

NEET - FULL SYLLABUS MOCK TEST

180 QUESTIONS | 720 MARKS

Duration: 3 hours (180 minutes)

Physics: Q1-45 | 180 marks

Chemistry: Q46-90 | 180 marks

Biology: Q91-180 | 360 marks

Name: _____

Batch: _____ Date: _____

INSTRUCTIONS

All 180 questions are compulsory. Select one correct or best option per question. Each correct answer earns 4 marks; an incorrect answer loses 1 mark; an unattempted question scores 0.

Use a separate response sheet. No calculators. For matching, statement-based and assertion-reason items, select the one option that gives the correct complete response.

This original full-length Prodigy mock covers the major units of the published NEET (UG) 2026 syllabus. Botany and Zoology are grouped separately for convenient practice.

PHYSICS | Q1-45

1. The dimensional formula of Planck's constant is:

- (A) ML^2T^{-1} (B) ML^2T^{-2}
(C) MLT^{-2} (D) $M^0L^2T^{-1}$

2. For $z = A^2B/C$, percentage uncertainties in A, B and C are 1%, 2% and 3%. The maximum percentage uncertainty in z is:

- (A) 4% (B) 7%
(C) 6% (D) 3%

3. A particle has $x = 2t^2 + 3t$ (SI units). Its velocity at $t = 2$ s is:

- (A) 14 m/s (B) 8 m/s
(C) 7 m/s (D) 11 m/s

4. A particle covers the first half of a distance at speed v and the second half at $2v$. Its average speed is:

- (A) $3v/2$ (B) $2v/3$
(C) $5v/3$ (D) $4v/3$

5. A projectile has range 40 m on level ground when launched at 45° . For $g = 10 \text{ m/s}^2$, its time of flight is:

- (A) 2 s (B) $\sqrt{2}$ s
(C) $2\sqrt{2}$ s (D) 4 s

6. A 4 kg block on a horizontal surface has coefficient of static friction 0.25. For $g = 10 \text{ m/s}^2$, the maximum static friction is:

- (A) 1 N (B) 16 N
(C) 10 N (D) 40 N

7. A 2 kg block on a smooth horizontal table is connected over an ideal pulley to a hanging 3 kg mass. With $g = 10 \text{ m/s}^2$, the string tension is:

- (A) 6 N (B) 30 N
(C) 12 N (D) 20 N

8. A net force varies as $F = 2x$ N along the x-axis. The work done from $x = 0$ to 3 m is:

- (A) 9 J (B) 6 J
(C) 18 J (D) 3 J

9. A 2 kg body at 4 m/s sticks to a stationary 2 kg body. Which pair gives the final speed and kinetic energy lost?

- (A) 4 m/s and 0 J (B) 1 m/s and 12 J
(C) 2 m/s and 8 J (D) 2 m/s and 16 J

10. The moment of inertia of a thin uniform ring of mass M and radius R about its central axis perpendicular to its plane is:

- (A) MR^2 (B) $MR^2/4$
(C) $MR^2/2$ (D) $2MR^2$

11. A solid sphere rolls without slipping from rest through vertical height h. Its speed at the bottom is:

- (A) $\sqrt{gh}$ (B) $\sqrt{10gh/7}$
(C) $\sqrt{4gh/3}$ (D) $\sqrt{2gh}$

12. A satellite's orbital radius is increased from r to 4r. Its orbital period becomes:

- (A) 2 times (B) 8 times
(C) 16 times (D) 4 times

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13. A satellite in a circular orbit has total energy $-E$, where $E > 0$. Its kinetic energy and potential energy are, respectively:

- (A) E and $-2E$ (B) E and $-E$
(C) $E/2$ and $-E$ (D) $2E$ and $-E$

14. A wire has stress 2×10^8 Pa and strain 10^{-3} . Its Young's modulus is:

- (A) 2×10^{10} Pa (B) 2×10^8 Pa
(C) 2×10^5 Pa (D) 2×10^{11} Pa

15. Water rises to height h in a capillary tube. If the tube radius is doubled, the rise is:

- (A) $h/2$ (B) $h/4$
(C) $2h$ (D) $4h$

16. An incompressible liquid flows steadily from cross-section 4 cm^2 to 2 cm^2 . If its initial speed is 3 m/s , the final speed is:

- (A) 12 m/s (B) 6 m/s
(C) 1.5 m/s (D) 3 m/s

17. A 0.2 kg sample with specific heat $500 \text{ J kg}^{-1} \text{ K}^{-1}$ is heated by 30 K . Heat supplied is:

- (A) 1000 J (B) 15000 J
(C) 3000 J (D) 300 J

18. A gas absorbs 500 J of heat and does 200 J of work. The increase in its internal energy is:

- (A) 500 J (B) 200 J
(C) 300 J (D) 700 J

19. A Carnot engine between 600 K and 300 K absorbs 1200 J per cycle. The work output and rejected heat are:

- (A) 300 J and 900 J (B) 900 J and 300 J
(C) 600 J and 600 J (D) 1200 J and 0 J

20. The absolute temperature of an ideal gas becomes four times its initial value. The rms molecular speed becomes:

- (A) 2 times (B) Unchanged
(C) 4 times (D) Half

21. At the same temperature, the ratio of rms speeds of helium and oxygen molecules (molar masses 4 and 32) is:

- (A) 8 (B) $\sqrt{2}$
(C) $2\sqrt{2}$ (D) 4

22. A mass-spring system has period T . Keeping the mass fixed, the spring constant is increased fourfold. The new period is:

- (A) $T/2$ (B) $4T$
(C) $2T$ (D) $T/4$

23. Two tuning forks have frequencies 256 Hz and 260 Hz . Their beat frequency is:

- (A) 516 Hz (B) 258 Hz
(C) 2 Hz (D) 4 Hz

24. An open organ pipe has fundamental frequency f . An otherwise identical pipe closed at one end has fundamental frequency:

- (A) $2f$ (B) f
(C) $f/2$ (D) $f/4$

25. Two charges $+q$ and $-q$ are equidistant from a midpoint. At the midpoint, the electric potential is:

- (A) Zero (B) $2kq/r$
(C) Infinite (D) kq/r

26. A $3 \mu\text{F}$ and a $6 \mu\text{F}$ capacitor are connected in series. The equivalent capacitance is:

- (A) $2 \mu\text{F}$ (B) $4.5 \mu\text{F}$
(C) $3 \mu\text{F}$ (D) $9 \mu\text{F}$

27. A capacitor of capacitance C is charged to V and disconnected. A dielectric of constant 4 fills its gap. The new potential and energy are:

- (A) $V/2$ and $CV^2/4$ (B) $4V$ and $2CV^2$
(C) V and $CV^2/2$ (D) $V/4$ and $CV^2/8$

28. A cell of emf 12 V and internal resistance 1Ω supplies a 5Ω external resistor. The current is:

- (A) 2.4 A (B) 2 A
(C) 3 A (D) 12 A

29. A wire of initial resistance R is uniformly stretched to double its length at constant volume and resistivity. Its new resistance is:

- (A) $R/4$ (B) $R/2$
(C) $2R$ (D) $4R$

30. A proton enters a uniform magnetic field perpendicular to its velocity. If its speed doubles, the orbit radius becomes:

- (A) Four times (B) Unchanged
(C) Half (D) Twice

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31. A proton and an alpha particle enter the same uniform magnetic field perpendicular to it with equal speeds. The ratio $r_{\alpha}/r_{\text{proton}}$ is approximately:

- (A) 2 (B) 4
(C) $1/2$ (D) 1

32. The magnetic flux through each turn of a 100-turn coil changes by 0.02 Wb in 0.1 s. The magnitude of average induced emf is:

- (A) 0.2 V (B) 200 V
(C) 2 V (D) 20 V

33. A series AC circuit has $R = 30\ \Omega$ and net reactance $40\ \Omega$. For applied rms voltage 100 V, its average power is:

- (A) 120 W (B) 60 W
(C) 200 W (D) 320 W

34. Which electromagnetic radiation has the shortest wavelength among these?

- (A) Microwaves (B) Radio waves
(C) Infrared (D) Gamma rays

35. An object is 30 cm from a convex lens of focal length 10 cm. Its real image is formed at:

- (A) 15 cm on the other side (B) 20 cm on the other side
(C) 30 cm on the other side (D) 15 cm on the object side

36. A convex lens of focal length 20 cm and a concave lens of focal length -30 cm are in contact. Their equivalent focal length is:

- (A) 60 cm (B) -60 cm
(C) 12 cm (D) -12 cm

37. In Young's experiment, $\lambda = 600\text{ nm}$, $D = 2\text{ m}$ and slit separation $d = 0.5\text{ mm}$. Fringe width is:

- (A) 0.6 mm (B) 4.8 mm
(C) 2.4 mm (D) 1.2 mm

38. Light of photon energy 5 eV falls on a metal with work function 2 eV. The stopping potential is:

- (A) 3 V (B) 2 V
(C) 7 V (D) 5 V

39. The energy of hydrogen in its ground state is -13.6 eV. Its energy at $n = 2$ is:

- (A) -6.8 eV (B) -1.51 eV
(C) -27.2 eV (D) -3.4 eV

40. The release of energy in fission of a heavy nucleus is mainly associated with:

- (A) Greater binding energy per nucleon of the products
(B) An increase in total rest mass of the products
(C) Creation of nucleons from no energy
(D) Disappearance of charge conservation

41. A nucleus has mass defect 0.02 u. With $1\text{ u} = 931\text{ MeV}/c^2$, its binding energy is approximately:

- (A) 46.55 MeV (B) 186.2 MeV
(C) 18.62 MeV (D) 9.31 MeV

42. An ideal combination sends A and B to an AND gate, then its output to a NOT gate. For inputs $A = 1$, $B = 1$, the final output is:

- (A) Undefined
(B) Either 0 or 1 depending on frequency
(C) 1
(D) 0

43. Statement I: Forward bias narrows a p-n junction's depletion layer. Statement II: Forward bias lowers its potential barrier. Choose the correct option.

