional to area, inversely to separation
(B) Proportional to separation
(C) Independent of area
(D) Inversely proportional to area

**Q.17. The phenomenon of resonance is used in:**

(A) Radio and TV tuning
(B) Nuclear fission
(C) Photography
(D) Fluorescence

**Q.18. A semiconductor diode in forward bias has:**

(A) Low resistance
(B) High resistance
(C) Infinite resistance
(D) Zero resistance

**Q.19. Two resistance R1 and R2 in parallel. Effective resistance:**

(A) R1*R2/(R1+R2)
(B) R1+R2
(C) (R1+R2)/R1*R2
(D) R1/R2

**Q.20. The critical temperature in superconductivity:**

(A) Temperature below which resistance becomes zero
(B) Temperature above which resistance increases
(C) Melting point
(D) None

**Q.21. Ultrasonic waves have frequency:**

(A) Greater than 20 kHz
(B) Less than 20 Hz
(C) 20-20000 Hz
(D) Exactly 20 kHz

**Q.22. The image in a simple magnifier is:**

(A) Virtual, erect, magnified

(B) Real, inverted, magnified

(C) Virtual, inverted

(D) Real, erect

**Q.23. Bending of light around obstacles is:**

(A) Diffraction

(B) Reflection

(C) Refraction

(D) Dispersion

**Q.24. In a cyclic process, change in internal energy is:**

(A) Zero

(B) Maximum

(C) Equal to work done

(D) Equal to heat added

**Q.25. Nuclear fusion requires:**

(A) Very high temperature

(B) Very low temperature

(C) High pressure only

(D) Catalyst

**Q.26. Ohm's law in vector form is:**

(A) J = sigma*E

(B) J = E/sigma

(C) E = J/sigma

(D) J = sigma/E

**Q.27. The phenomenon of beats occurs when two waves have:**

(A) Slightly different frequencies

(B) Same frequency

(C) Very different frequencies

(D) Same amplitude

**Q.28. Spring-mass system period is T. If mass doubles, new period:**

(A) T*sqrt(2)

(B) 2T

(C) T/sqrt(2)

(D) 4T

**Q.29. Electric flux through closed surface enclosing charge q:**

(A) q/epsilon_0

(B) q*epsilon_0

(C) q/(4*pi*epsilon_0)

(D) 4*pi*q/epsilon_0

**Q.30. Brewster's angle satisfies:**

(A) tan(i_B) = n

(B) sin(i_B) = n

(C) cos(i_B) = n

(D) i_B = n

**Q.31. The forbidden energy gap in insulators is:**

(A) More than 3 eV

(B) Less than 1 eV

(C) About 1 eV

(D) Zero

**Q.32. Terminal velocity of a sphere in viscous fluid depends on:**

(A) r^2 (radius squared)

(B) r^3

(C) r

(D) r^(1/2)

**Q.33. The Heisenberg uncertainty principle states:**

(A) Delta_x * Delta_p >= h/(4*pi)

(B) Delta_x * Delta_p = 0

(C) Exact position and momentum can be measured

(D) None

**Q.34. A body in free fall experiences:**

(A) Weightlessness

(B) Normal weight

(C) Double weight

(D) Variable weight

**Q.35. The coefficient of performance of a refrigerator is:**

(A) Q_L/(Q_H - Q_L)

(B) Q_H/W

(C) W/Q_L

(D) Q_H/Q_L

## SECTION B

**Q.36. In which spectrum does hydrogen emit in visible range?**

(A) Balmer series

(B) Lyman series

(C) Paschen series

(D) Brackett series

**Q.37. Kirchhoff's voltage law is based on:**

(A) Conservation of energy

(B) Conservation of charge

(C) Conservation of momentum

(D) Ohm's law

**Q.38. The image formed by convex mirror is always:**

(A) Virtual, erect, diminished

(B) Real, inverted, diminished

(C) Virtual, erect, magnified

(D) Real, erect

**Q.39. If the frequency of a wave doubles, its wavelength:**

(A) Halves

(B) Doubles

(C) Remains same

(D) Quadruples

**Q.40. Energy in a magnetic field (B) per unit volume is:**

(A) B^2/(2*mu_0)

(B) B^2*mu_0/2

(C) B/(2*mu_0)

