CODE-A

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MM : 720 **Time : 200 Minutes**

Mock Test-01

Complete Syllabus of NEET

Instructions:

(i) There are two sections in each subject, i.e. Section-A & Section-B. You have to attempt all 35 questions from Section-A & only 10 questions from Section-B out of 15.

(ii) Each question carries 4 marks. For every wrong response 1 mark shall be deducted from the total score. Unanswered / unattempted questions will be given no marks.

(iii) Use blue/black ballpoint pen only to darken the appropriate circle.

(iv) Mark should be dark and completely fill the circle.

(v) Dark only one circle for each entry.

(vi) Dark the circle in the space provided only.

(vii) Rough work must not be done on the Answer sheet and do not use white-fluid or any other rubbing material on the Answer sheet.

PHYSICS

Choose the correct answer:

SECTION-A

1. Identify the vector quantity among the following

(1) Distance (2) Heat

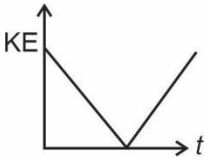
(3) Angular momentum (4) Energy

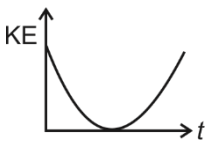
2. Distance travelled by a particle starting form rest and moving with an acceleration of $\frac{4}{3}$ ms^{-2}, in third second is

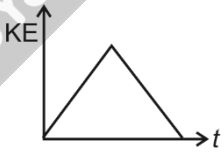
(1) $\frac{10}{3}$ m (2) $\frac{19}{3}$ m

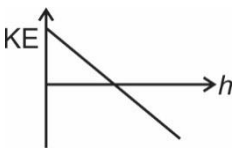
(3) 4 m (4) 6 m

3. A ball is projected vertically up with an initial velocity. Which of the following graph represent KE of ball?

(1) 

(2) 

(3) 

(4) 

4. A ball is projected from ground at angle θ with the horizontal. After t = 1 s, it is moving at 45° with the horizontal and after t = 2 second, it is moving horizontally. What is speed of projection of ball? [g = 10 m s^{-2}]

(1) $10\sqrt{2}$ m/s (2) $10\sqrt{3}$ m/s

(3) 20 m/s (4) $10\sqrt{5}$ m/s

5. In the equation of angular displacement of a particle moving on a circular path is given as $\theta = 2t^3 + 0.5$, θ is in radian and t in second. The angular velocity of the particle at t = 2 s is

(1) 16.5 rad/s

(2) 19.5 rad/s

(3) 24 rad/s

(4) 12 rad/s

6. Bullets of 0.03 kg mass each hit a plate at a rate of 200 bullets per second with velocity of 50 m/s and reflect back with velocity of 30 m/s. The average force acting on the plate in newton is

(1) 120 (2) 180

(3) 480 (4) 245

7. A block rests on an inclined plane making an angle of 30° with the horizontal. The coefficient of static friction between block and the plane is 0.8. If the frictional force on the block is 10 N, then mass of block (in kg) (Take $g = 10\ m/s^2$)

(1) 2.0 (2) 2.5

(3) 4.0 (4) 1.5

8. A mass of 1 kg is suspended by a thread. It is lifted up with an acceleration of 4.9 m s^{-2}, and then lowered with an acceleration of 4.9 m s^{-2}. The ratio of tensions in first case to second cases is ($g = 9.8\ ms^{-2}$)

(1) 2 : 1 (2) 1 : 1

(3) 3 : 1 (4) 1 : 3

9. A particle moves along x axis from $x = 1$ m to $x = 3$ m under the effect of the force $F = 3x^2 - 2x + 5$ N. Work done in process is

(1) 24 J (2) 38 J

(3) 18 J (4) 28 J

10. In stable equilibrium position, a body has

(1) Maximum potential energy

(2) Minimum potential energy

(3) Minimum kinetic energy

(4) Neither maximum nor minimum potential energy

11. Two bodies of mass 10 kg and 2 kg are moving with velocities $(2i - 7\hat{j} + 3\hat{k})$ m/s and $(-10\hat{i} + 35\hat{j} - 3\hat{k})$ m/s respectively. The velocity of their centre of mass is

(1) $2\hat{i}$ m/s

(2) $2\hat{k}$ m/s

(3) $4\hat{i} + 2\hat{j}$ m/s

(4) $6\hat{i} + 2\hat{j} - 3\hat{k}$ m/s

12. A flywheel of mass 50 kg and radius of gyration about its axis of rotation of 0.5 m is acted upon by a constant torque of 12.5 N m. Its angular velocity at $t = 5$ s is

(1) 2 rad/s (2) 5 rad/s

(3) 10 rad/s (4) 12 rad/s

13. A body is released from height equal to radius R of the earth. The velocity of body with which it will strike the earth surface is

(1) $\sqrt{2gR}$ (2) $2\sqrt{gR}$

(3) $\sqrt{gR}$ (4) $\sqrt{\frac{gR}{2}}$

14. The height at which the weight of an object becomes $\left(\frac{1}{16}\right)$th of its weight on the surface of earth is (R is radius of earth)

(1) 3 R (2) 2 R

(3) 4 R (4) 5 R

15. A wire can be broken by a load of 20 kg-wt. The force required to break wire of same material with twice the diameter will be

(1) 20 kg-wt (2) 60 kg-wt

(3) 90 kg-wt (4) 80 kg-wt

16. If work done in increasing the size of rectangular soap film with dimensions 8 cm × 3.75 cm to 10 cm × 6 cm is 2×10^{-4} J. The surface tension of film in newton per meter is

(1) 2.1×10^{-2} (2) 1.65×10^{-2}

(3) 3.3×10^{-2} (4) 4.2×10^{-2}

17. Two rain drops reach earth from clouds with different terminal velocities having ratio 9 : 4. Then the ratio of their volumes is

(1) 3 : 2 (2) 27 : 8

(3) 64 : 81 (4) 8 : 27

18. In a thermodynamic process, pressure of fixed mass of a gas is changed in such a manner that the gas releases 20 J of heat and 8 J of work is done on the gas. If initial internal energy of the gas was 40 J, what will be final internal energy?