- (A) Both statements are false (B) I true, II false
(C) I false, II true (D) Both statements are true

44. A vernier has 10 divisions equal to 9 main-scale divisions. If 1 main-scale division is 1 mm, its least count is:

- (A) 0.01 mm (B) 0.1 mm
(C) 0.9 mm (D) 1 mm

45. A metre bridge balances at 40 cm from the left, with unknown resistance X in the left gap and $6\ \Omega$ in the right. X is:

- (A) $4\ \Omega$ (B) $9\ \Omega$
(C) $2\ \Omega$ (D) $6\ \Omega$

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CHEMISTRY | Q46-90

46. How many moles of oxygen atoms are present in 0.5 mol of CO_2 ?

- (A) 0.5 mol (B) 1 mol
(C) 2 mol (D) 1.5 mol

47. For $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$, 3 mol H_2 and 1 mol O_2 react completely as far as possible. The maximum water formed is:

- (A) 2 mol (B) 3 mol
(C) 4 mol (D) 1 mol

48. For a 3p orbital, the numbers of radial and angular nodes are, respectively:

- (A) 1 and 1 (B) 2 and 1
(C) 2 and 0 (D) 0 and 2

49. An electron has quantum numbers $n = 3$ and $l = 2$. Which pair of m_l and m_s is allowed?

- (A) $m_l = -2$, $m_s = +1/2$ (B) $m_l = -3$, $m_s = -1/2$
(C) $m_l = 0$, $m_s = 1$ (D) $m_l = 3$, $m_s = +1/2$

50. The ground-state configuration of chromium ($Z = 24$) is:

- (A) $[\text{Ar}] 3d^3 4s^3$ (B) $[\text{Ar}] 3d^6$
(C) $[\text{Ar}] 3d^4 4s^2$ (D) $[\text{Ar}] 3d^5 4s^1$

51. The molecular shape of NH_3 is:

- (A) Trigonal pyramidal (B) Trigonal planar
(C) Linear (D) Tetrahedral

52. According to molecular orbital theory, the bond orders of N_2 and N_2^+ are, respectively:

- (A) 3 and 2.5 (B) 3 and 3.5
(C) 2 and 2.5 (D) 2.5 and 3

53. Which compound has the greatest ionic character among these?

- (A) Cl_2 (B) CH_4
(C) NaCl (D) HCl

54. For a reaction, $\Delta H = -40 \text{ kJ mol}^{-1}$ and $\Delta S = -100 \text{ J mol}^{-1} \text{ K}^{-1}$. At 300 K, ΔG is:

- (A) -70 kJ mol^{-1} (B) $+10 \text{ kJ mol}^{-1}$
(C) -10 kJ mol^{-1} (D) $+70 \text{ kJ mol}^{-1}$

55. If ΔH for $A \rightarrow B$ is 20 kJ/mol and for $B \rightarrow C$ is -50 kJ/mol , ΔH for $A \rightarrow C$ is:

- (A) $+30 \text{ kJ/mol}$ (B) $+70 \text{ kJ/mol}$
(C) -30 kJ/mol (D) -70 kJ/mol

56. For an exothermic reaction at equilibrium, an increase in temperature generally:

- (A) Increases the equilibrium constant
(B) Makes the equilibrium constant zero
(C) Leaves the equilibrium constant unchanged
(D) Decreases the equilibrium constant

57. An ideal dilute solution has molality 0.2 mol kg^{-1} and freezing-point depression 0.8 K . If $K_f = 2 \text{ K kg mol}^{-1}$, the van't Hoff factor is:

- (A) 1 (B) 2
(C) 4 (D) 3

58. At the same temperature, equal molar concentrations of fully dissociated NaCl and glucose have osmotic pressures in the approximate ratio:

- (A) 3 : 1 (B) 1 : 2
(C) 2 : 1 (D) 1 : 1

59. For $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$, the expression for K_c is:

- (A) $[\text{NH}_3]^2/([\text{N}_2]^3[\text{H}_2])$ (B) $[\text{NH}_3]^2/([\text{N}_2][\text{H}_2]^3)$
(C) $[\text{N}_2][\text{H}_2]^3/[\text{NH}_3]^2$ (D) $[\text{NH}_3]/([\text{N}_2][\text{H}_2])$