(D) B^2*2*mu_0

**Q.41. The principle of superposition for electric fields:**

(A) Vector addition of individual fields

(B) Scalar addition

(C) Maximum field dominates

(D) Fields cancel

**Q.42. Moment of inertia of hollow cylinder (radius R, mass M) about axis:**

(A) MR^2

(B) MR^2/2

(C) 2MR^2/3

(D) MR^2/3

**Q.43. Nuclear isomers have same:**

(A) A and Z but different energy states

(B) Different A

(C) Different Z

(D) None

**Q.44. For total internal reflection, angle must be:**

(A) Greater than critical angle

(B) Less than critical angle

(C) Equal to critical angle

(D) 90 degrees

**Q.45. The p-n junction when reverse biased:**

(A) Acts as open switch

(B) Conducts freely

(C) Breaks down always

(D) Acts as short circuit

**Q.46. A wave with phase velocity v_p and group velocity v_g; for non-dispersive medium:**

(A) $v_p = v_g$

(B) $v_p > v_g$

(C) $v_p < v_g$

(D) They are unrelated

**Q.47. An astronaut in orbiting spacecraft feels:**

(A) Weightlessness (apparent)

(B) Full weight

(C) Half weight

(D) Double weight

**Q.48. The path of electron in cyclotron is:**

(A) Circular/spiral

(B) Straight line

(C) Parabolic

(D) Elliptical

**Q.49. Ferromagnetic materials above Curie temperature become:**

(A) Paramagnetic

(B) Diamagnetic

(C) Antiferromagnetic

(D) More ferromagnetic

**Q.50. The velocity of EM waves in free space is:**

(A) 3 x 10^8 m/s

(B) 3 x 10^6 m/s

(C) 3 x 10^10 m/s

(D) 3 x 10^4 m/s

## CHEMISTRY

### SECTION A

**Q.51. The element with atomic number 20 is:**

(A) Ca (Calcium)

(B) Ar (Argon)

(C) K (Potassium)

(D) Sc (Scandium)

**Q.52. Which of the following has maximum covalent character?**

(A) $AlCl_3$

(B) NaCl

(C) KCl

(D) $CaCl_2$

**Q.53. The reaction: $N_2 + 3H_2 \rightarrow 2NH_3$ is the:**

(A) Haber process

(B) Ostwald process

(C) Contact process
(D) Frasch process

**Q.54. Hybridisation of carbon in CO2:**

(A) sp
(B) sp2
(C) sp3
(D) sp3d

**Q.55. The IUPAC name of CH3COCH2CH3 is:**

(A) Butan-2-one
(B) 2-butanone
(C) Methyl ethyl ketone
(D) Butanone

**Q.56. Denaturation of protein results in:**

(A) Loss of secondary and tertiary structure
(B) Hydrolysis of peptide bonds
(C) Change in amino acid sequence
(D) All of these

**Q.57. Which acid is present in vinegar?**

(A) Acetic acid
(B) Citric acid
(C) Lactic acid
(D) Tartaric acid

**Q.58. The pH of pure water at 25 degrees C is:**

(A) 7
(B) 6
(C) 8
(D) 14

**Q.59. The common name of sodium bicarbonate is:**

(A) Baking soda
(B) Washing soda
(C) Bleaching powder
(D) Lime

**Q.60. The allotrope of carbon used as lubricant is:**

(A) Graphite
(B) Diamond
(C) Fullerene
(D) Carbon black

**Q.61. Borazine has formula:**

(A) B3N3H6
(B) B2N2H4

(C) BNH3
(D) BNH2

**Q.62. The hybridization of Xe in XeF4 is:**

(A) sp3d2
(B) sp3d
(C) sp3
(D) sp2

**Q.63. Trans-fatty acids result from:**

(A) Partial hydrogenation of vegetable oils
(B) Complete hydrogenation
(C) Oxidation
(D) Esterification

**Q.64. Rosenmund reduction converts acyl chloride to:**

(A) Aldehyde
(B) Alcohol
(C) Ketone
(D) Acid

**Q.65. Electronic configuration of Cu (Z=29) is:**

(A) [Ar]3d10 4s1
(B) [Ar]3d9 4s2
(C) [Ar]3d8 4s2
(D) [Ar]3d10

**Q.66. The order of reaction is determined experimentally by:**

(A) Varying concentrations systematically
(B) Measuring temperature
(C) Measuring pressure
(D) Using catalyst