(1) 18 J (2) 28 J

(3) 52 J (4) 32 J

19. Choose the correct statement.

(1) Internal energy is a path function, while heat is not

(2) Heat is a path function, while internal energy is not

(3) Both heat and internal energy are not path function

(4) Both heat and internal energy are path function

20. An ideal engine whose efficiency is 40%, receives heat at 500 K. If required efficiency is 50%, then intake temperature for the same exhaust temperature is

(1) 800 K (2) 700 K

(3) 400 K (4) 600 K

21. The root mean square speed of molecules of a gas is 1260 m/s. The average speed of the gas molecules is

(1) 1161 m/s (2) 1671 m/s

(3) 912 m/s (4) 1040 m/s

22. An object on a spring vibrates in a simple harmonic motion at a frequency of 4 hertz and an amplitude of 8 cm. If the mass of the object is 200 g, the spring constant is

(1) 40 N/m (2) 160 N/m

(3) 126 N/m (4) 109 N/m

23. A heavy rope is suspended from rigid support. A wave pulse is set up at the lower end. Then

(1) The pulse travels with uniform speed

(2) The pulse will travel with increasing speed

(3) The pulse will travel with decreasing speed

(4) The pulse cannot travel through rope

24. Two waves of wavelength 50 cm and 51 cm produced 12 beats per second. The velocity of sound is

(1) 306 m/s (2) 333 m/s

(3) 342 m/s (4) 356 m/s

25. A positive charge is moved from low potential point A to a high potential point B. Then the electric potential energy

(1) Increases

(2) Decreases

(3) Will remain same

(4) Nothing definite can be predicted

26. A parallel plate capacitor is charged and then charging battery is disconnected. If the plates are now pulled apart with insulated handles

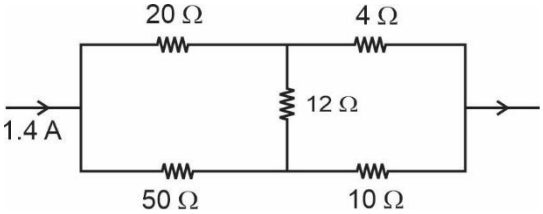
(1) The capacitance increases

(2) Potential energy decreases

(3) Potential difference increases

(4) Charge and potential difference both remains same

27. In the shown circuit, current through 4 Ω resistor is



(1) 0.6 A (2) 0.7 A

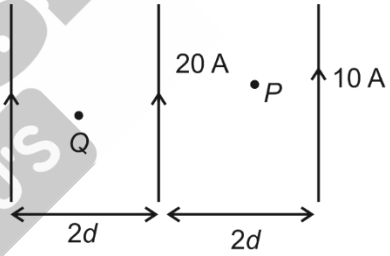
(3) 1 A (4) 1.2 A

28. Two identical cells connected in series send 10 A current through a 5 Ω resistor. When they are connected in parallel, they send 8 A current through same resistance. What is internal resistance of each cell?

(1) 2.5 Ω (2) 1 Ω

(3) 1.5 Ω (4) 1.9 Ω

29. Three long wires, carrying current 10 A, 20 A and 30 A are placed parallel to each other as shown. Point *P* and *Q* are in midway of wires. What is ratio of magnetic field at *P* to the *Q*?



(1) 2 : 1 (2) 3 : 2

(3) 2 : 3 (4) 3 : 1

30. A 0.8 m long solenoid has 800 turns and has a field density of 2.52×10^{-3} T at its centre. What is current in the wire?

(1) 3 A (2) 2 A

(3) 1 A (4) 4 A

31. A charge particle having charge 2 C is thrown with velocity of $(2\hat{i}+3\hat{j})$ m/s inside a region having $\vec{E}=2\hat{j}$ N/C and magnetic field $5\hat{k}$ T. The Lorentz force acting on particle is

(1) $(30\hat{i}-16\hat{j})$N (2) $(15\hat{i}+20\hat{j})$N

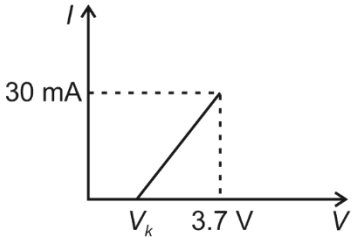
(3) $(15\hat{i}-30\hat{j})$N (4) $(30\hat{i}+15\hat{j})$N

32. The relative permeability of iron is 5500. What is its magnetic susceptibility?

(1) 1 (2) 5499

(3) 5501 (4) 4999

33. The resistance of a silicon junction diode, whose V - I characteristics is as shown in figure is (V_k = 0.7 V)



(1) 0.2 kΩ (2) 0.1 kΩ

(3) 1.5 kΩ (4) 3.7 kΩ

34. The horizontal component of earth's magnetic field at a place is 4×10^{-4} T and dip is 45°. A metal rod of length 20 cm is placed in north south direction and is moved at constant speed of 5 cm/s towards East. What is e.m.f. induced in the rod?

(1) 4×10^{-6} V (2) 2×10^{-4} V

(3) 4×10^{-5} V (4) 3×10^{-6} V

35. According to Lenz's law of electromagnetic induction

(1) The induced emf in the direction opposing the change in magnetic flux

(2) The relative motion between coil and magnet produces no change in magnetic flux in any case

(3) Only magnet should be moved towards coil

(4) Only the coil should be moved towards magnet

SECTION-B

36. A coil has resistance of 30 ohm and inductive reactance 20 ohm at 50 Hz frequency. If an ac source of 200 V, 100 Hz is connected across the coil, current in coil will be

(1) 2 A (2) 4 A

(3) 5 A (4) 6 A

37. A plane electromagnetic wave E_Z = 100 cos ($6 \times 10^8 t + 4x$) V/m, where x is in metre and t is in second. propagates in medium, what is refractive index of the medium?