60. A weak-acid buffer has $\text{pK}_a = 4.0$ and concentration ratio $[\text{salt}]/[\text{acid}] = 10$. Its pH is approximately:

- (A) 6.0 (B) 4.0
(C) 3.0 (D) 5.0

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61. A salt MX has $K_{sp} = 10^{-10}$. In a solution containing 0.01 M X^- from another soluble salt, its molar solubility is approximately:

- (A) 10^{-6} M (B) 10^{-12} M
(C) 10^{-8} M (D) 10^{-5} M

62. The oxidation number of chromium in $Cr_2O_7^{2-}$ is:

- (A) +3 (B) +2
(C) +6 (D) +7

63. A cell has $E^\circ = 1.10$ V and transfers 2 electrons. At 298 K, reaction quotient $Q = 100$. Using $E = E^\circ - (0.0592/n) \log Q$, E is approximately:

- (A) 1.100 V (B) 1.041 V
(C) 1.159 V (D) 0.982 V

64. On dilution of a weak electrolyte, its molar conductivity usually:

- (A) Becomes negative (B) Decreases to zero
(C) Remains exactly constant (D) Increases substantially

65. A first-order reaction is 87.5% complete in 30 min. Its half-life is:

- (A) 10 min (B) 5 min
(C) 15 min (D) 20 min

66. For rate = $k[A]^2[B]$, the overall order is:

- (A) 3 (B) 1
(C) 4 (D) 2

67. Which species has the smallest radius in this isoelectronic set?

- (A) F^- (B) Na^+
(C) Mg^{2+} (D) Al^{3+}

68. Which has the highest first ionisation enthalpy among these Period 2 elements?

- (A) Ne (B) B
(C) O (D) Li

69. The valence-shell configuration ns^2np^3 corresponds to:

- (A) Group 15 (B) Group 17
(C) Group 13 (D) Group 16

70. The inert-pair effect generally favours lower oxidation states in:

- (A) Only the lightest noble gases
(B) Heavier p-block elements
(C) All first-row transition elements equally
(D) Only hydrogen

71. Lanthanoid contraction is mainly due to poor shielding by:

- (A) 4f electrons (B) 1s electrons
(C) 3s electrons (D) 2p electrons

72. Statement I: Free Mn^{2+} has five unpaired electrons. Statement II: Free Zn^{2+} has a completely filled 3d subshell. Choose the correct option.

- (A) I false, II true (B) I true, II false
(C) Both statements are false (D) Both statements are true

73. The coordination number of Co in $[Co(NH_3)_6]Cl_3$ is:

- (A) 3 (B) 9
(C) 6 (D) 1

74. For octahedral low-spin $[Fe(CN)_6]^{4-}$, the oxidation state of Fe and number of unpaired electrons are:

- (A) +3 and 5 (B) +2 and 4
(C) +3 and 1 (D) +2 and 0

75. Which complex can exhibit cis-trans isomerism?

- (A) Square-planar $[Pt(NH_3)_2Cl_2]$ (B) $[Ag(NH_3)_2]^+$
(C) Tetrahedral $[NiCl_4]^{2-}$ (D) $[Co(NH_3)_6]^{3+}$

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76. Two miscible liquids with widely separated boiling points and no azeotrope can usually be separated by:

- (A) Simple distillation (B) Decantation
(C) Filtration (D) Sublimation

77. Among these carbocations, the most stable is:

- (A) n-Propyl (B) Methyl
(C) Ethyl (D) tert-Butyl

78. Which pair of compounds represents functional-group isomerism?

- (A) Cis-but-2-ene and trans-but-2-ene (B) Propan-1-ol and propan-2-ol
(C) Ethanol and dimethyl ether (D) Butane and isobutane

79. Addition of HBr to propene in the presence of peroxide chiefly produces:

- (A) 2-Bromopropane (B) 1-Bromopropane
(C) 1,2-Dibromopropane (D) Propane

80. Nitration of benzene is primarily an example of:

- (A) Free-radical addition (B) Electrophilic substitution
(C) Elimination (D) Nucleophilic addition

81. Which substrate reacts fastest by the S_N1 mechanism under comparable suitable polar conditions?

- (A) Ethyl chloride (B) tert-Butyl chloride
(C) n-Propyl chloride (D) Methyl chloride

82. Phenol is more acidic than ethanol mainly because:

- (A) Phenoxide ion is resonance-stabilised
(B) Phenol is an ionic solid
(C) Ethoxide has greater resonance stabilisation
(D) Ethanol has no O-H bond

83. Which compound gives both Tollens' test and the iodoform test?

- (A) Propanone (B) Methanal
(C) Benzaldehyde (D) Ethanal

84. Which compound undergoes Cannizzaro reaction with concentrated alkali?

- (A) Ethanal (B) Propanal
(C) Butanal (D) Benzaldehyde

85. Which compound gives the carbylamine test?

- (A) Trimethylamine (B) Acetamide
(C) Aniline (D) Dimethylamine

86. Match: P-glucose, Q-fructose, R-sucrose with 1-non-reducing disaccharide, 2-aldohehexose, 3-ketohehexose. Choose the correct matching.