**Q.67. Which type of isomerism is shown by [Co(NH3)5Br]SO4 and [Co(NH3)5SO4]Br?**

(A) Ionization isomerism
(B) Geometrical
(C) Optical
(D) Linkage

**Q.68. Bleaching powder is used as:**

(A) Disinfectant and bleaching agent
(B) Drying agent
(C) Reducing agent
(D) Antacid

**Q.69. SN1 reaction is favored by:**

(A) Tertiary substrate in polar protic solvent
(B) Primary substrate

(C) Strong nucleophile
(D) Polar aprotic solvent

**Q.70. Biuret test is positive for:**

(A) Proteins (two or more peptide bonds)
(B) Glucose
(C) Starch
(D) Lipids

**Q.71. Which process converts ethyne to benzene?**

(A) Trimerization (cyclic polymerization)
(B) Hydrogenation
(C) Halogenation
(D) Reduction

**Q.72. Buffer solution resists changes in:**

(A) pH
(B) Concentration
(C) Temperature
(D) Volume

**Q.73. Magnus green salt has formula:**

(A) [Pt(NH3)4][PtCl4]
(B) [PtCl4]^2-
(C) [Pt(NH3)4]^2+
(D) PtCl4

**Q.74. The coagulation of colloids by electrolytes follows:**

(A) Hardy-Schulze rule
(B) Raoult's law
(C) Dalton's law
(D) Henry's law

**Q.75. Carbohydrates are optically active due to:**

(A) Presence of asymmetric carbon
(B) Presence of OH groups
(C) Presence of CHO
(D) Cyclic structure

**Q.76. Nitrogen mustards are used as:**

(A) Anti-cancer drugs
(B) Anaesthetics
(C) Analgesics
(D) Antibiotics

**Q.77. The anhydride of H2SO4 is:**

(A) SO3
(B) SO2

(C) $H_2S$
(D) $H_2SO_3$

**Q.78. Which of these is NOT a semiconductor?**

(A) NaCl (ionic crystal)
(B) Si
(C) Ge
(D) GaAs

**Q.79. Inert gas configuration is achieved by:**

(A) Noble gas electron configuration
(B) Ionic charge
(C) Covalent bond
(D) Metallic bond

**Q.80. Claisen condensation gives:**

(A) Beta-keto ester from ester
(B) Aldol product
(C) Ketone from alcohol
(D) Acid from ester

**Q.81. The colour of flame given by copper salts is:**

(A) Blue-green
(B) Yellow
(C) Brick red
(D) Violet

**Q.82. Froth flotation depends on:**

(A) Surface properties of minerals
(B) Density difference
(C) Magnetic property
(D) Solubility

**Q.83. Proton NMR chemical shift is measured relative to:**

(A) TMS (Tetramethylsilane)
(B) Water
(C) Benzene
(D) $CDCl_3$

**Q.84. The reagent $OsO_4$ is used for:**

(A) Syn dihydroxylation of alkenes
(B) Epoxidation
(C) Ozonolysis
(D) Bromination

**Q.85. Zwitter ion is a form of:**

(A) Amino acid with both positive and negative charges
(B) Inorganic salt

(C) Metal complex

(D) Polymer

## SECTION B

**Q.86. Which vitamin is produced by intestinal bacteria?**

(A) Vitamin K

(B) Vitamin B12

(C) Vitamin D

(D) Vitamin C

**Q.87. Protein denaturation is reversible in:**

(A) Mild conditions (urea removal)

(B) All conditions

(C) Heat treatment

(D) Strong acid treatment

**Q.88. The most common type of RNA in cell is:**

(A) rRNA (ribosomal)

(B) mRNA

(C) tRNA

(D) snRNA

**Q.89. Anti-Markovnikov addition to alkene requires:**

(A) HBr with peroxide (free radical)

(B) HBr without peroxide

(C) $H_2SO_4$

(D) HCl

**Q.90. Flocculation is precipitation of:**

(A) Colloid by electrolyte

(B) True solution

(C) Suspension

(D) Gel

**Q.91. Lindlar's catalyst reduces alkynes to:**

(A) cis-alkene

(B) trans-alkene

(C) Alkane

(D) Alcohol

**Q.92. The phenomenon of chemisorption is:**

(A) Irreversible and specific monolayer

(B) Reversible and multilayer

(C) Physical only

(D) None

**Q.93. Chirality requires absence of:**

(A) Plane of symmetry

(B) Double bonds
(C) Rings
(D) Hydrogen

**Q.94. The Ellingham diagram is used to predict:**

(A) Feasibility of reduction of metal oxides
(B) Rate of reaction
(C) Equilibrium constant
(D) Entropy change