(1) 1.2 (2) 2.0

(3) 1.4 (4) 1.5

38. If two coherent waves are represented by $y_1 = 4 \sin\omega t$ and $y_2 = 3 \sin(\omega t + \pi/3)$ interfere at a point, the amplitude of resulting wave will be about

(1) 7.2 (2) 6.1

(3) 5 (4) 12

39. The fringe width in Young's double slit experiment increases when

(1) Wavelength decreases

(2) Distance between sources and screen decreases

(3) Source slit is moved closer to slit openings

(4) Distance between slits plane and screen increases

40. A defective eye cannot see close objects clearly because their image is formed

(1) On the eye lens

(2) Between eye lens and retina

(3) On the retina

(4) Beyond retina

41. Rainbow is formed due to

(1) Scattering and refraction

(2) Scattering and reflection

(3) Internal reflection and dispersion

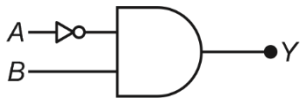
(4) Dispersion alone

42. When light of maximum wavelength 300 nm falls on a photoelectric emitter, photoelectrons are liberated. For another emitter however light of maximum wavelength 600 nm causes photoelectric emission. The ratio of work functions of first emitter to second emitter will be

(1) 1 : 2 (2) 2 : 1

(3) 1 : 1 (4) 1 : 4

43. The Boolean equation for the circuit as shown in figure is



(1) $A \cdot B$ (2) $\bar{A} + B$

(3) $\bar{A}\ B$ (4) $A + B$

44. After one alpha particle emission and one β^- particle emission from a nucleus

(1) Mass number reduces by 5

(2) Atomic number increases by 1

(3) Mass number reduces by 2

(4) Atomic number reduces by 1

45. To measure light intensity we use

(1) LED with forward bias

(2) LED with reverse bias

(3) Photodiode with forward bias

(4) Photodiode with reverse bias

46. Two trains 101 m and 99 m in length are running in opposite direction with velocities 54 km/h and 36 km/h. In what time they will completely cross each other?

(1) 20 s (2) 8 s

(3) 10 s (4) 16 s

47. A body of mass *M* is rotating in a vertical circle of radius *r* with critical speed. The difference in its kinetic energy at the top and the bottom is

(1) 2 *Mgr* (2) 4 *Mgr*

(3) 6 *Mgr* (4) 3 *Mgr*

48. The angular frequency of a simple pendulum is ω rad/s. Now the length is made one fourth of the original length, the angular frequency becomes

(1) $\frac{\omega}{2}$ (2) 2ω

(3) 4ω (4) ω

49. The radii of circular orbits of two satellites *A* and *B* of the earth, are 4*R* and *R*, respectively. If speed of satellite *A* is 2*V*, then the speed of satellite *B* will be

(1) 2*V* (2) $\frac{V}{2}$

(3) 4*V* (4) $\frac{V}{4}$

50. If the distance between successive compressions and rarefaction in a sound wave is 2 m and velocity of sound is 360 m/s, then the frequency is

(1) 180 Hz

(2) 45 Hz

(3) 120 Hz

(4) 90 Hz

CHEMISTRY

SECTION-A

51. 21.75 g of MnO_2 on reaction with HCl forms 2.8 L of Cl_2(g) at STP, the percentage purity of MnO_2 is (atomic mass of Mn = 55u)

$MnO_2 + 4\ HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$

(1) 80% (2) 75%

(3) 33% (4) 50%

52. Which of the following has the maximum number of electrons?

(1) 14 g of N^{3-} ion (2) 4 g of Ca^{2+} ion

(3) 16 g of O_3 (4) 2.3 g of Na^+ ion

53. The radii of 2nd Bohr orbit of Be^{3+} ion is

(1) 26.45 pm (2) 52.9 pm

(3) 79.35 pm (4) 105.8 pm

54. For hydrogen atom, the correct order of energy of orbitals is

(1) 4*f* > 4*d* > 4*p* > 3*d* > 3*p* > 3*s*

(2) 4*f* = 4*d* > 3*d* > 4*p* > 3*p* > 3*s*

(3) 4*f* > 4*p* > 4*d* = 3*d* > 3*p* > 3*s*

(4) 4*f* = 4*d* = 4*p* > 3*d* = 3*p* = 3*s*

55. If the value of ionisation enthalpy of K is x eV then the value of electron gain enthalpy of K^+ is

(1) –x eV (2) –2x eV

(3) +2x eV (4) $-\frac{1}{2}$x eV

56. The correct order of ionic radii is represented in

(1) $O > O^- > O^{2-}$ (2) $Al^+ > Al^{2+} > Al^{3+}$

(3) $S^{2-} > K^+ > Cl^-$ (4) $Mg^{2+} > Na^+ > N^{3-}$

57. Which of the following pairs of compounds are isostructural?

(1) H_2O and SO_3 (2) I_3^- and XeF_2

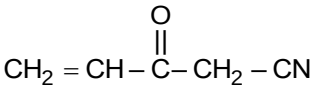
(3) NH_3 and BF_3 (4) SF_4 and XeF_4

58. The species which does not exist is

(1) Li_2 (2) C_2

(3) H_2 (4) He_2

59. The number of σ and π bonds in the following compound respectively are



(1) 12 and 3 (2) 11 and 3

(3) 12 and 4 (4) 11 and 4

60. The temperature at which rms velocity of CH_4 will be same as that of O_2 at 27ºC is

(1) 150 K (2) 450 K

(3) 600 K (4) 900 K

61. van der Waals constant (a) for the gases A, B, C and D are 1.25, 3.29, 4.28 and 0.244 respectively. The gas which is most easily liquefied is

(1) A (2) B

(3) C (4) D

62. For the reaction,

$CCl_4(g) + 2H_2O(g) \rightarrow CO_2(g) + 4HCl(g)$ at constant temperature, $\Delta H - \Delta E$ is

(1) –RT (2) RT

(3) –2RT (4) 2RT

63. Four monobasic acids A, B, C and D have their respective Δ_{neut} H° values as – 11.5, –7.5, –12.4 and – 8.9 kcal/mol. Which of the following acids has the highest pK_a value?

(1) A (2) B

(3) C (4) D

64. For the reversible reactions,

$CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$

Which of the following does not affect the equilibrium state?