- (A) P-3, Q-2, R-1 (B) P-1, Q-2, R-3
(C) P-2, Q-3, R-1 (D) P-2, Q-1, R-3

87. The bond joining amino-acid residues in a protein is a:

- (A) Glycosidic bond (B) Metallic bond
(C) Peptide bond (D) Phosphodiester bond

88. In Lassaigne's test, nitrogen in an organic compound is converted into:

- (A) Sodium cyanide (B) Sodium nitrate
(C) Nitric acid (D) Ammonium chloride

89. A violet colour with neutral $FeCl_3$ is commonly used to detect:

- (A) An alkyl halide only (B) An alkene only
(C) Phenolic -OH (D) An ester only

90. A white precipitate formed with $AgNO_3$ in a properly prepared acidified chloride test solution, soluble in dilute NH_3 , indicates:

- (A) Chloride (B) Iodide
(C) Bromide (D) Sulphate

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BIOLOGY - BOTANY | Q91-135

91. In binomial nomenclature, the first word denotes the:

- (A) Order (B) Species epithet
(C) Family (D) Genus

92. The fungal partner of a lichen primarily provides:

- (A) Photosynthetic carbohydrates (B) Water, minerals and shelter
(C) Seeds (D) Only atmospheric nitrogen

93. The dominant independent phase of the life cycle in mosses is the:

- (A) Endosperm (B) Sporophyte
(C) Zygote only (D) Gametophyte

94. Which group first shows well-developed vascular tissues but reproduces by spores rather than seeds?

- (A) Bryophytes (B) Gymnosperms
(C) Pteridophytes (D) Angiosperms

95. Match P-moss, Q-fern, R-Pinus with 1-naked seeds, 2-dominant gametophyte, 3-seedless vascular plant. Choose the correct matching.

- (A) P-3, Q-2, R-1 (B) P-2, Q-1, R-3
(C) P-2, Q-3, R-1 (D) P-1, Q-3, R-2

96. In a typical dicot stem, vascular bundles are:

- (A) Radial and closed (B) Only phloem-containing
(C) Conjoint, collateral and open (D) Scattered and closed

97. Which floral feature is characteristic of Brassicaceae (Cruciferae)?

- (A) A single stamen (B) Tetradynamous stamens
(C) Five free petals in every flower (D) Monadelphous stamens

98. Axile placentation is found in:

- (A) Pea (B) Sunflower
(C) Mustard (D) Tomato

99. Match P-Malvaceae, Q-Brassicaceae, R-Asteraceae with 1-tetradynamous stamens, 2-capitulum, 3-monadelphous stamens.

- (A) P-3, Q-2, R-1 (B) P-1, Q-3, R-2
(C) P-2, Q-1, R-3 (D) P-3, Q-1, R-2

100. Which organelle is outside the endomembrane system as conventionally defined?

- (A) Endoplasmic reticulum (B) Mitochondrion
(C) Golgi apparatus (D) Lysosome

101. Statement I: Bacterial cytoplasmic ribosomes are 70S. Statement II: Mitochondria possess their own DNA and ribosomes. Choose the correct option.

- (A) Both statements are true (B) I true, II false
(C) I false, II true (D) Both statements are false

102. The fluid-mosaic model mainly describes a membrane as:

- (A) A cellulose sheet
(B) A DNA-protein bilayer
(C) A lipid bilayer with embedded proteins
(D) A rigid protein wall

103. The major structural polysaccharide in plant cell walls is:

- (A) Chitin (B) Starch
(C) Glycogen (D) Cellulose

104. Assertion: A competitive inhibitor can reduce an enzyme's activity. Reason: It competes with the substrate for the active site. Choose the correct option.

- (A) Assertion false; Reason true
(B) Assertion true; Reason false
(C) Both true; Reason does not explain Assertion
(D) Both true; Reason explains Assertion

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105. DNA replication in the cell cycle occurs during:

- (A) S phase (B) M phase only
(C) G₁ phase (D) G₂ phase

106. A meiocyte has $2n = 16$. At metaphase I, the number of bivalents and total chromatids are, respectively:

- (A) 16 and 16 (B) 8 and 32
(C) 16 and 32 (D) 8 and 16

107. The oxygen released during photosynthesis comes directly from:

- (A) Glucose (B) Carbon dioxide
(C) Chlorophyll (D) Water

108. The primary CO₂ acceptor in C₄ plants is:

- (A) Oxaloacetate (B) Pyruvate
(C) Phosphoenolpyruvate (D) RuBP

109. For fixation of six CO₂ molecules through the Calvin cycle to yield one hexose equivalent, the usual ATP and NADPH requirements are:

- (A) 24 ATP and 6 NADPH (B) 18 ATP and 12 NADPH
(C) 12 ATP and 18 NADPH (D) 6 ATP and 6 NADPH

110. In cyclic photophosphorylation, which is produced directly?

- (A) Glucose without ATP
(B) Only oxygen
(C) ATP without net NADPH or O₂ production
(D) Only NADPH

111. The respiratory quotient for complete oxidation of a carbohydrate is approximately:

- (A) 0.7 (B) 1
(C) 0 (D) 2

112. The respiratory electron transport chain in plant mitochondria is located mainly in the:

- (A) Inner mitochondrial membrane (B) Cytosol
(C) Outer mitochondrial membrane (D) Nucleolus

113. Match P-ABA, Q-ethylene, R-cytokinin with 1-fruit ripening, 2-promotes cell division, 3-stomatal closure during stress.

- (A) P-2, Q-1, R-3 (B) P-3, Q-1, R-2
(C) P-1, Q-3, R-2 (D) P-3, Q-2, R-1

114. A typical mature angiosperm embryo sac is:

- (A) 7-celled and 8-nucleate (B) 4-celled and 4-nucleate
(C) 8-celled and 7-nucleate (D) 8-celled and 8-nucleate

115. In a diploid flowering plant with $2n = 24$, the usual chromosome numbers of the zygote and primary endosperm nucleus are:

- (A) 12 and 24 (B) 36 and 48
(C) 24 and 24 (D) 24 and 36

116. Transfer of pollen between two flowers of the same plant is:

- (A) Xenogamy (B) Geitonogamy
(C) Apogamy (D) Parthenocarp

117. Formation of a fruit without fertilisation is called:

- (A) Polyembryony (B) Parthenocarp
(C) Syngamy (D) Sporogenesis

118. In a monohybrid cross with complete dominance, the F₂ genotypic ratio is:

- (A) 3 : 1 (B) 9 : 3 : 3 : 1
(C) 1 : 1 (D) 1 : 2 : 1

119. A red-flowered snapdragon is crossed with a white-flowered one. All F₁ plants are pink. This demonstrates:

- (A) Complete dominance (B) Incomplete dominance
(C) Sex linkage (D) Polyploidy only

120. A plant AaBb is test-crossed with aabb. With independent assortment, the probability of offspring aaBb is:

- (A) 1/4 (B) 1/8
(C) 3/4 (D) 1/2

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121. If adenine constitutes 20% of the bases in a double-stranded DNA molecule, guanine constitutes:

- (A) 30% (B) 20%
(C) 40% (D) 60%

122. The enzyme that joins Okazaki fragments is:

- (A) Peptidyl transferase (B) DNA ligase
(C) Helicase (D) RNA polymerase

123. Which DNA template sequence yields RNA 5'-AUG-3'?

- (A) 5'-TAC-3' (B) 3'-ATG-5'
(C) 3'-UAC-5' (D) 3'-TAC-5'

124. The lac operon is induced when its repressor is inactivated by:

- (A) Pepsin
(B) An inducer derived from lactose
(C) Glucose binding permanently to DNA
(D) Absence of lactose alone

125. Assertion: Restriction enzymes can generate compatible sticky ends. Reason: Some cut the two DNA strands at staggered positions. Choose the correct option.

- (A) Assertion false; Reason true
(B) Assertion true; Reason false
(C) Both true; Reason does not explain Assertion
(D) Both true; Reason explains Assertion

126. PCR requires a thermostable DNA polymerase because the reaction includes:

- (A) Permanent freezing of DNA
(B) Protein digestion at every cycle
(C) No DNA template
(D) Repeated high-temperature denaturation

127. Statement I: A cloning vector needs an origin of replication. Statement II: A selectable marker helps distinguish transformants from non-transformants. Choose the correct option.

- (A) I true, II false (B) Both statements are true
(C) Both statements are false (D) I false, II true

128. Bt toxin becomes active in the insect gut mainly because of its:

- (A) Alkaline pH
(B) Lack of water
(C) Strongly acidic pH
(D) Absence of proteases in every insect

129. The interaction between a pollinating insect and a flower is usually:

- (A) Predation on the plant (B) Amensalism
(C) Mutualism (D) Competition

130. Under unlimited resources, population growth is described by:

- (A) $dN/dt = rN(1 - N/K)$ only (B) $dN/dt = 0$ for all N
(C) $dN/dt = -rN$ always (D) $dN/dt = rN$

131. In logistic growth, the rate dN/dt is maximum at:

- (A) $N = 0$ (B) $N = 2K$
(C) $N = K/2$ (D) $N = K$

132. Net primary productivity equals:

- (A) Total consumer respiration
(B) Only decomposer biomass
(C) Gross productivity plus respiration
(D) Gross primary productivity minus plant respiration