**Q.95. Aspirin is:**

(A) Acetylsalicylic acid
(B) Salicylic acid
(C) Paracetamol
(D) Ibuprofen

**Q.96. Gabriel phthalimide synthesis is used to prepare:**

(A) Primary amines
(B) Secondary amines
(C) Tertiary amines
(D) Quaternary salts

**Q.97. Borax bead test identifies:**

(A) Transition metal ions (by bead colour)
(B) Non-metals
(C) Anions
(D) Organic compounds

**Q.98. Pinacol rearrangement involves:**

(A) Diol to ketone with 1,2-shift
(B) Diol to aldehyde
(C) Ketone to ester
(D) Ester to ketone

**Q.99. The dipole moment of $CO_2$ is:**

(A) Zero (linear molecule)
(B) Non-zero
(C) Maximum
(D) Variable

**Q.100. Alums have general formula:**

(A) $M^+M^{3+}(SO_4)_2.12H_2O$
(B) $M_2SO_4.Al_2(SO_4)_3$
(C) $MSO_4.Al(OH)_3$
(D) $M(AlO_2)_2$

## BOTANY

## SECTION A

**Q.101. Respiration in plants occurs:**

(A) In all living cells continuously
(B) Only in leaves
(C) Only at night
(D) Only in roots

**Q.102. The green colour of plants is due to:**

(A) Chlorophyll
(B) Carotenoids
(C) Anthocyanins
(D) Xanthophylls

**Q.103. The process of uptake of mineral salts against concentration gradient requires:**

(A) Active transport (ATP)
(B) Passive diffusion
(C) Osmosis
(D) Facilitated diffusion

**Q.104. Turgor pressure is maximum in:**

(A) Fully turgid cell
(B) Plasmolysed cell
(C) Wilted cell
(D) Dead cell

**Q.105. The zygote divides to form:**

(A) Embryo
(B) Endosperm
(C) Seed coat
(D) Fruit

**Q.106. Apical dominance is due to:**

(A) Auxin produced at apex
(B) Gibberellin
(C) Cytokinin
(D) ABA

**Q.107. Which tissue is responsible for secondary growth?**

(A) Cambium (lateral meristem)
(B) Apical meristem
(C) Intercalary meristem
(D) Cork

**Q.108. In which organelle does oxidative phosphorylation occur?**

(A) Mitochondria
(B) Chloroplast
(C) Lysosome
(D) Peroxisome

**Q.109. Plant cell is distinguished from animal cell by:**

(A) Cell wall and chloroplast
(B) Mitochondria
(C) Nucleus
(D) Ribosome

**Q.110. Vernalization occurs in:**

(A) Winter crops (wheat, barley)
(B) Summer crops
(C) Tropical plants
(D) Desert plants

**Q.111. Vascular bundle in monocot stem is:**

(A) Scattered
(B) In a ring
(C) In two rings
(D) Absent

**Q.112. Movement of water from one cell to another by osmosis is called:**

(A) Symplastic/apoplastic pathway (osmosis)
(B) Active transport
(C) Bulk flow
(D) Diffusion

**Q.113. The 'n' generation is called:**

(A) Gametophyte
(B) Sporophyte
(C) Protonema
(D) Thallus

**Q.114. Abscisic acid causes:**

(A) Stomatal closure and leaf abscission
(B) Stem elongation
(C) Root initiation
(D) Fruit development

**Q.115. DNA polymerase synthesizes DNA in:**

(A) 5' to 3' direction
(B) 3' to 5' direction
(C) Both directions
(D) Any direction

**Q.116. Bioenergy from biogas is a form of:**

(A) Renewable energy
(B) Non-renewable energy
(C) Nuclear energy
(D) Solar energy

**Q.117. Which element is part of chlorophyll?**

(A) Magnesium
(B) Iron
(C) Copper
(D) Zinc

**Q.118. The number of ATP produced per glucose in aerobic respiration is approximately:**

(A) 36-38
(B) 2
(C) 12
(D) 18

**Q.119. A test cross is used to determine:**

(A) Genotype of dominant phenotype
(B) Phenotype
(C) Mutation rate
(D) Linkage map

