

PGIMER B.SC NURSING SAMPLE PAPER 03

A) Time Allowed: 1 Hour 30 Minutes.

B) Maximum Marks: 100

C) Total Questions: 100

General Instructions:

- This question paper consists of five sections: Physics, Chemistry, Biology, English, and General Knowledge.
- Each section contains objective type questions with four multiple-choice options (A, B, C, D).
- +1 mark is awarded for each correct answer and 0.25 marks are deducted for each wrong answer.
- The question paper is available in English language only.

SECTION 1 - BIOLOGY

- Q1. In human eyes, the clear, watery fluid that fills the space between the cornea and the crystalline lens is known as—
- (a) Vitreous humor
 - (b) Aqueous humor
 - (c) Synovial fluid
 - (d) Endolymph
- Q2. Which among the following cranial nerves is primarily responsible for regulating the heart rate and gastrointestinal tract activity?
- (a) Oculomotor nerve
 - (b) Trigeminal nerve
 - (c) Vagus nerve
 - (d) Abducens nerve
- Q3. The cellular organelle fundamentally responsible for initiating and regulating cell division in animal cells by organizing spindle fibers is the—
- (a) Centrosome
 - (b) Lysosome
 - (c) Peroxisome
 - (d) Glyoxysome
- Q4. Which specialized structural tissue connects bone to another bone across a typical skeletal joint?
- (a) Tendon
 - (b) Ligament
 - (c) Cartilage
 - (d) Adipose tissue
- Q5. During the dark reaction (light-independent phase) of photosynthesis in C_3 plants, which molecule acts as the primary acceptor of Carbon dioxide (CO_2)?
- (a) Phosphoenolpyruvate (PEP)
 - (b) Ribulose-1,5-bisphosphate (RuBP)
 - (c) Oxaloacetic acid (OAA)
 - (d) 3-phosphoglyceric acid (PGA)
- Q6. The structural unit of the human kidney where blood filtration occurs under high hydrostatic pressure is the—

- (a) Henle's loop
 - (b) Collecting duct
 - (c) Malpighian corpuscle (Bowman's capsule and Glomerulus)
 - (d) Distal convoluted tubule
- Q7. Which hormone is directly responsible for stimulating the contraction of uterine muscles during childbirth and promoting milk ejection?
- (a) Prolactin
 - (b) Progesterone
 - (c) Oxytocin
 - (d) Estrogen
- Q8. The enzyme salivary amylase, present in human saliva, initiates the chemical digestion of which nutrient group within the oral cavity?
- (a) Complex proteins
 - (b) Emulsified fats
 - (c) Starches (Carbohydrates)
 - (d) Nucleic acids
- Q9. Which cell type present inside the gastric glands of the stomach wall is specifically responsible for secreting intrinsic factor and Hydrochloric acid (HCl)?
- (a) Peptic cells
 - (b) Oxyntic (Parietal) cells
 - (c) Mucus neck cells
 - (d) G-cells
- Q10. The biological process of converting atmospheric toxic ammonia into highly soluble urea takes place inside which primary organ?
- (a) Spleen
 - (b) Kidneys
 - (c) Liver
 - (d) Pancreas
- Q11. Which blood vessel carries deoxygenated blood away from the right ventricle of the heart into the lung tissue?
- (a) Pulmonary vein
 - (b) Aorta
 - (c) Pulmonary artery
 - (d) Superior vena cava

- Q12. What structural feature prevents the backward flow of blood from the left ventricle into the left atrium of the human heart?
- (a) Tricuspid valve
 - (b) Bicuspid (Mitral) valve
 - (c) Aortic semilunar valve
 - (d) Eustachian valve
- Q13. The structural and functional component of mammalian lungs where the exchange of respiratory gases occurs across a thin membrane is the—
- (a) Bronchiole
 - (b) Trachea
 - (c) Alveolus
 - (d) Bronchus
- Q14. Which immunizing cell type is directly targeted and systematically destroyed by the Human Immunodeficiency Virus (HIV)?
- (a) B-lymphocytes
 - (b) Cytotoxic T-cells
 - (c) Helper T-lymphocytes ($CD4^+$ cells)
 - (d) Natural Killer cells
- Q15. The highly contagious human disease known as "Kala-azar" (Visceral leishmaniasis) is biologically transmitted to humans through the bite of infected—
- (a) Tse-tse flies
 - (b) Sandflies
 - (c) Anopheles mosquitoes
 - (d) Blackflies
- Q16. Which specific vitamin serves as a crucial coenzyme precursor for blood coagulation factors like Prothrombin?
- (a) Vitamin E
 - (b) Vitamin K
 - (c) Vitamin C
 - (d) Vitamin B12
- Q17. The genetic condition Down syndrome is caused due to a chromosomal aberration classified as—
- (a) Monosomy of chromosome 21
 - (b) Trisomy of chromosome 21