133. If producers contain 20,000 J and each transfer is 10% efficient, the energy reaching the third consumer level is:

- (A) 200 J (B) 20 J
(C) 2000 J (D) 2 J

134. Which process converts organic detritus into inorganic nutrients?

- (A) Mineralisation (B) Leaching only
(C) Humification only (D) Fragmentation only

135. Which pair is correctly matched?

- (A) Biodiversity hotspot - region with no endemic species
(B) Seed bank - in situ conservation
(C) National park - ex situ conservation
(D) Sacred grove - in situ conservation

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136. The presence of choanocytes is characteristic of:

- (A) Annelida (B) Cnidaria
(C) Arthropoda (D) Porifera

137. Cnidoblasts are specialised cells primarily used for:

- (A) Prey capture and defence (B) Blood circulation
(C) Bone formation (D) Excretion only

138. Which animal is a pseudocoelomate?

- (A) Starfish (B) Earthworm
(C) Ascaris (D) Taenia

139. A water vascular system is characteristic of:

- (A) Mollusca (B) Arthropoda
(C) Echinodermata (D) Chordata

140. Which combination consists entirely of chordate features present at least at some developmental stage?

- (A) Water vascular system, notochord, ventral nerve cord
(B) Ventral solid nerve cord, jointed legs, notochord
(C) Radial symmetry, cnidoblasts, pharyngeal slits
(D) Notochord, dorsal hollow nerve cord, pharyngeal slits

141. The epithelium lining pulmonary alveoli is chiefly:

- (A) Stratified keratinised (B) Simple columnar with dense cilia
(C) Transitional (D) Simple squamous

142. The adult frog normally has a heart with:

- (A) Two chambers (B) Three chambers
(C) One chamber (D) Four chambers

143. Assertion: Air enters the lungs during normal inspiration. Reason: Contraction of the diaphragm and external intercostals increases thoracic volume and lowers intrapulmonary pressure.

Choose the correct option.

- (A) Both true; Reason does not explain Assertion
(B) Both true; Reason explains Assertion
(C) Assertion true; Reason false
(D) Assertion false; Reason true

144. Most CO₂ is transported in human blood as:

- (A) Bicarbonate ions (B) Carbaminohaemoglobin only
(C) Carbon monoxide (D) Dissolved CO₂ only

145. The normal pacemaker of the human heart is the:

- (A) Bundle branch alone (B) Atrioventricular valve
(C) Sinoatrial node (D) Purkinje fibre alone

146. A person with blood group AB normally has:

- (A) Both anti-A and anti-B antibodies in plasma
(B) Both A and B antigens on RBCs
(C) Only anti-A antibody
(D) Neither A nor B antigen

147. A resting heart rate of 75/min and stroke volume of 70 mL rise to 100/min and 100 mL.

Cardiac output increases by:

- (A) 5.25 L/min (B) 2.5 L/min
(C) 10 L/min (D) 4.75 L/min

148. Glomerular filtration occurs from glomerular capillaries into:

- (A) Collecting duct directly (B) Bowman's capsule
(C) Renal pelvis directly (D) Loop of Henle directly

149. ADH chiefly increases renal water reabsorption by acting on the:

- (A) Ureter only
(B) Glomerular blood cells only
(C) Renal artery wall only
(D) Distal nephron and collecting ducts

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150. Atrial natriuretic factor is released in response to atrial stretch and generally:
(A) Prevents all urine formation
(B) Promotes natriuresis and opposes the renin-angiotensin system
(C) Stimulates renin release as its main effect
(D) Raises sodium retention in every nephron

151. Statement I: The A band remains approximately constant during muscle contraction. Statement II: Actin and myosin filaments themselves shorten markedly. Choose the correct option.

- (A) I false, II true (B) Both statements are true
(C) I true, II false (D) Both statements are false

152. Calcium initiates skeletal-muscle contraction by binding to:

- (A) Acetylcholinesterase (B) Troponin
(C) Myosin ATP-binding site only (D) Actin's nuclear DNA

153. Depolarisation of a typical neuron's membrane during an action potential is chiefly caused by:

- (A) Cl^- influx only (B) K^+ influx only
(C) Na^+ influx (D) Ca^{2+} efflux only

154. Saltatory conduction takes place between successive:

- (A) Nucleoli (B) Dendritic spines only
(C) Nodes of Ranvier (D) Synaptic vesicles