**Q.120. Interspecific hybridization is crossing between:**

(A) Different species
(B) Same species
(C) Same variety
(D) Related genera

**Q.121. Bark of stem is formed by:**

(A) Phellogen (cork cambium)
(B) Vascular cambium
(C) Epidermis
(D) Cortex

**Q.122. Microsporogenesis produces:**

(A) Pollen grains (microspores)
(B) Megaspores
(C) Ovules
(D) Seeds

**Q.123. The Krebs cycle produces per turn:**

(A) 3 NADH, 1 $FADH_2$, 1 GTP, 2 $CO_2$
(B) 2 NADH, 2 ATP
(C) 4 ATP
(D) 6 $CO_2$

**Q.124. Gene flow between populations occurs by:**

(A) Migration
(B) Mutation
(C) Genetic drift
(D) Selection

**Q.125. Clonal selection theory explains:**

(A) Immune response specificity
(B) Enzyme specificity
(C) Hormone action
(D) Gene expression

**Q.126. Petiole connects leaf blade to:**

(A) Stem (node)
(B) Root
(C) Other leaves
(D) Flower

**Q.127. Embryogenesis in plants is studied by:**

(A) Embryology
(B) Taxonomy
(C) Ecology
(D) Anatomy

**Q.128. Which process produces haploid cells?**

(A) Meiosis
(B) Mitosis
(C) Amitosis
(D) Endomitosis

**Q.129. Photoinhibition occurs when:**

(A) Light exceeds photosynthetic capacity
(B) Light is insufficient
(C) Temperature is low
(D) $CO_2$ is absent

**Q.130. The term gene was coined by:**

(A) Johannsen
(B) Mendel
(C) Morgan
(D) De Vries

**Q.131. Companion cells are associated with:**

(A) Sieve tubes in phloem
(B) Xylem vessels
(C) Tracheids
(D) Fibres

**Q.132. Photoperiodism in short-day plants requires:**

(A) Long continuous dark period
(B) Short dark period
(C) Continuous light
(D) Temperature change

**Q.133. Which is used as biofertilizer?**

(A) Rhizobium
(B) E.coli
(C) Salmonella
(D) Pseudomonas

**Q.134. Desert plants show:**

(A) Thick cuticle and water storage
(B) Thin leaves
(C) No roots
(D) High transpiration

**Q.135. Nucleosome is composed of:**

(A) DNA wound around histone octamer
(B) RNA and protein
(C) DNA only
(D) Protein only

## SECTION B

**Q.136. The Hardy-Weinberg principle applies when:**

(A) No selection, mutation, migration or drift
(B) Selection occurs
(C) Mutation is frequent
(D) Population is small

**Q.137. Totipotency of plant cells was demonstrated by:**

(A) F.C.Steward (carrot phloem cells)
(B) Darwin
(C) Mendel
(D) Flemming

**Q.138. Bt crops are resistant to:**

(A) Insect pests
(B) Viral diseases
(C) Fungal infections
(D) Drought

**Q.139. DNA barcoding uses:**

(A) Specific gene sequences to identify species
(B) Protein analysis
(C) Morphology
(D) Behaviour

**Q.140. Gene silencing by dsRNA is called:**

(A) RNAi (RNA interference)
(B) Antisense
(C) Ribozyme
(D) CRISPR

**Q.141. The vector used in gene therapy includes:**

(A) Viral vectors (retroviruses, adenoviruses)
(B) Plasmids only
(C) Cosmids only
(D) None

**Q.142. SCID (Severe Combined Immunodeficiency) was treated by:**

(A) ADA gene therapy
(B) Bone marrow transplant only
(C) Antibiotics
(D) Vitamins

**Q.143. Bioprospecting involves:**

(A) Discovering new useful species from biodiversity
(B) Mining
(C) Agriculture
(D) Fishing

**Q.144. In-vitro fertilization produces:**

(A) Test tube baby
(B) Cloned baby
(C) Surrogate baby
(D) Transgenic baby

**Q.145. The nitrogen base absent in RNA is:**

(A) Thymine
(B) Adenine
(C) Guanine
(D) Cytosine

**Q.146. Which type of RNA carries amino acids to ribosome?**

(A) tRNA
(B) mRNA
(C) rRNA
(D) hnRNA

**Q.147. Chromosomal theory of heredity was proposed by:**

(A) Sutton and Boveri
(B) Morgan
(C) Mendel
(D) De Vries

**Q.148. An exon is a:**

(A) Coding sequence in eukaryotic gene
(B) Non-coding sequence
(C) Intron
(D) Promoter region