(1) Increase in the volume of the container

(2) Decrease in the volume of the container

(3) Addition of CaO(s)

(4) Addition of inert gas at constant pressure

65. Conjugate acid and conjugate base of HPO_4^{2-} respectively are

(1) $H_2PO_4^-$ and H_3PO_4 (2) $H_2PO_4^-$ and PO_4^{3-}

(3) H_3PO_4 and PO_4^{3-} (4) PO_4^{3-} and $H_2PO_4^-$

66. Which of the following is not a disproportionation reaction?

(1) $Cl_2 + OH^- \longrightarrow Cl^- + ClO_3^- + H_2O$

(2) $P_4 + OH^- + H_2O \longrightarrow PH_3 + H_2PO_2^-$

(3) $S_8 + OH^- \longrightarrow 4S^{2-} + 2S_2O_3^{2-} + 6H_2O$

(4) $F_2 + OH^- \longrightarrow F^- + OF_2 + H_2O$

67. The oxidation state of central bromine atom in Br_3O_8 is

(1) +6 (2) +3

(3) +4 (4) +5

68. Which of the following is a method of laboratory preparation of dihydrogen?

(1) Electrolysis of acidified water using platinum electrodes

(2) Reaction of granulated zinc with dil hydrochloric acid

(3) Reaction of steam on hydrocarbons or coke at high temperature in the presence of catalyst

(4) Electrolysis of brine solution

69. The characteristic colour exhibited by Rb atom to an oxidizing flame is

(1) Crimson red (2) Yellow

(3) Red violet (4) Blue

70. The 13th group element which has the least melting point is

(1) B (2) Al

(3) Ga (4) In

71. Thermodynamically, the most stable allotrope of carbon is

(1) Coke (2) Fullerene

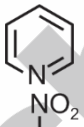
(3) Diamond (4) Graphite

72. Formic acid on reaction with concentrated H_2SO_4 at 373 K gives

(1) CO_2 (2) HCHO

(3) CH_3OH (4) CO

73. Kjeldahl's method is applicable to which of the following compounds?

(1) 

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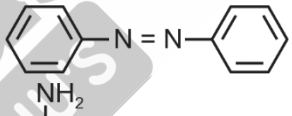
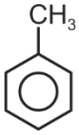
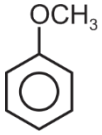
(3) 

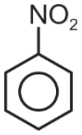
(4) 

74. The compound which is most reactive towards electrophilic substitution reaction is

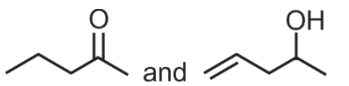
(1) 

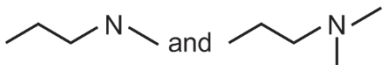
(2) 

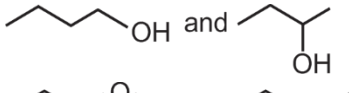
(3) 

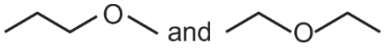
(4) 

75. Which of the following pairs of compounds are metamers of each other?

(1) 

(2) 

(3) 

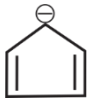
(4) 

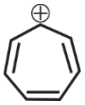
76. Ethene on reaction with Baeyer's reagent gives

(1) Ethane-1, 2 diol (2) Ethanoic acid

(3) Ethanal (4) Ethanol

77. Anti-aromatic species among the following is

(1)  (2) 

(3)  (4) 

78. Maximum prescribed concentration of Cd in drinking water is

(1) 0.2 ppm (2) 0.02 ppm

(3) 0.005 ppm (4) 0.05 ppb

79. Packing efficiency of fcc unit cell is

(1) 74% (2) 68%

(3) 52.8% (4) 26%

80. Which of the following colligative property is used to determine molar masses of proteins?

(1) Relative lowering of vapour pressure

(2) Elevation in boiling point

(3) Depression in freezing point

(4) Osmotic pressure

81. Which of the following metal has the highest conductivity at room temperature?

(1) Na (2) Cu

(3) Ag (4) Au

82. Which of the following quantities changes on addition of a catalyst during a chemical reaction?

(1) Equilibrium constant (2) Activation energy

(3) Gibbs energy (4) Enthalpy

83. For the coagulation of methylene blue sol, the flocculating power of which of the following ion is maximum?

(1) PO_4^{3-} (2) Al^{3+}

(3) Cl^- (4) Ba^{2+}

84. Select the incorrect statement about electrolytic refining

(1) Impure metal is made to act as anode

(2) Pure metal is used as cathode

(3) Zinc can be refined using this method

(4) Impurities deposit as cathode mud

85. The compound which has the highest reducing character among the following is

(1) H_2O (2) H_2S

(3) H_2Se (4) H_2Te

SECTION-B

86. The ion which has the highest magnetic moment is

(1) Sc^{3+} (2) Ni^{2+}

(3) Ti^{3+} (4) Zn^{2+}

87. The co-ordination complex which shows linkage isomerism is

(1) $[Co(NH_3)_5NO_2]^{2+}$ (2) $[Co(NH_3)_6]^{3+}$

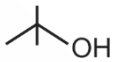
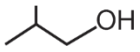
(3) $[Co(NH_3)_5Br]^{2+}$ (4) $[Cr(H_2O)_5Cl]^{2+}$

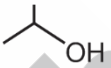
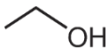
88. The alkyl halide which is most reactive towards dehydrohalogenation is

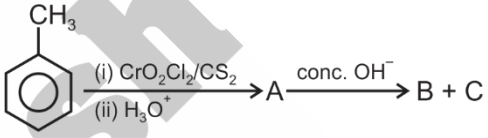
(1) R-F (2) R-Cl

(3) R-Br (4) R-I

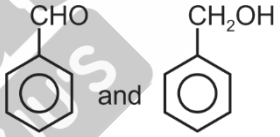
89. The alcohol which reacts fastest with Lucas reagent is

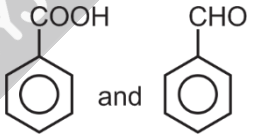
(1)  (2) 

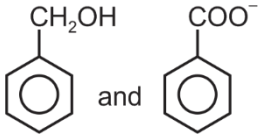
(3)  (4) 

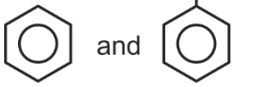
90. 