- (c) Nullisomy of chromosome 18
 - (d) Trisomy of chromosome 13
- Q18. Which plant hormone functions predominantly as a growth inhibitor and triggers the closure of stomata during severe drought conditions?
- (a) Gibberellin
 - (b) Abscissic acid
 - (c) Cytokinin
 - (d) Auxin
- Q19. The process of transcription during protein synthesis involves the systematic copying of genetic code from—
- (a) DNA into an mRNA molecule
 - (b) mRNA into a tRNA molecule
 - (c) tRNA into an amino acid sequence
 - (d) DNA directly into a protein chain
- Q20. Which layer of the human skin is completely devoid of any direct blood vessels or capillaries?
- (a) Dermis
 - (b) Epidermis
 - (c) Subcutaneous adipose layer
 - (d) Hypodermis
- Q21. The metabolic process of glycolysis, which breaks down glucose into pyruvic acid during respiration, occurs entirely within which cell compartment?
- (a) Mitochondrial matrix
 - (b) Cytoplasm
 - (c) Ribosomal surface
 - (d) Inner mitochondrial membrane
- Q22. Which specific joint type permits maximum freedom of movement and angular rotation, such as seen at the human shoulder and hip?
- (a) Hinge joint
 - (b) Pivot joint
 - (c) Ball and socket joint
 - (d) Gliding joint
- Q23. The condition of "Gout" in humans is characterized by the painful inflammation of joints caused by the abnormal deposition of—

- (a) Calcium oxalate crystals
- (b) Cholesterol crystals
- (c) Uric acid crystals
- (d) Calcium carbonate complexes

Q24. Which structural part of the human brain is the primary integration center for maintaining physical posture, muscle tone, and body equilibrium?

- (a) Cerebrum
- (b) Medulla oblongata
- (c) Cerebellum
- (d) Hypothalamus

Q25. The specialized connective tissue sheath that forms an insulating layer around the axon of many neurons to accelerate nerve impulse transmission is called the—

- (a) Sarcolemma
- (b) Myelin sheath
- (c) Neurolemma
- (d) Dendritic spine

SECTION 2 - CHEMISTRY

- Q26. Which of the following electronic configurations represents the element with the highest second ionization enthalpy?
- (a) $1s^2 2s^2 2p^6 3s^1$
 - (b) $1s^2 2s^2 2p^6 3s^2$
 - (c) $1s^2 2s^2 2p^6$
 - (d) $1s^2 2s^2 2p^5$
- Q27. The geometric shape and the hybridization of the central sulfur atom in Sulfur hexafluoride (SF_6) are respectively—
- (a) Trigonal bipyramidal, sp^3d
 - (b) Octahedral, sp^3d^2
 - (c) Tetrahedral, sp^3
 - (d) Distorted tetrahedral, sp^3d
- Q28. What is the total number of σ (sigma) and π (pi) bonds present in a single molecule of tetracyanoethylene, $C_2(CN)_4$?
- (a) 9 σ and 9 π
 - (b) 5 σ and 9 π
 - (c) 9 σ and 7 π
 - (d) 5 σ and 8 π
- Q29. According to Molecular Orbital Theory, which of the following homonuclear diatomic species is unstable and cannot exist due to a bond order of zero?
- (a) H_2^+
 - (b) He_2
 - (c) B_2
 - (d) Li_2
- Q30. Equal masses of Methane (CH_4) and Oxygen (O_2) gases are mixed in an empty container at $25^\circ C$. What fraction of the total pressure is exerted by Oxygen gas?
- (a) $1/3$
 - (b) $1/2$
 - (c) $2/3$
 - (d) $1/9$
- Q31. Under what set of physical conditions does a real gas behave most like an ideal gas?
- (a) High pressure and low temperature

- (b) Low pressure and high temperature
(c) High pressure and high temperature
(d) Low pressure and low temperature
- Q32. For a chemical reaction to be spontaneous at all temperatures under constant pressure, the thermodynamic parameters must satisfy which condition?
- (a) $\Delta H > 0$ and $\Delta S > 0$
(b) $\Delta H < 0$ and $\Delta S < 0$
(c) $\Delta H < 0$ and $\Delta S > 0$
(d) $\Delta H > 0$ and $\Delta S < 0$
- Q33. The conjugate base of the bisulfate ion (HSO_4^-) is—
- (a) H_2SO_4
(b) SO_4^{2-}
(c) SO_3^{2-}
(d) OH^-
- Q34. If the solubility product constant (K_{sp}) of a sparingly soluble salt like AB_2 is 4×10^{-12} at a given temperature, its molar solubility (S) in water is—
- (a) $1 \times 10^{-4} M$
(b) $2 \times 10^{-4} M$
(c) $1 \times 10^{-6} M$
(d) $4 \times 10^{-4} M$
- Q35. Oxidation states of Phosphorus in H_3PO_2 , H_3PO_3 , and H_3PO_4 are respectively—
- (a) +1, +3, and +5
(b) +3, +5, and +1
(c) +1, +5, and +3
(d) -1, +3, and +5
- Q36. Pure water can be obtained from seawater by utilizing which chemical and physical engineering process?
- (a) Simple filtration
(b) Reverse osmosis
(c) Plasmolysis
(d) Sedimentation
- Q37. What is the total number of structural isomers possible for an alkane with the molecular formula C_5H_{12} ?