**Q.149. Chromatin remodeling involves:**

(A) Modification of histones (acetylation etc.)
(B) DNA sequence change
(C) RNA degradation
(D) Protein synthesis

**Q.150. Gene amplification in cancer often involves:**

(A) Proto-oncogene duplication
(B) Tumor suppressor activation
(C) DNA repair
(D) Apoptosis

## ZOOLOGY

### SECTION A

**Q.151. Which enzyme converts angiotensinogen to angiotensin I?**

(A) Renin
(B) ACE
(C) Aldosterone
(D) Pepsin

**Q.152. The cerebellum controls:**

(A) Balance and coordination
(B) Intelligence
(C) Memory
(D) Emotions

**Q.153. Rods and cones are found in:**

(A) Retina
(B) Cornea
(C) Iris
(D) Lens

**Q.154. The site of sperm capacitation is:**

(A) Female reproductive tract
(B) Testis
(C) Epididymis
(D) Seminal vesicle

**Q.155. Heparin is secreted by:**

(A) Mast cells and basophils
(B) Liver
(C) Platelets
(D) Red cells

**Q.156. The glomerular filtration rate (GFR) in humans is approximately:**

(A) 125 mL/min

(B) 1 L/min
(C) 10 mL/min
(D) 500 mL/min

**Q.157. Which receptor detects sound frequency?**

(A) Hair cells in organ of Corti
(B) Rods
(C) Cones
(D) Olfactory receptors

**Q.158. The Rh factor was discovered by:**

(A) Karl Landsteiner and Wiener
(B) Landsteiner alone
(C) Watson
(D) Crick

**Q.159. Thyrotropin releasing hormone (TRH) is produced by:**

(A) Hypothalamus
(B) Anterior pituitary
(C) Thyroid
(D) Liver

**Q.160. Anucleate cells include:**

(A) RBCs and platelets
(B) WBCs
(C) Neurons
(D) Muscle cells

**Q.161. Albumin maintains:**

(A) Blood osmotic pressure
(B) Blood clotting
(C) Immunity
(D) Gas transport

**Q.162. Which part of brain is associated with memory?**

(A) Hippocampus
(B) Cerebellum
(C) Medulla
(D) Thalamus

**Q.163. Bilirubin is produced from:**

(A) Haemoglobin degradation
(B) Protein synthesis
(C) Fat metabolism
(D) Carbohydrate metabolism

**Q.164. The vas deferens carries:**

(A) Sperm from epididymis to urethra

(B) Urine
(C) Seminal fluid
(D) Sperm from testis to epididymis

**Q.165. Down feathers in birds are for:**

(A) Insulation
(B) Flight
(C) Waterproofing
(D) Display

**Q.166. The complement system is part of:**

(A) Innate immunity
(B) Adaptive immunity
(C) Both
(D) Neither

**Q.167. Type I hypersensitivity (allergy) is mediated by:**

(A) IgE
(B) IgG
(C) IgM
(D) IgA

**Q.168. Which structure prevents backflow of blood in heart?**

(A) Valves (AV and semilunar)
(B) Chordae tendineae
(C) Papillary muscles
(D) Coronary arteries

**Q.169. The diaphragm is involved in:**

(A) Breathing (inspiration/expiration)
(B) Digestion
(C) Circulation
(D) Excretion

**Q.170. Calcitriol (active Vitamin D) is produced in:**

(A) Kidney
(B) Liver
(C) Skin
(D) Bone

**Q.171. The longest nerve in human body is:**

(A) Sciatic nerve
(B) Femoral nerve
(C) Vagus nerve
(D) Optic nerve

**Q.172. Sleep is regulated by:**

(A) Melatonin from pineal gland

(B) Cortisol
(C) Insulin
(D) Glucagon

**Q.173. Cretinism is caused by:**

(A) Hypothyroidism in infants
(B) Hyperthyroidism
(C) Diabetes
(D) Obesity

**Q.174. The immune cell that presents antigen to T-cells is:**

(A) Dendritic cell (APC)
(B) B-cell
(C) NK cell
(D) Mast cell

**Q.175. Myoglobin stores:**

(A) Oxygen in muscle
(B) Iron in liver
(C) Glucose in muscle
(D) Calcium in bone

**Q.176. Gap junctions allow:**

(A) Direct cytoplasmic communication between cells
(B) Mechanical cell-cell adhesion
(C) Signal transduction only
(D) Nutrient transport only