B and C are

(1) 

(2) 

(3) 

(4) 

91. Consider the following reaction sequence,

$CH_3CH_2Cl \xrightarrow{KCN} A \xrightarrow{H_3O^+} B \xrightarrow{NH_3/\Delta} C \xrightarrow{Br_2+NaOH} D$

Major product D is

(1) $CH_3CH_2NH_2$ (2) $CH_3CH_2CONH_2$

(3) $CH_3CH_2CH_2NH_2$ (4) $CH_3CH = NH$

92. Nitrobenzene on reduction with $LiAlH_4$ in the presence of ether yields

(1) Hydrazobenzene (2) Azoxybenzene

(3) Azobenzene (4) p-amino phenol

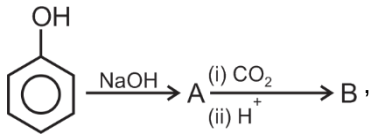
93. Purine base among the following is
(1) Cytosine (2) Guanine
(3) Thymine (4) Uracil

94. Monomer of Nylon-6 is
(1) Acrylonitrile (2) Styrene
(3) Caprolactam (4) Chloroprene

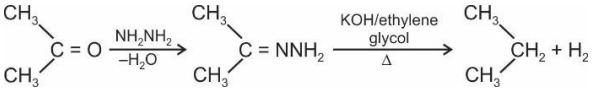
95. Antidepressant drug among the following is
(1) Phenelzine (2) Chloramphenicol
(3) Prontosil (4) Salvarsan

96. Number of P-OH bonds in pyrophosphoric acid is
(1) 1 (2) 2
(3) 3 (4) 4

97. Consider the following reaction,



The major product (B) obtained in the above reaction is
(1) Salicylaldehyde (2) Salicylic acid
(3) Benzoic acid (4) Phthalic acid

98. 

The above reaction is known as
(1) Rosenmund reduction
(2) Clemmensen reduction
(3) Wolff-Kishner reduction
(4) Stephen reaction

99. If the standard electrode potential for a cell, $A^{2+}(aq) + 2B(s) \rightarrow A(s) + 2B^{+}(aq)$ is 1.9 V, then the standard Gibbs energy for the reaction is
(1) 3.8 F J/mol
(2) –1.9 F J/mol
(3) –3.8 F J/mol
(4) –7.6 F J/mol

100. Most basic compound among the following is
(1) $La(OH)_3$ (2) $Eu(OH)_3$
(3) $Er(OH)_3$ (4) $Lu(OH)_3$

BOTANY

SECTION-A

101. Which of the following taxonomic category is represented by *Solanum* in the scientific name *Solanum tuberosum*?
(1) Family (2) Genus
(3) Order (4) Division

102. Select the **incorrect** statement
(1) In multicellular organism growth and reproduction are not synonymous
(2) A scientific name should be printed in italics according to binomial nomenclature
(3) A museum has preserved plant and animals specimens
(4) Taxonomy includes phylogeny as the basis of classification of organisms

103. Diatoms, which are good indicators of water pollution are
(1) Photosynthetic protists
(2) Saprophytes
(3) Heterotorphs
(4) Chemoautotrophs

104. The organisms which can fix atmosphere CO_2 and releases O_2 as by product is
(1) *Rhizobium* (2) *Rhodospirillum*
(3) *Wolffia* (4) *Chlorobium*

105. Prions differ from viroids as the former has/is
(1) DNA as genetic material
(2) Low molecular weight RNA
(3) Proteinaceous in nature
(4) Obligate parasite

106. Membrane less cell organelle common to both prokaryotes and eukaryotes is
(1) Lysosome (2) Vacuole
(3) Ribosome (4) Spherosomes

107. Most common type of lipids found in plasma membrane is A and they show B movement within the plasma membrane.
Choose the most appropriate option to fill A and B.

	A	B
(1)	Glycolipid	Flip flop
(2)	Phospholipid	Flip flop
(3)	Glycolipid	Lateral
(4)	Phospholipid	No

108. Which of the following is synthesized during S-phase of cell cycle?
(1) Tubulin protein
(2) Spindle fibre
(3) Deoxyribonucleic acid
(4) Nucleotides

109. Synapsis and desynapsis takes place respectively during
(1) Leptotene and Zygotene
(2) Pachytene and Diplotene
(3) Zygotene and Leptotene
(4) Zygotene and Diplotene

110. The feature not related to family Solanaceae is
(1) Persistent calyx
(2) Epipetalous condition of androecium
(3) Swollen placenta
(4) Incomplete flower with Perianth

111. Hypogynous flowers are seen in
(1) Plum (2) Rose
(3) Pea (4) Peach

112. Collenchyma is living mechanical tissue. Select the **incorrect** about it
(1) Has cell wall thickening
(2) Lacks protoplasm at maturity
(3) Provides mechanical support
(4) Generally lacks intercellular spaces

113. Ground tissue of leaf is called
(1) Pith (2) Medulla
(3) Mesophyll (4) Endodermis

114. Select the **incorrect** match
(1) *Salvinia* – Heterosporous
(2) *Pinus* – Monoecious
(3) *Selaginella* – Homosporous
(4) *Funaria* – Dominant gametophyte

115. The ploidy level of egg apparatus of embryo sac which contains three cells is
(1) Triploid (2) Haploid
(3) Diploid (4) Tetraploid

116. Active transport does **not** involve
(1) Energy in the form of ATP
(2) Membrane proteins
(3) Movement down the concentration gradient
(4) Uphill movement of substances

117. If water potential of cell A, B and C are -2, -4 and -6 respectively then the water will move from
(1) $A \rightarrow B \rightarrow C$ (2) $C \rightarrow B \rightarrow A$
(3) $A \rightarrow C \rightarrow B$ (4) $B \rightarrow C \rightarrow A$

118. Root nodules in some plants like soyabean export fixed nitrogen along with transpiration stream in the form of
(1) NH_3 (2) Amino acids
(3) Amides (4) Ureides

119. Which of the following nutrient is required for pollen germination?
(1) Ca (2) Zn
(3) B (4) Mg

120. The primary CO_2 accepter in C_4 plants in mesophyll cells are
(1) PEP (2) RUBP
(3) RuBisCO (4) OAA

121. In PSII, the reaction centre chlorophyll a has an absorption peak at
(1) 680 nm (2) 700 nm
(3) 720 nm (4) 400 nm

122. Which of the following processes takes place in anaerobic bacteria?
(1) ETS (2) Krebs cycle
(3) Glycolysis (4) Link reaction

123. The respiratory quotient of which of the following substrate is less than one?
(1) Proteins (2) Organic acids
(3) Carbohydrates (4) Malic acid