- (a) 2
(b) 3
(c) 4
(d) 5
- Q38. Which of the following groups acts as a strong deactivating and meta-directing group during electrophilic aromatic substitution of a benzene ring?
- (a) $-NH_2$
(b) $-OCH_3$
(c) $-NO_2$
(d) $-CH_3$
- Q39. The dynamic phenomenon of permanent displacement of shared σ -electrons along a carbon chain due to the presence of an electronegative atom is called—
- (a) Electromeric effect
(b) Inductive effect
(c) Resonance effect
(d) Hyperconjugation
- Q40. Which of the following crystal defects lowers the overall density of an ionic crystalline solid without changing its stoichiometry?
- (a) Frenkel defect
(b) Schottky defect
(c) Metal excess defect
(d) Interstitial defect
- Q41. If a current of 0.5 amperes is passed through an aqueous solution of $CuSO_4$ for exactly 2 hours, what mass of copper (Cu) will deposit at the cathode? (Molar mass of $Cu = 63.5g/mol$)
- (a) 1.18g
(b) 2.37g
(c) 4.74g
(d) 0.59g
- Q42. The units of the rate constant (k) for a second-order chemical reaction are expressed as—
- (a) s^{-1}
(b) $molL^{-1}s^{-1}$
(c) $Lmol^{-1}s^{-1}$
(d) $L^2mol^{-2}s^{-1}$

- Q43. If the initial concentration of a reactant in a first-order reaction is doubled, what happens to its half-life period ($t_{1/2}$)?
- (a) It is doubled
 - (b) It is halved
 - (c) It remains unchanged
 - (d) It becomes four times
- Q44. The biological coagulation of a colloidal solution by adding an electrolyte depends primarily on the valency and charge of the coagulating ion. This empirical relationship is stated by—
- (a) Tyndall effect
 - (b) Hardy-Schulze rule
 - (c) Brownian movement
 - (d) Raoult's law
- Q45. Which transition metal oxide exhibits electrical conductivity and appearance similar to metallic copper?
- (a) TiO
 - (b) CrO_2
 - (c) ReO_3
 - (d) V_2O_3
- Q46. The IUPAC nomenclature name for the coordination complex $[Co(NH_3)_5(CO_3)]Cl$ is—
- (a) Carbonatopentamminecobalt(III) chloride
 - (b) Pentamminecarbonatcobalt(III) chloride
 - (c) Pentamminecarbonatocobalt(II) chloride
 - (d) Pentamminecarbonatocobalt(III) chloride
- Q47. When an alkyl halide undergoes a bimolecular nucleophilic substitution reaction (S_N2), the reaction proceeds with—
- (a) Complete racemization
 - (b) Complete inversion of configuration
 - (c) Partial retention of configuration
 - (d) Formation of a stable carbocation intermediate
- Q48. Which chemical reagent is most suitable to effectively distinguish between a primary alcohol, a secondary alcohol, and a tertiary alcohol at room temperature?
- (a) Tollen's reagent
 - (b) Lucas reagent

- (c) Schiff's reagent
- (d) Fehling's solution

Q49. The reduction of an aromatic carbonyl compound like benzaldehyde to its corresponding hydrocarbon using Zinc amalgam (Zn/Hg) and concentrated Hydrochloric acid (HCl) is called—

- (a) Rosenmund reduction
- (b) Clemmensen reduction
- (c) Wolff-Kishner reduction
- (d) Cannizzaro reaction

Q50. Which of the following structures represents a non-reducing disaccharide that does not reduce Tollen's or Fehling's reagent?

- (a) Maltose
- (b) Lactose
- (c) Sucrose
- (d) Cellobiose

SECTION 3 - PHYSICS

- Q51. A body moves along a circular path of radius R . What is its displacement after completing two and a half revolutions?
- (a) Zero
 - (b) $2R$
 - (c) $5\pi R$
 - (d) πR
- Q52. When a moving passenger bus stops suddenly, the passengers sitting inside tend to fall forward. Which physical principle explains this phenomenon?
- (a) Inertia of rest
 - (b) Inertia of motion
 - (c) Inertia of direction
 - (d) Conservation of linear momentum
- Q53. If the kinetic energy of a moving particle is increased by 300%, by what percentage does its linear momentum increase?
- (a) 50%
 - (b) 100%
 - (c) 150%
 - (d) 200%
- Q54. What is the value of escape velocity from the surface of Earth for any object, independent of its individual mass?
- (a) 9.8 km/s
 - (b) 11.2 km/s
 - (c) 42.1 km/s
 - (d) 7.9 km/s
- Q55. According to Hooke's Law, within the elastic limit of a material, stress is directly proportional to—
- (a) Strain
 - (b) Square of strain
 - (c) Modulus of elasticity
 - (d) Poisson's ratio
- Q56. Which of the following phenomena explains why small insects can walk seamlessly across the surface of still water without sinking?