**Q.177. Which organ is responsible for extra uterine hematopoiesis in fetus?**

(A) Liver (and spleen)
(B) Bone marrow only
(C) Thymus
(D) Lymph nodes

**Q.178. Exhalation is:**

(A) Passive process (elastic recoil)
(B) Active process
(C) Requires muscle contraction only
(D) Controlled by cerebellum

**Q.179. Smooth muscle is found in:**

(A) Walls of hollow organs (gut, bladder)
(B) Heart
(C) Skeletal muscles
(D) Tendons

**Q.180. The juxtaglomerular apparatus secretes:**

(A) Renin

(B) Erythropoietin
(C) ADH
(D) Aldosterone

**Q.181. Interferon is produced by:**

(A) Virus-infected cells
(B) B-cells
(C) T-cells
(D) Macrophages

**Q.182. Testosterone is produced by:**

(A) Leydig cells of testis
(B) Sertoli cells
(C) Seminiferous tubules
(D) Prostate

**Q.183. The enzyme pepsin is activated by:**

(A) HCl (converts pepsinogen to pepsin)
(B) Bile
(C) Trypsin
(D) Amylase

**Q.184. Hemolytic disease of newborn is caused by:**

(A) Rh incompatibility
(B) ABO incompatibility
(C) Both
(D) Viral infection

**Q.185. The largest lymphoid organ is:**

(A) Spleen
(B) Thymus
(C) Lymph node
(D) Tonsils

## SECTION B

**Q.186. Parthenogenesis occurs in:**

(A) Unfertilized egg develops into organism
(B) Fertilized egg
(C) Both sexes
(D) Only males

**Q.187. Which type of cartilage is found in intervertebral discs?**

(A) Fibrocartilage
(B) Hyaline cartilage
(C) Elastic cartilage
(D) All types

**Q.188. Erythropoiesis is stimulated by:**

(A) Erythropoietin (EPO)
(B) Thrombopoietin
(C) G-CSF
(D) CSF

**Q.189. The zona fasciculata of adrenal cortex secretes:**

(A) Glucocorticoids (cortisol)
(B) Mineralocorticoids
(C) Sex hormones
(D) Epinephrine

**Q.190. Epinephrine (adrenaline) is produced by:**

(A) Adrenal medulla
(B) Adrenal cortex
(C) Thyroid
(D) Pancreas

**Q.191. Anaphylaxis is a severe form of:**

(A) Type I hypersensitivity (allergy)
(B) Autoimmune disease
(C) Immunodeficiency
(D) Infection

**Q.192. Genetic recombination contributes to:**

(A) Variation in offspring
(B) Identical offspring
(C) Cloning
(D) Parthenogenesis

**Q.193. The clonal deletion theory explains:**

(A) Self-tolerance (autoimmune prevention)
(B) Antibody diversity
(C) T-cell activation
(D) B-cell memory

**Q.194. Hemoglobin's oxygen-binding follows:**

(A) Sigmoidal curve (cooperative binding)
(B) Hyperbolic curve
(C) Linear curve
(D) Exponential curve

**Q.195. Temperature regulation centre is:**

(A) Hypothalamus
(B) Cerebral cortex
(C) Cerebellum
(D) Brainstem

**Q.196. The 2,3-BPG binds hemoglobin and:**

(A) Decreases oxygen affinity (promotes $O_2$ release)
(B) Increases oxygen affinity
(C) Denatures hemoglobin
(D) Converts to $HbO_2$

**Q.197. Osteoclasts are responsible for:**

(A) Bone resorption
(B) Bone formation
(C) Cartilage formation
(D) Muscle contraction

**Q.198. The aqueous humor fills:**

(A) Anterior chamber of eye
(B) Posterior chamber
(C) Vitreous chamber
(D) Optic canal

**Q.199. Micturition reflex is controlled by:**

(A) Spinal cord (S2-S4) and brain
(B) Only brain
(C) Only spinal cord
(D) Peripheral nerves only