155. Which hormone lowers blood glucose by promoting uptake and storage?

- (A) Insulin (B) Glucagon
(C) Cortisol (D) Adrenaline

156. Match P-thyroid, Q-adrenal medulla, R-pancreatic beta cells with 1-insulin, 2-adrenaline, 3-thyroxine.

- (A) P-2, Q-3, R-1 (B) P-3, Q-1, R-2
(C) P-1, Q-2, R-3 (D) P-3, Q-2, R-1

157. The usual site of fertilisation in humans is the:

- (A) Vagina
(B) Ampullary-isthmic junction of the oviduct
(C) Uterine cervix
(D) Ovarian follicle

158. During human spermatogenesis, one primary spermatocyte normally produces:

- (A) Two diploid spermatids (B) One haploid spermatid
(C) Eight haploid spermatids (D) Four haploid spermatids

159. The LH surge in the menstrual cycle chiefly triggers:

- (A) Menstruation directly (B) Implantation
(C) Lactation (D) Ovulation

160. Which hormone primarily stimulates milk ejection?

- (A) Oxytocin (B) FSH
(C) Prolactin (D) Progesterone

161. Copper-releasing IUDs chiefly reduce fertilisation by:

- (A) Suppressing sperm motility and fertilising capacity
(B) Increasing sperm count
(C) Removing the endometrium permanently
(D) Blocking ovulation in all users

162. An I^{Ai} parent and an I^{Bi} parent can have a child with which blood group?

- (A) Only O (B) Only AB
(C) Only A or B (D) Any of A, B, AB or O

163. A carrier woman for haemophilia and an unaffected man have a son. The probability that this son is affected is:

- (A) 1 (B) $\frac{1}{4}$
(C) 0 (D) $\frac{1}{2}$

164. Down syndrome most commonly results from:

- (A) XXY chromosomes
(B) Deletion of the entire Y chromosome
(C) Monosomy X
(D) Trisomy of chromosome 21

165. In a Hardy-Weinberg population, a recessive phenotype has frequency 0.09. The heterozygote frequency is:

- (A) 0.49 (B) 0.21
(C) 0.42 (D) 0.09

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166. Statement I: The genetic code is degenerate. Statement II: Every codon specifies more than one amino acid in the standard code. Choose the correct option.

- (A) Both statements are false (B) Both statements are true
(C) I true, II false (D) I false, II true

167. AUG ordinarily functions as:

- (A) A start codon coding for methionine
(B) A codon for glycine only
(C) A stop codon
(D) An untranslated anticodon

168. Meselson and Stahl's experiment supported:

- (A) Semiconservative DNA replication
(B) Dispersive replication exclusively
(C) Conservative replication exclusively
(D) RNA as the only genetic material

169. Assertion: Whale flippers and bat forelimbs are homologous. Reason: Their underlying skeletal plan reflects common ancestry despite different functions. Choose the correct option.

- (A) Assertion false; Reason true
(B) Both true; Reason does not explain Assertion
(C) Assertion true; Reason false
(D) Both true; Reason explains Assertion

170. Darwin's finches are a standard example of:

- (A) Acquired inheritance only (B) Biomagnification
(C) Artificial cloning (D) Adaptive radiation

171. Random change in allele frequencies, especially in a small population, is:

- (A) Stabilising selection in every case
(B) Gene translation
(C) Genetic drift
(D) Mutation rate alone

172. Industrial melanism is commonly used to illustrate:

- (A) Direct creation of mutations by need
(B) Absence of environmental selection
(C) Inheritance of learned behaviour
(D) Natural selection

173. The infective stage of Plasmodium entering humans with a mosquito bite is the:

- (A) Sporozoite (B) Merozoite
(C) Gametocyte (D) Ookinete

174. HIV primarily damages which immune cells?

- (A) Platelets (B) Helper T lymphocytes
(C) Mature RBCs (D) Neutrophils only

175. Statement I: HIV primarily targets helper T lymphocytes. Statement II: Antibodies are normally secreted by plasma cells derived from B lymphocytes. Choose the correct option.

- (A) Both statements are false (B) Both statements are true
(C) I true, II false (D) I false, II true

176. Methanogens used in biogas production belong to:

- (A) Green algae (B) Archaea
(C) Protozoa (D) Viruses

177. Match P-Lactobacillus, Q-Methanobacterium, R-Trichoderma with 1-biogas production, 2-biocontrol, 3-curd formation.

- (A) P-2, Q-1, R-3 (B) P-1, Q-3, R-2
(C) P-3, Q-2, R-1 (D) P-3, Q-1, R-2

178. Recombinant human insulin production must account for mature insulin having:

- (A) One DNA chain
(B) Three lipid chains
(C) No peptide bonds
(D) Two peptide chains linked by disulphide bonds

179. Adenosine deaminase deficiency is a classic example used to explain:

- (A) Gene therapy (B) Artificial insemination only
(C) Biomagnification (D) Somatic hybridisation in wheat

180. A parasite usually benefits while its host is:

- (A) Unaffected in every case (B) Harmed
(C) Always killed immediately (D) Benefited equally