- (a) Viscosity
 - (b) Surface tension
 - (c) Buoyancy
 - (d) Capillarity
- Q57. An ideal heat engine works between two temperatures: a source at T_1 and a sink at T_2 . What is the mathematical expression for its maximum thermodynamic efficiency?
- (a) $1 + \frac{T_2}{T_1}$
 - (b) $1 - \frac{T_2}{T_1}$
 - (c) $\frac{T_1 - T_2}{T_2}$
 - (d) $\frac{T_2}{T_1}$
- Q58. What happens to the frequency of a sound wave heard by an observer when the source of sound moves rapidly away from the stationary observer?
- (a) It increases
 - (b) It decreases
 - (c) It remains completely unchanged
 - (d) It fluctuates periodically
- Q59. Two point charges, separated by a distance r in a vacuum, exert a force F on each other. If a dielectric medium of constant $K = 4$ is introduced between them, the new force becomes—
- (a) $4F$
 - (b) $\frac{F}{4}$
 - (c) $2F$
 - (d) $\frac{F}{2}$
- Q60. A cylindrical wire of resistance R is uniformly stretched to double its original length without altering its mass. What is its new electrical resistance?
- (a) $2R$
 - (b) $4R$
 - (c) R
 - (d) $\frac{R}{2}$
- Q61. Which of the following instruments is primarily used for the precise measurement of internal electromotive force (emf) of a cell without drawing any current from it?
- (a) Voltmeter
 - (b) Potentiometer
 - (c) Ammeter

- (d) Galvanometer
- Q62. A charged particle enters a uniform magnetic field with a velocity vector directed perfectly perpendicular to the field lines. What shape will its trajectory take?
- (a) Straight line
 - (b) Circular path
 - (c) Helical path
 - (d) Parabolic path
- Q63. The core of an electrical power transformer is laminated primarily to minimize energy losses arising from which phenomenon?
- (a) Hysteresis loss
 - (b) Eddy currents
 - (c) Copper loss
 - (d) Radiation loss
- Q64. Which of the following components of the electromagnetic spectrum possesses the highest frequency and photon energy?
- (a) X-rays
 - (b) Gamma rays
 - (c) Ultraviolet light
 - (d) Microwaves
- Q65. An object is placed exactly at the focal point of a standard converging convex lens. Where will its final image form?
- (a) At the optical center
 - (b) At infinity
 - (c) At twice the focal length ($2f$)
 - (d) Between focus and center
- Q66. What happens to the fringe width in a standard Young's Double Slit Experiment if the entire experimental apparatus is immersed in water?
- (a) It increases
 - (b) It decreases
 - (c) It remains completely identical
 - (d) The fringes vanish completely
- Q67. The threshold frequency in the photoelectric effect represents the minimum light frequency required to—

- (a) Maximize the speed of photoelectrons
 - (b) Eject photoelectrons from the metal surface
 - (c) Produce X-rays
 - (d) Stop current flow
- Q68. According to the Bohr model of the atom, how does the radius of the n th stable electron orbit scale with the principal quantum number n ?
- (a) Proportional to n
 - (b) Proportional to n^2
 - (c) Inversely proportional to n
 - (d) Inversely proportional to n^2
- Q69. A radioactive sample has a half-life of 10 days. What fraction of the original active nuclei will remain undecayed after a period of 30 days?
- (a) $\frac{1}{3}$
 - (b) $\frac{1}{8}$
 - (c) $\frac{1}{6}$
 - (d) $\frac{7}{8}$
- Q70. In a forward-biased p-n junction diode, the width of the internal depletion layer region—
- (a) Increases significantly
 - (b) Decreases
 - (c) Remains completely constant
 - (d) Becomes infinite
- Q71. Which of the following logic gates provides a HIGH output (1) only and strictly when all its input lines are at a LOW state (0)?
- (a) AND gate
 - (b) NOR gate
 - (c) NAND gate
 - (d) XOR gate
- Q72. What is the dimensional formula for the universal gravitational constant G ?
- (a) $[MLT^{-2}]$
 - (b) $[M^{-1}L^3T^{-2}]$
 - (c) $[ML^2T^{-2}]$
 - (d) $[M^0LT^{-1}]$

- Q73. A particle executes uniform simple harmonic motion (SHM). At what position across its oscillatory path does its kinetic energy reach its maximum value?
- (a) At the extreme positive displacement
 - (b) At the mean (equilibrium) position
 - (c) At half the maximum amplitude
 - (d) It remains constant at all positions
- Q74. Two vectors of equal magnitude A are oriented such that their resultant vector also has a magnitude equal to A . What is the angle between the two vectors?
- (a) 60°
 - (b) 120°
 - (c) 90°
 - (d) 0°
- Q75. Which of the following options defines the fundamental physical meaning of an adiabatic thermodynamic process?
- (a) The temperature of the system remains perfectly constant
 - (b) There is no heat exchange between the system and its surroundings
 - (c) The pressure of the working gas remains completely uniform
 - (d) The total mechanical work done by the system must be zero

SECTION 4 - ENGLISH

Q76. Identify the specific segment of the sentence that contains a grammatical error:

”The chief nursing administrator, accompanied by several senior ward sisters, / were responsible for / establishing the new sanitization protocols / during the emergency shift.”

- (a) The chief nursing administrator, accompanied by several senior ward sisters,
- (b) were responsible for
- (c) establishing the new sanitization protocols
- (d) during the emergency shift.

Q77. Choose the option that provides the most accurate grammatical improvement for the underlined segment:

Had the clinical research team detected the anomalies in the initial control group earlier, they would proceed with the secondary trial.

- (a) would proceed with
- (b) would have proceeded with
- (c) proceeded with
- (d) should proceed with

Q78. Select the most appropriate meaning for the highlighted idiomatic expression:

The core laboratory staff had to burn the midnight oil for three consecutive weeks to finish processing the pandemic tissue cultures.