124. The plant hormone responsible for apical dominance is
(1) Cytokinin (2) Auxin
(3) Ethylene (4) ABA

125. Which of the following hormone promotes bolting?
(1) ABA (2) Gibberellins
(3) Auxin (4) Cytokinin

126. The most common type of asexual spores in algae are
(1) Zoospores (2) Conidia
(3) Buds (4) Sporangiospores

127. All of the following produce isogametes, **except**
(1) *Ulothrix* (2) *Rhizopus*
(3) *Cladophora* (4) *Volvox*

128. Colourblindness and haemophilia are
(1) Autosomal recessive disorders
(2) Sex-linked recessive disorders
(3) Autosomal dominant disorders
(4) Sex-linked dominant disorders

129. Genetically different type of pollen grains land on stigma of ovary in
(1) Geitonogamy (2) Homogamy
(3) Cleistogamy (4) Xenogamy

130. The innermost layer of anther wall which surrounds the sporogenous tissue and nourishes the developing pollen grains is
(1) Epidermis (2) Endothecium
(3) Tapetum (4) Middle layer

131. Number of chromosomes are different in male and female individuals in
(1) *Drosophila* (2) Grasshopper
(3) Humans (4) Birds

132. In lac operon, when repressor protein binds to operator then
(1) There is synthesis of β-galactosidase enzyme
(2) RNA polymerase cannot bind to the promoter
(3) RNA polymerase binds to the promoter
(4) There is mutation in i gene

133. Select the **incorrect** about minisatellites.
(1) They are VNTRs
(2) They are surrounded by conserved restriction sites
(3) Size varies from 0.1 to 20 kb
(4) Their copy number varies from individual to individual but not from chromosome to chromosome in an individual

134. The entire collection of plants/seeds having all the diverse alleles for all genes of a given crop is called
(1) Genome (2) Germplasm
(3) Protoplasm (4) Cytoplasm

135. Himgiri is a variety of
(1) Mustard (2) Chilli
(3) Wheat (4) Cauliflower

SECTION-B

136. Which of the following is a commercial blood cholesterol lowering agent?
(1) Cyclosporin A (2) Statin
(3) Amylase (4) Streptokinase

137. Select the **mismatched** pair
(1) *Anabaena* – Autotrophic
(2) *Rhizobium* – N_2 fixer
(3) *Trichoderma* – Cyclosporin A
(4) Tobacco mosaic virus – Biocontrol agent

138. A population interaction in which both species are benefitted is called
(1) Commensalism (2) Ammensalism
(3) Predation (4) Mutualism

139. Natality refers to
(1) Birth rate
(2) Death rate
(3) Death of an organism
(4) Number of individuals leaving the habitat

140. The pymarid which is always upright is
(1) Pyramid of biomass
(2) Pyramid of number
(3) Pyramid of biomass in sea
(4) Pyramid of energy

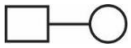
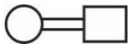
141. In an ecosystem the rate of production of organic matter by producers which is available to herbivores is
(1) Net primary productivity
(2) Gross primary productivity
(3) Secondary productivity
(4) Tertiary productivity

142. Which of the following is most important cause of animals and plants to become extinct?
(1) Co-extinction
(2) Overexploitation
(3) Alien species invasion
(4) Habitat loss and fragmentation

143. Which of the following is *in-situ* conservation strategy?
(1) Botanical gardens
(2) Wildlife safari parks
(3) Wildlife sanctuaries
(4) Cryopreservation

144. Montreal Protocol was signed in
(1) 1986 (2) 1987
(3) 1988 (4) 1989

145. Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for
(1) Making plastic bags
(2) Making plastic pipes and tubes
(3) Laying roads
(4) Both (1) and (2)

146. Select the **wrong** match w.r.t. symbols used in pedigree
(1)  – Mating
(2)  – Affected female
(3)  – Mating between relatives
(4)  – Five unaffected offspring

147. Which of the following is **not** a stop codon?
(1) UAA (2) UAG
(3) AUG (4) UGA

148. Casparian strips on endodermis are seen in
(1) Monocot root
(2) Monocot leaf
(3) Monocot stem
(4) Dicot stem

149. Monocot stem has all, **except**
(1) Epidermis
(2) Vascular bundles
(3) Medullary rays
(4) General cortex

150. All of the following do not have nucleus at maturity, **except**
(1) Sieve tube elements
(2) Companion cell
(3) Vessel element
(4) Sclerenchymatous fibre

ZOOLOGY

SECTION-A

151. Which one of the following statement is correct regarding digestion and absorption of food in humans?
(1) About 50% of starch is hydrolysed by salivary amylase in mouth
(2) Parietal cells in stomach secrete proenzyme, pepsinogen
(3) Micelles are small glycoprotein particles that are transported from intestine into blood capillaries
(4) Diglycerides and monoglycerides are broken into fatty acids and glycerol by the action of lipases in small intestine

152. Where do certain symbiotic micro-organisms normally occur in human body?
(1) Duodenum (2) Rectum
(3) Caecum (4) Jejunum

153. Complete the analogy:
Calorific value of carbohydrate : 4.1 kcal/g :: Calorific value of fat : _____.
(1) 5.65 kcal/g
(2) 9.45 kcal/g
(3) 5.45 kcal/g
(4) 6.95 kcal/g

154. Choose the **incorrect** match among the following:
(1) *Balanoglossus* – Body is cylindrical and is composed of anterior proboscis, a collar and a long trunk
(2) *Hippocampus* – Contains one auricle and one ventricle
(3) *Naja* – Shows ecdysis
(4) *Pheretima* – Excretes through Malpighian tubules

155. Characteristics: Bioluminescence, exclusively marine, radially symmetrical, diploblastic, tissue level of organization.
Organisms which have the above mentioned characteristics belong to which phylum?
(1) Coelenterata (2) Aschelminthes
(3) Ctenophora (4) Echinodermata

156. Which of the following feature(s) is not present in the phylum Arthropoda?
(1) Chitinous exoskeleton
(2) Jointed appendages
(3) Compound and simple eyes
(4) Parapodia

157. Which of the following bone falls under the category of sesamoid bone?
(1) Patella (2) Radius
(3) Parietal bone (4) Incus

158. _____ in some bones is the site of haemopoiesis. Fill the blank with correct option