**Q.200. Which enzyme is elevated in myocardial infarction?**

(A) Troponin I and CK-MB
(B) Amylase
(C) Lipase
(D) ALT

# ANSWER KEY — SQP-4

## Physics

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1.** (a) | **2.** (a) | **3.** (a) | **4.** (a) | **5.** (a) | **6.** (a) | **7.** (a) | **8.** (a) |
| **9.** (a) | **10.** (a) | **11.** (a) | **12.** (a) | **13.** (a) | **14.** (a) | **15.** (a) | **16.** (a) |
| **17.** (a) | **18.** (a) | **19.** (a) | **20.** (a) | **21.** (a) | **22.** (a) | **23.** (a) | **24.** (a) |
| **25.** (a) | **26.** (a) | **27.** (a) | **28.** (a) | **29.** (a) | **30.** (a) | **31.** (a) | **32.** (a) |
| **33.** (a) | **34.** (a) | **35.** (a) | **36.** (a) | **37.** (a) | **38.** (a) | **39.** (a) | **40.** (a) |
| **41.** (a) | **42.** (a) | **43.** (a) | **44.** (a) | **45.** (a) | **46.** (a) | **47.** (a) | **48.** (a) |
| **49.** (a) | **50.** (a) | | | | | | |

## Chemistry

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **51.** (a) | **52.** (a) | **53.** (a) | **54.** (a) | **55.** (a) | **56.** (a) | **57.** (a) | **58.** (a) |
| **59.** (a) | **60.** (a) | **61.** (a) | **62.** (a) | **63.** (a) | **64.** (a) | **65.** (a) | **66.** (a) |
| **67.** (a) | **68.** (a) | **69.** (a) | **70.** (a) | **71.** (a) | **72.** (a) | **73.** (a) | **74.** (a) |
| **75.** (a) | **76.** (a) | **77.** (a) | **78.** (a) | **79.** (a) | **80.** (a) | **81.** (a) | **82.** (a) |
| **83.** (a) | **84.** (a) | **85.** (a) | **86.** (a) | **87.** (a) | **88.** (a) | **89.** (a) | **90.** (a) |
| **91.** (a) | **92.** (a) | **93.** (a) | **94.** (a) | **95.** (a) | **96.** (a) | **97.** (a) | **98.** (a) |
| **99.** (a) | **100.** (a) | | | | | | |

## Botany

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **101.** (a) | **102.** (a) | **103.** (a) | **104.** (a) | **105.** (a) | **106.** (a) | **107.** (a) | **108.** (a) |
| **109.** (a) | **110.** (a) | **111.** (a) | **112.** (a) | **113.** (a) | **114.** (a) | **115.** (a) | **116.** (a) |
| **117.** (a) | **118.** (a) | **119.** (a) | **120.** (a) | **121.** (a) | **122.** (a) | **123.** (a) | **124.** (a) |
| **125.** (a) | **126.** (a) | **127.** (a) | **128.** (a) | **129.** (a) | **130.** (a) | **131.** (a) | **132.** (a) |
| **133.** (a) | **134.** (a) | **135.** (a) | **136.** (a) | **137.** (a) | **138.** (a) | **139.** (a) | **140.** (a) |
| **141.** (a) | **142.** (a) | **143.** (a) | **144.** (a) | **145.** (a) | **146.** (a) | **147.** (a) | **148.** (a) |
| **149.** (a) | **150.** (a) | | | | | | |

## Zoology

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|---|---|---|---|---|---|---|---|
| **151.** (a) | **152.** (a) | **153.** (a) | **154.** (a) | **155.** (a) | **156.** (a) | **157.** (a) | **158.** (a) |
| **159.** (a) | **160.** (a) | **161.** (a) | **162.** (a) | **163.** (a) | **164.** (a) | **165.** (a) | **166.** (a) |
| **167.** (a) | **168.** (a) | **169.** (a) | **170.** (a) | **171.** (a) | **172.** (a) | **173.** (a) | **174.** (a) |
| **175.** (a) | **176.** (a) | **177.** (a) | **178.** (a) | **179.** (a) | **180.** (a) | **181.** (a) | **182.** (a) |
| **183.** (a) | **184.** (a) | **185.** (a) | **186.** (a) | **187.** (a) | **188.** (a) | **189.** (a) | **190.** (a) |
| **191.** (a) | **192.** (a) | **193.** (a) | **194.** (a) | **195.** (a) | **196.** (a) | **197.** (a) | **198.** (a) |
| **199.** (a) | **200.** (a) | | | | | | |