- (a) To waste expensive medical supplies during an ongoing investigation.
- (b) To work or study late into the night with great diligence.
- (c) To cause an accidental hazard due to exhaustion.
- (d) To demand immediate financial compensation for overtime hours.

Q79. Identify the specific segment of the sentence that contains a grammatical error:

”No sooner had the critical care physician / entered the isolation ward / when the secondary patient monitor / triggered a loud auditory alarm.”

- (a) No sooner had the critical care physician
- (b) entered the isolation ward
- (c) when the secondary patient monitor
- (d) triggered a loud auditory alarm.

Q80. Choose the word that is closest in meaning (SYNONYM) to the underlined word:

The public health department provided a lucid explanation of the complex genetic mechanisms driving viral mutations.

- (a) Ambiguous

- (b) Clear and easily understood
- (c) Convoluted
- (d) Redundant

Q81. Choose the option that provides the most accurate grammatical improvement for the underlined segment:

The clinical psychologist recommended the treatment course because she found it to be not only highly effective for chronic stress but also it was safe for long-term practice.

- (a) not only highly effective for chronic stress but also it was safe
- (b) effective not only for chronic stress but also safety
- (c) not only highly effective for chronic stress but also safe
- (d) not effective only for chronic stress but also she felt it was safe

Q82. Choose the word that is most opposite in meaning (ANTONYM) to the given word:
COMPLACENT

- (a) Satisfied
- (b) Smug
- (c) Contented
- (d) Vigilant

Q83. Identify the specific segment of the sentence that contains a grammatical error:

"The multi-center study concluded / that the statistical results of the second trial / were more preferable than / those obtained during the initial pilot study."

- (a) The multi-center study concluded
- (b) that the statistical results of the second trial
- (c) were more preferable than
- (d) those obtained during the initial pilot study.

Q84. Select the option that displays the correct spelling of the word meaning "a disease, chronic physical ailment, or deeply-rooted disorder":

- (a) Malady
- (b) Mallady
- (c) Malaedy
- (d) Maladey

Q85. Choose the correct passive voice conversion for the given active sentence:

"The chief surgeon meticulously performed the complex corrective operation under local anesthesia."

- (a) The complex corrective operation is being meticulously performed by the chief surgeon under local anesthesia.
- (b) The complex corrective operation was meticulously performed by the chief surgeon under local anesthesia.
- (c) The complex corrective operation had been meticulously performed by the chief surgeon under local anesthesia.
- (d) Meticulously performing the complex corrective operation under local anesthesia was done by the chief surgeon.



SECTION 5 - GENERAL KNOWLEDGE

- Q86. The specialized diagnostic test historically known as the "Widal Test" is widely used in clinical pathology to confirm a diagnosis of which bacterial infection?
- (a) Cholera
 - (b) Tuberculosis
 - (c) Typhoid Fever
 - (d) Amoebic Dysentery
- Q87. Under the provisions of the Constitution of India, who holds the absolute executive power to officially appoint the Comptroller and Auditor General (CAG) of India?
- (a) The Prime Minister of India
 - (b) The Chief Justice of India
 - (c) The President of India
 - (d) The Union Finance Minister
- Q88. The central headquarters of the "United Nations International Children's Emergency Fund" (UNICEF), which works globally to provide developmental and humanitarian aid to children, is located in which city?
- (a) Geneva, Switzerland
 - (b) Paris, France
 - (c) New York, USA
 - (d) Vienna, Austria
- Q89. Which famous Indian space research facility, widely recognized as the launch site for India's major satellite missions, is located at Sriharikota in Andhra Pradesh?
- (a) Vikram Sarabhai Space Centre (VSSC)
 - (b) Satish Dhawan Space Centre (SDSC)
 - (c) Space Applications Centre (SAC)
 - (d) Liquid Propulsion Systems Centre (LPSC)
- Q90. The historic "Fundamental Rights" enshrined in Part III of the Constitution of India were heavily inspired by the constitutional frameworks and documentation of which nation?
- (a) United Kingdom (UK)
 - (b) United States of America (USA)
 - (c) Soviet Union (USSR)
 - (d) Ireland

- Q91. Which prominent Indian public health institution, responsible for executing key medical research and formulating ethical clinical guidelines across the country, is headquartered in New Delhi?
- (a) National Centre for Disease Control (NCDC)
 - (b) Indian Council of Medical Research (ICMR)
 - (c) Central Drugs Standard Control Organization (CDSCO)
 - (d) National Institute of Health and Family Welfare (NIHFW)
- Q92. The deep oceanic trench known as the "Mariana Trench", historically recorded as the deepest point on Earth's crust, is situated in which ocean basin?
- (a) Atlantic Ocean
 - (b) Indian Ocean
 - (c) Pacific Ocean
 - (d) Arctic Ocean
- Q93. Which Indian nationalist leader is widely celebrated in historical texts as the "Iron Man of India" for his monumental role in the political integration of princely states?
- (a) Subhas Chandra Bose
 - (b) Lala Lajpat Rai
 - (c) Sardar Vallabhbhai Patel
 - (d) Bal Gangadhar Tilak
- Q94. The premier global grouping known as the "World Economic Forum" (WEF), famous for hosting its high-profile annual winter assembly of global leaders, is based out of which town?
- (a) Davos, Switzerland
 - (b) Brussels, Belgium
 - (c) Frankfurt, Germany
 - (d) London, UK
- Q95. Under the Seventh Schedule of the Constitution of India, the administrative subject of "Public Health and Sanitation; Hospitals and Dispensaries" falls under which specific legislative list?
- (a) Union List
 - (b) State List
 - (c) Concurrent List
 - (d) Residuary Powers
- Q96. The global healthcare monitoring index known as the "GHI" is published annually to track pathways of progress against nutritional deprivations. What does the acronym "GHI" stand for?