(1) Epiphysis (2) Bone marrow

(3) Periosteum (4) Perichondrium

159. The tergum, sternum and pleurite of the body of cockroach are joined by

(1) Pronotum

(2) Haemolymph

(3) Arthrodial membrane

(4) Muscular tissue

160. Which of the following statement is **incorrect** w.r.t. reproductive system and development of cockroach?

(1) The development of *Periplaneta americana* is paurometabolous

(2) Females produce 9-10 oothecae, each containing 14-16 eggs

(3) Male reproductive system consists of a pair of testes, one lying on each lateral side in the 4^{th} to 6^{th} abdominal segments

(4) Mushroom shaped gland is present in the 4^{th} to 6^{th} abdominal segments of male cockroach

161. A competitive inhibitor of succinic dehydrogenase is

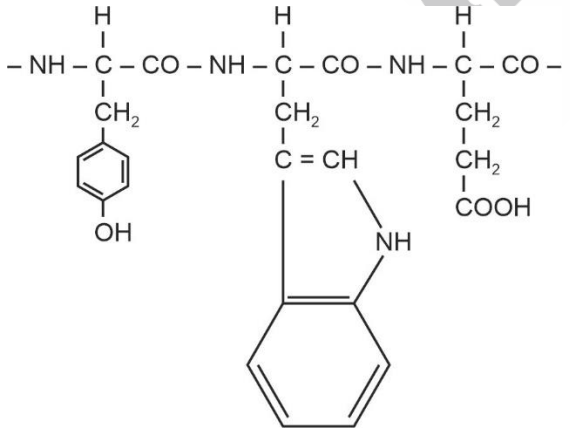
(1) α-ketoglutaric acid

(2) Acetic acid

(3) Malate

(4) Malonate

162. The following figure shows a tripeptide portion of a protein. Identify the **correct** sequence of amino acids arranged in the following tripeptide.



Choose the correct option:

(1) Phenylalanine – Tyrosine – Aspartic acid

(2) Tyrosine – Tryptophan – Glutamic acid

(3) Tryptophan – Tyrosine – Glycine

(4) Hydroxyproline – Alanine – Asparagine

163. Read the given statements w.r.t. co-factors:

Statement-A: Prosthetic groups are organic compounds which are tightly bound to the apoenzyme.

Statement-B: Coenzymes are organic compounds which are loosely bound to the holoenzyme to form apoenzyme.

Choose the **correct** option w.r.t. the above given statements.

(1) Statement A is correct, statement B is incorrect

(2) Statement A is incorrect, statement B is correct

(3) Both statements A and B are incorrect

(4) Both statements A and B are correct

164. Majority of CO_2 in blood is transported in the form of

(1) Carboxyhaemoglobin in erythrocytes

(2) Carbaminohaemoglobin in plasma

(3) Free CO_2 in blood plasma

(4) Bicarbonate in blood plasma

165. Name the disease which occurs due to inflammation of bronchi and bronchioles in which breathing becomes difficult and leads to wheezing.

(1) Emphysema

(2) Asthma

(3) Pleurisy

(4) Pneumoconiosis

166. Mark the **incorrect** option w.r.t. respiratory capacities:

(1) IC = TV + IRV

(2) VC = IRV + ERV

(3) EC = TV + ERV

(4) TLC = VC + RV

167. A boy goes to a park where he gets stung by a bee. His body shows allergic reactions. Certain cells of the body produce histamine which results in the inflammation at the site of where he was stung. These histamine-secreting cells are:

(1) Eosinophils

(2) Acidophils

(3) Neutrophils

(4) Basophils

168. Match column-I **correctly** with column-II

	Column-I		**Column-II**
a.	Visceral pericardium	(i)	Pace-setter of the heart
b.	Sino-atrial node	(ii)	Outer pericardial membrane
c.	Parietal pericardium	(iii)	Pace-maker of the heart
d.	Atrio-ventricular node	(iv)	Inner pericardial membrane

Choose the **correct** option.

(1) a(iv), b(iii), c(ii), d(i)

(2) a(i), b(ii), c(iii), d(iv)

(3) a(ii), b(i), c(iv), d(iii)

(4) a(i), b(ii), c(iv), d(iii)

169. The T-wave in ECG represents:

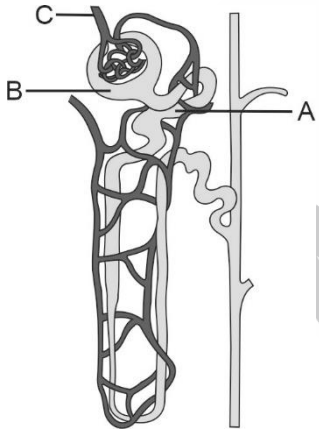
(1) Repolarization of both atria

(2) Repolarization of both ventricles

(3) Depolarization of both atria

(4) Depolarization of both ventricles

170. Observe the given diagram of nephron



Select the correct option which represents the labelling for the site where maximum reabsorption of water occurs and the labelling for the site which brings impure and oxygenated blood to the nephron respectively.

(1) B and C (2) C and B

(3) A and C (4) C and A

171. Complete the analogy:

Increases blood pressure : Renin :: Decreases blood pressure: _____.

(1) Atrial natriuretic peptide

(2) Adrenaline

(3) Serotonin

(4) Cortisol

172. Find the **incorrect** match.

(1)	High concentration of urea in blood	–	Uremia
(2)	High concentration of glucose in urine	–	Glycosuria
(3)	Presence of blood in urine	–	Polyuria
(4)	Inflammation of glomeruli of kidney	–	Glomerulonephritis

173. Uric acid is the main excretory product in

(1) Pisces (2) Insects

(3) Mammals (4) Amphibians

174. Match column-I **correctly** with column-II

	Column-I		**Column-II**
a.	Smooth muscle	(i)	Thin filament
b.	Actin	(ii)	Involuntary
c.	Red muscle	(iii)	Sutures
d.	Skull	(iv)	Myoglobin

Choose the correct option

(1) a(ii), b(i), c(iv), d(iii)

(2) a(i), b(ii), c(iii), d(iv)

(3) a(i), b(iii), c(ii), d(iv)

(4) a(iv), b(iii), c(i), d(ii)

175. Inflammation of joints due to accumulation of uric acid crystals:

(1) Gouty arthritis (2) Osteoporosis

(3) Tetany (4) Muscular dystrophy

176. Select the **incorrect** match

(1)	Knee joint	–	Hinge joint
(2)	Joint between atlas and axis	–	Pivot joint
(3)	Joint between carpals	–	Saddle joint
(4)	Joint between humerus and pectoral girdle	–	Ball and socket joint

177. Choose the **incorrect** statement:

(1) Dorsal portion of midbrain consists of corpora quadrigemina

(2) Midbrain is located between hypothalamus of the forebrain and pons of hindbrain

(3) The cerebral hemispheres are connected by a tract of nerve fibres called corpus callosum

(4) Hypothalamus is responsible for complex functions like intersensory associations, memory and communication

178. Read the given statements:

Statement-A: Organ of corti rests on tectorial membrane.