- (a) Global Health Indicators
 - (b) Global Hunger Index
 - (c) Global Hygiene Initiative
 - (d) Global Healthcare Index
- Q97. Which physical line of latitude marks the northernmost point on Earth where the sun can appear directly overhead at noon, running approximately 23.5° North of the Equator?
- (a) Tropic of Capricorn
 - (b) Arctic Circle
 - (c) Tropic of Cancer
 - (d) Prime Meridian
- Q98. The prestigious "Lalit Kala Akademi" was established by the Government of India as a premier national institute dedicated to the promotion and study of—
- (a) Classical Dance and Ballet
 - (b) Fine Arts and Visual Arts
 - (c) Traditional Folk Music
 - (d) Investigative Journalism
- Q99. In medical history, the discovery of the first true antibiotic chemical, Penicillin, was accomplished by which British scientist in the year 1928?
- (a) Louis Pasteur
 - (b) Alexander Fleming
 - (c) Edward Jenner
 - (d) Robert Koch
- Q100. Which core state in India is geographically characterized by the "Deccan Trap", a massive volcanic plateau formed by prehistoric thick solidified basaltic lava flows?
- (a) Rajasthan
 - (b) Maharashtra
 - (c) West Bengal
 - (d) Punjab

SOLUTIONS

Q1. Correct Answer: (B)

Aqueous humor is the clear fluid present between the cornea and lens. It helps maintain intraocular pressure and nourishes eye tissues.

Q2. Correct Answer: (C)

The vagus nerve regulates heart rate and digestive activities. It is the tenth cranial nerve.

Q3. Correct Answer: (A)

The centrosome organizes spindle fibers during cell division. It plays a key role in chromosome separation.

Q4. Correct Answer: (B)

Ligaments connect bone to bone at joints. They provide strength and stability to skeletal structures.

Q5. Correct Answer: (B)

RuBP acts as the primary acceptor of carbon dioxide in C_3 plants. This occurs during the Calvin cycle.

Q6. Correct Answer: (C)

The Malpighian corpuscle performs ultrafiltration of blood. It consists of Bowman's capsule and glomerulus.

Q7. Correct Answer: (C)

Oxytocin stimulates uterine contractions and milk ejection. It is secreted by the posterior pituitary gland.

Q8. Correct Answer: (C)

Salivary amylase begins digestion of starch in the mouth. It converts starch into simpler sugars.

Q9. Correct Answer: (B)

Oxyntic or parietal cells secrete hydrochloric acid and intrinsic factor. Intrinsic factor is essential for Vitamin B_{12} absorption.

Q10. Correct Answer: (C)

The liver converts toxic ammonia into urea through the urea cycle. Urea is later excreted by kidneys.

Q11. Correct Answer: (C)

The pulmonary artery carries deoxygenated blood to the lungs. It originates from the right ventricle.

Q12. Correct Answer: (B)

The bicuspid or mitral valve prevents backflow into the left atrium. It ensures one-way blood circulation.

Q13. Correct Answer: (C)

Alveoli are tiny air sacs where gaseous exchange occurs. Oxygen and carbon dioxide diffuse across thin membranes.

Q14. Correct Answer: (C)

HIV primarily destroys helper T-lymphocytes ($CD4^+$ cells). This weakens the body's immune system.

Q15. Correct Answer: (B)

Kala-azar is transmitted through infected sandflies. It is caused by Leishmania parasites.

Q16. Correct Answer: (B)

Vitamin K is essential for synthesis of clotting factors. It helps in normal blood coagulation.

Q17. Correct Answer: (B)

Down syndrome occurs due to trisomy of chromosome 21. Affected individuals possess an extra chromosome.

Q18. Correct Answer: (B)

Abscisic acid inhibits growth and closes stomata during drought. It helps plants conserve water.

Q19. Correct Answer: (A)

Transcription is the process of synthesizing mRNA from DNA. It is the first step of protein synthesis.

Q20. Correct Answer: (B)

The epidermis lacks direct blood vessels and capillaries. It receives nutrients by diffusion from deeper layers.

Q21. Correct Answer: (B)

Glycolysis occurs in the cytoplasm of cells. Glucose breaks down into pyruvic acid during this process.

Q22. Correct Answer: (C)

Ball and socket joints allow maximum movement in multiple directions. Examples include shoulder and hip joints.

Q23. Correct Answer: (C)

Gout is caused by deposition of uric acid crystals in joints. This leads to severe pain and inflammation.

Q24. Correct Answer: (C)

The cerebellum controls posture, balance, and coordination. It helps maintain body equilibrium.

Q25. Correct Answer: (B)

The myelin sheath insulates nerve fibers and speeds impulse conduction. It surrounds the axon of many neurons.

Q26. Correct Answer: (C)

The configuration $1s^2 2s^2 2p^6 3s^1$ belongs to sodium. Removing the second electron breaks a stable noble gas configuration, requiring maximum energy.

Q27. Correct Answer: (B)

SF_6 has an octahedral geometry with sp^3d^2 hybridization. Six fluorine atoms surround sulfur symmetrically.

Q28. Correct Answer: (A)

Tetracyanoethylene contains 9 sigma bonds and 9 pi bonds. Each cyanide group contributes multiple bonding.

Q29. Correct Answer: (B)

He_2 has bond order zero according to Molecular Orbital Theory. Therefore, it is unstable and cannot exist independently.

Q30. Correct Answer: (C)

Equal masses produce different mole ratios because molecular masses differ. Oxygen contributes $\frac{2}{3}$ of total pressure.

Q31. Correct Answer: (B)

Real gases behave ideally at low pressure and high temperature. Intermolecular attractions become negligible under these conditions.

Q32. Correct Answer: (C)

For spontaneity at all temperatures, ΔH must be negative and ΔS positive. This ensures negative Gibbs free energy.

Q33. Correct Answer: (B)

The conjugate base of HSO_4^- is SO_4^{2-} . It forms after losing one proton.

Q34. Correct Answer: (A)

For salt AB_2 , molar solubility calculation gives 1×10^{-4} M. It is obtained using the K_{sp} expression.

Q35. Correct Answer: (A)

Oxidation states of phosphorus are +1, +3, and +5 respectively. Oxidation state increases with oxygen content.

Q36. Correct Answer: (B)

Reverse osmosis removes dissolved salts from seawater. It is widely used in desalination plants.

Q37. Correct Answer: (B)

C_5H_{12} has three structural isomers. These are n-pentane, isopentane, and neopentane.

Q38. Correct Answer: (C)

The nitro group is strongly deactivating and meta-directing. It withdraws electrons from the benzene ring.

Q39. Correct Answer: (B)

The inductive effect involves displacement of sigma electrons. It occurs due to electronegativity differences.

Q40. Correct Answer: (B)

Schottky defects reduce density by creating ion vacancies. Stoichiometry of the crystal remains unchanged.

Q41. Correct Answer: (B)

Using Faraday's law, deposited copper mass equals 2.37 g. Copper ions gain electrons at the cathode.

Q42. Correct Answer: (C)

Second-order reaction constants have units $Lmol^{-1}s^{-1}$. Units depend on overall reaction order.

Q43. Correct Answer: (C)

Half-life of first-order reactions is independent of concentration. Doubling concentration does not affect $t_{1/2}$.

Q44. Correct Answer: (B)

Hardy-Schulze rule explains coagulation of colloids by electrolytes. Higher valency ions cause faster coagulation.

Q45. Correct Answer: (C)

ReO_3 exhibits metallic conductivity and copper-like appearance. It behaves unusually among metal oxides.

Q46. Correct Answer: (D)

The correct IUPAC name is Pentamminecarbonatocobalt(III) chloride. Cobalt has an oxidation state of +3.

Q47. Correct Answer: (B)

S_N2 reactions proceed with inversion of configuration. The nucleophile attacks from the opposite side.

Q48. Correct Answer: (B)

Lucas reagent distinguishes primary, secondary, and tertiary alcohols. Reaction speed differs based on alcohol type.

Q49. Correct Answer: (B)

Clemmensen reduction converts carbonyl compounds into hydrocarbons. It uses Zn-Hg and concentrated HCl.

Q50. Correct Answer: (C)

Sucrose is a non-reducing sugar. It does not reduce Tollen's or Fehling's reagent.

Q51. Correct Answer: (D)

Laser light is both monochromatic and coherent. It consists of waves having the same frequency and phase.

Q52. Correct Answer: (A)

A choke coil controls current only in AC circuits. It works using inductive reactance.

Q53. Correct Answer: (C)

Decibel is the unit used to measure sound intensity. It expresses sound levels logarithmically.

Q54. Correct Answer: (B)

Myopia is corrected using a concave lens. It diverges incoming light rays properly onto the retina.

Q55. Correct Answer: (B)

Friction between sand and feet is less than on concrete. Hence walking on sand becomes difficult.

Q56. Correct Answer: (C)

Magnetism at the center of a bar magnet is nearly zero. Magnetic strength is maximum at the poles.

Q57. Correct Answer: (D)

Radioactive substances emit alpha, beta, and gamma radiations. Neutrons are generally not emitted in normal radioactive decay.

Q58. Correct Answer: (A)

Lux is the SI unit of illumination intensity. It measures luminous flux per unit area.

Q59. Correct Answer: (B)

Brilliant colours in oil films are due to interference of light. Reflected light waves combine constructively and destructively.

Q60. Correct Answer: (B)

An electron moves towards higher potential due to its negative charge. Hence it moves towards point B.

Q61. Correct Answer: (A)

Rainproof materials repel water because of surface tension. Water droplets cannot penetrate easily.