Statement-B: Organ of corti helps to maintain equilibrium of the body.

Choose the **correct** option.

(1) Both statements A and B are correct

(2) Both statements A and B are incorrect

(3) Statement A is correct, statement B is incorrect

(4) Statement A is incorrect, statement B is correct

179. Complete the analogy:

Milk-producing hormone : Prolactin :: Milk-ejecting hormone : _____.

(1) Oxytocin (2) Relaxin

(3) ADH (4) Vasopressin

180. Aldosterone aids in the maintenance of

a. Electrolytes

b. Body fluid volume

c. Osmotic pressure

d. Blood pressure

How many of the above factors hold true for the functionality of aldosterone?

(1) Four (2) Three

(3) Two (4) One

181. Which of the following was absent in the atmosphere at the time of origin of life?

(1) NH_3 (2) CH_4

(3) H_2 (4) O_2

182. An important evidence in favour of organic evolution is the occurrence of

(1) Analogous and vestigial organs

(2) Analogous and homologous organs

(3) Homologous organs only

(4) Homologous and vestigial organs

183. Mating of the related individuals having common ancestors upto 4-6 generations is called:

(1) Inbreeding

(2) Outbreeding

(3) Outcrossing

(4) Interspecific hybridization

184. Which of the following is not an STD?

(1) Down's syndrome (2) Syphilis

(3) Genital warts (4) AIDS

185. Which of the following is not a copper-ion releasing IUD?

(1) CuT (2) Cu7

(3) Lippes loop (4) Multiload 375

SECTION-B

186. The first movements of the foetus and appearance of hair on the head are usually observed during:

(1) 4^{th} month (2) 5^{th} month

(3) 6^{th} month (4) 7^{th} month

187. Arrange the following structures from the point of fertilization till the point of implantation:

a. 4-celled stage b. 2-celled stage

c. Early morula d. Blastocyst

e. Late morula

Choose the correct option from the following:

(1) $a \rightarrow b \rightarrow c \rightarrow d \rightarrow e$

(2) $e \rightarrow d \rightarrow c \rightarrow b \rightarrow a$

(3) $b \rightarrow c \rightarrow a \rightarrow d \rightarrow e$

(4) $b \rightarrow a \rightarrow c \rightarrow e \rightarrow d$

188. Read the following statements and select the **incorrect** one:

(1) Opioids bind to specific opioid receptors present in CNS and GI tract

(2) Cannabinoids interact with cannabinoid receptors present principally in the brain

(3) Cocaine interferes with the transport of the neurotransmitter, dopamine which leads to a potent stimulating action on CNS, producing a sense of increased energy and euphoria.

(4) Morphine does not function as an effective sedative and a painkiller

189. Most cancers are treated by the combination of

a. Radiotherapy

b. Chemotherapy

c. Surgery

Choose the **correct** option

(1) Only c (2) Only b and c

(3) Only a and b (4) a, b and c

190. HIV is a member of group of viruses called

(1) Retrovirus

(2) Rhinovirus

(3) Baculovirus

(4) Nucleopolyhedrovirus

191. Which of the following vector is commonly used in transfer of gene of interest into the crop plants?

(1) *Agrobacterium tumefaciens*

(2) *Trichoderma polysporum*

(3) *Monascus purpureus*

(4) *Penicillium notatum*

192. _____ refers to the use of bio-resources by multinational companies and other organizations without proper authorization from the countries and people concerned without compensatory payment.

Fill the blank with a suitable option:

(1) Bioaugmentation

(2) Biopiracy

(3) Bioremediation

(4) Biological patent

193. A Bt prototoxin is

(1) A toxin produced by protozoa

(2) Inactive toxin

(3) An active toxin

(4) Primitive toxin

194. In pBR322 vector, a foreign gene is inserted at *Pst* I restriction site. The recombinant so formed:

(1) Will grow in a culture medium containing ampicillin only

(2) Will grow in a culture medium containing both ampicillin and tetracycline

(3) Will grow in a culture medium containing tetracycline only

(4) Will grow in a culture medium containing Kanamycin only

195. Select the **incorrect** match

(1) Gene gun – Suitable for incorporating foreign gene into animal cells

(2) Lysozyme – Degrades bacterial cell wall

(3) Chitinase – Degrades fungal cell wall

(4) Heat shock – Suitable for incorporating foreign gene into bacterial cells

196. Select the **incorrect** match.

(1) Porifera – Circulatory system is absent

(2) Platyhelminthes – Circulatory system is absent

(3) Aschelminthes – Respiratory system is absent

(4) Annelida – Respiratory system is present

197. *Felis* belongs to class

(1) Reptilia (2) Amphibia

(3) Aves (4) Mammalia

198. Read the following statements and choose the **correct** option.

Statement A: Aspartic acid is the only known acidic amino acid.

Statement B: Methionine is an essential amino acid.

(1) Both statements are correct

(2) Both statements are incorrect

(3) Only statement B is correct

(4) Only statement A is correct

199. Select the **incorrect** match w.r.t. secondary metabolites.

(1) Pigments – Carotenoids, Anthocyanins

(2) Toxins – Abrin, Ricin

(3) Drugs – Curcumin, Concanavalin-A

(4) Polymeric substances – Rubber, Gums

200. Read the following statements and state them as true**(T)** or false**(F)**.

A. DNA and RNA function as genetic material.

B. Nucleic acids are monomers of nucleotides.

C. Adenine, Guanine, Cytosine, Uracil and Thymine are nitrogenous bases.

Choose the **correct** option.

	A	**B**	**C**
(1)	F	T	F
(2)	F	F	T
(3)	T	T	T
(4)	T	F	T

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