Q62. Correct Answer: (D)

RADAR detects and locates objects like aircraft. It uses radio waves for detection.

Q63. Correct Answer: (A)

Optical fibres work on total internal reflection. Light remains confined inside the fibre core.

Q64. Correct Answer: (B)

Transformers operate on the principle of mutual induction. A changing magnetic field induces emf in another coil.

Q65. Correct Answer: (C)

The angle of incidence producing 90° refraction is the critical angle. Beyond this angle, total internal reflection occurs.

Q66. Correct Answer: (C)

According to Kepler's second law, angular momentum remains constant. Planets sweep equal areas in equal times.

Q67. Correct Answer: (C)

On clear nights, terrestrial radiation escapes freely into space. Clouds otherwise trap heat like a blanket.

Q68. Correct Answer: (B)

Immersing a convex lens in water reduces its refractive power. Therefore its focal length increases.

Q69. Correct Answer: (B)

Gamma rays have the shortest wavelength in the spectrum. They possess the highest energy and frequency.

Q70. Correct Answer: (B)

A clear echo is heard if the reflector is about 17 meters away. This allows a time gap of at least 0.1 second.

Q71. Correct Answer: (B)

Doping silicon with trivalent impurities forms a p-type semiconductor. Holes become the majority charge carriers.

Q72. Correct Answer: (D)

Gravitational force varies inversely as the square of distance. Doubling distance reduces force to one-fourth.

Q73. Correct Answer: (C)

An isochoric process occurs at constant volume. No work is done during this process.

Q74. Correct Answer: (B)

Three equal resistors in parallel give equivalent resistance $R/3$. Parallel combinations reduce total resistance.

Q75. Correct Answer: (C)

Rocket propulsion works on conservation of linear momentum. Expelled gases produce forward thrust on the rocket.

Q76. Correct Answer: (B)

The subject "The chief nursing administrator" is singular. Therefore, "were responsible" should be replaced with "was responsible".

Q77. Correct Answer: (B)

The sentence requires third conditional structure for a past hypothetical situation. Hence "would have proceeded with" is grammatically correct.

Q78. Correct Answer: (B)

"Burn the midnight oil" means working late into the night with dedication. It refers to intense hard work or study.

Q79. Correct Answer: (C)

The correct correlative conjunction is "No sooner...than". Here "when" should be replaced with "than".

Q80. Correct Answer: (B)

"Lucid" means clear and easy to understand. It is commonly used for explanations or language.

Q81. Correct Answer: (C)

The structure "not only...but also" requires parallel construction. "Safe" correctly parallels "highly effective".

Q82. Correct Answer: (D)

“Complacent” means self-satisfied or careless. Its opposite is “vigilant,” meaning alert and watchful.

Q83. Correct Answer: (C)

“More superior” is grammatically incorrect because “superior” itself is comparative. It should simply be “superior to”.

Q84. Correct Answer: (A)

“Malady” is the correct spelling of the word meaning disease or disorder. The other options contain spelling errors.

Q85. Correct Answer: (B)

The passive sentence changes correctly into active voice in option B. The subject “chief surgeon” performs the action directly.

Q86. Correct Answer: (B)

The Alma-Ata Declaration of 1978 emphasized universal access to Primary Health Care. It became a major milestone in global public health policy.

Q87. Correct Answer: (C)

The World Bank Group partnered with WHO for the Triple Billion targets. These goals focus on universal health coverage and emergency preparedness.

Q88. Correct Answer: (C)

Article 360 deals with Financial Emergency in India. It can be declared if financial stability is threatened.

Q89. Correct Answer: (B)

The National Institute of Virology (NIV) is located in Pune. It is a premier institute for viral research in India.

Q90. Correct Answer: (B)

The Shanti Swarup Bhatnagar Prize recognizes excellence in Science and Technology. It is one of India’s highest scientific honors.

Q91. Correct Answer: (B)

The Ten Degree Channel separates the Andaman and Nicobar Islands. It lies in the Bay of Bengal region.

Q92. Correct Answer: (C)

Dadabhai Naoroji pioneered the “Drain of Wealth” theory. He also estimated India’s national income during British rule.

Q93. Correct Answer: (B)

The Gavi Alliance works to improve vaccine access in poorer nations. It supports immunization programs globally.

Q94. Correct Answer: (B)

The Fourth Schedule contains provisions regarding Rajya Sabha seats allocation. It specifies representation of states and union territories.

Q95. Correct Answer: (B)

Kupffer cells are specialized macrophages found in the liver. They remove pathogens and damaged blood cells.

Q96. Correct Answer: (C)

The Poona Pact was signed between Mahatma Gandhi and Dr. B.R. Ambedkar. It dealt with political representation for depressed classes.

Q97. Correct Answer: (B)

The International Development Association functions under the World Bank Group. It provides concessional loans to developing countries.

Q98. Correct Answer: (B)

The minimum runway length for long jump and triple jump is 40 meters. This standard is specified in athletics regulations.

Q99. Correct Answer: (B)

Mangrove forests grow in saline or brackish intertidal environments. They are commonly found in coastal wetlands.

Q100. Correct Answer: (B)

Karnam Malleswari was the first Indian woman to win an individual Olympic medal. She won a bronze medal in weightlifting at the 2000 Sydney Olympics.