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MM : 720

NEET 720-MOCK TEST SERIES for NEET-2022

Time : 3 Hrs.

MOCK TEST - 3

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. A dimensionless quantity

   (1) Never has a unit (2) Always has a unit

   (3) May have a unit (4) Does not exist

2. A force of 20 N acts on a particle along a direction making angle 37º with the vertical. Its component along horizontal direction is

   (1) 16 N (2) 12 N

   (3) 20 N (4) 10 N

3. The value of (24.36 + 0.0623 + 256.2) with proper significant digit is

   (1) 280.7 (2) 280.6

   (3) 280.622 (4) 281

4. The component of a vector is

   (1) Always less than its magnitude

   (2) Always greater than its magnitude

   (3) Always equal to its magnitude

   (4) May be greater than its magnitude

5. A particle starts with an initial velocity of 2.5 m/s along positive x-axis. How much distance will it cover in reaching velocity of 7.5 m/s with uniform acceleration of 0.5 m s^{-2}?

   (1) 20 m (2) 30 m

   (3) 40 m (4) 50 m

6. A boy standing on road has to hold umbrella at 30º with vertical to keep the rain away. He throws umbrella and starts running at 10 km/hr he finds that rain drops are hitting his head vertically. The speed of raindrops w.r.t. ground is

   (1) 10 km/h (2) $10\sqrt{3}$ km/h

   (3) 15 km/h (4) 20 km/h

7. Which of the following systems may be adequately described by classical physics?

   (1) A hydrogen atom

   (2) A neutron changing to proton

   (3) Position of an electron

   (4) Motion of a cricket ball

8. A car accelerates on a horizontal road due to force exerted by

(1) The engine of the car

(2) The road

(3) The gravity of earth

(4) The driver of car

9. A block of mass 0.2 kg is suspended from the ceiling by a light string. A second block of mass 0.3 kg is suspended from first block through another string. The ratio of tension in two strings is

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

(3) 1 : 2 (4) 5 : 3

10. A particle travels in circle of radius 20 cm at a speed that uniformly increases. It speed changes from 5 m/s to 6 m/s in 2 s. The angular acceleration is

(1) 2 rad s^{-2} (2) 2.5 rad s^{-2}

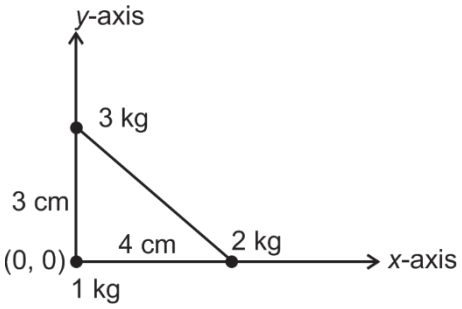
(3) 5 rad s^{-2} (4) 1.5 rad s^{-2}

11. A circular frictionless track having radius of 150 m is to be designed for vehicles at an average speed of 30 m/s. The ideal angle of bank is (g = 10 m/s^2)

(1) 37º (2) $\tan^{-1}\left(\frac{3}{5}\right)$

(3) $\tan^{-1}\left(\frac{5}{3}\right)$ (4) $\tan^{-1}\left(\frac{1}{2}\right)$

12. Three particles of masses 1 kg, 2 kg and 3 kg are placed at three corners of a right angled triangle of sides 3 cm, 4 cm and 5 cm as shown in the figure. The centre of mass from 1 kg mass is



(1) (1.33 cm, 1.5 cm)

(2) (2 cm, 1 cm)

(3) (1.14 cm, 1.5 cm)

(4) (1.7 cm, 0.9 cm)

13. The power factor of an ac series circuit having resistance R and inductance L connected in series with a source having angular frequency ω is

(1) $\frac{R}{\omega L}$ (2) $\frac{\omega L}{R}$

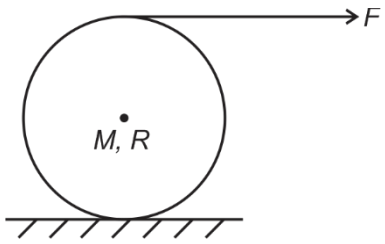
(3) $\frac{R}{\sqrt{R^2+\omega^2L^2}}$ (4) $\frac{R}{\sqrt{(R+\omega L)^2}}$

14. A wheel rotating at 20 rad/s is brought to rest by a constant torque in 4 second. If moment of inertia of wheel is 0.2 kg m^2. What is angle rotated by wheel in first 2 seconds?

(1) 20 rad (2) 25 rad

(3) 30 rad (4) 40 rad

15. A force F acts tangentially at highest point of a solid sphere of mass M and radius R. The sphere is on rough horizontal surface, and there is no slipping. What is acceleration of centre of mass of sphere?



(1) $\frac{5}{2}\frac{F}{M}$ (2) $\frac{5}{7}\frac{F}{M}$

(3) $\frac{5}{3}\frac{F}{M}$ (4) $\frac{10}{7}\frac{F}{M}$

16. A solid sphere has mass M uniformly distributed over its volume and a is radius of sphere. What is the gravitational potential at the centre of the sphere?

(1) $\frac{GM}{a}$ (2) $-\frac{3}{2}\frac{GM}{a}$

(3) $\frac{-3GM}{5a}$ (4) $\frac{-GM}{2a}$

17. A particle of mass 200 g executes SHM. The restoring force is provided by spring of spring constant 80 N m^{-1}. What is magnitude of acceleration when mass is 2 cm away from equilibrium position?

(1) 4 m s^{-2} (2) 6 m s^{-2}

(3) 8 m s^{-2} (4) 10 m s^{-2}

18. A simple pendulum clock keeping correct time at the earth surface is taken to high altitude
    (1) It will keep correct time
    (2) Its length should be increased to keep correct time
    (3) Its length should be decreased to keep correct time
    (4) Its mass should be decreased to keep correct time

19. In a streamline flow (homogeneous fluid)
    (1) The speed of particle remain same everywhere in flow
    (2) The kinetic energy at different points is same
    (3) Velocity of all particles arriving at a point are same
    (4) The velocity of particles always remain same

20. A steel wire of length 2 m is stretched through 2 mm. What is elastic potential energy stored in a wire of cross-sectional area 4 mm^2 in stretched condition ($Y = 2 \times 10^{11}\ Nm^{-2}$)
    (1) 0.8 J (2) 1.2 J
    (3) 2.4 J (4) 1.6 J

21. A 50 cm long wire has mass of 20 g linearly distributed. This string is under a tension of 16 N. The speed of transverse pulse generated on it is
    (1) 2 m/s (2) 10 m/s
    (3) 20 m/s (4) 15 m/s

22. A sound source produce sound of intensity I_0 at a point. When its amplitude become double and the frequency becomes one fourth then the intensity of sound at same point will be
    (1) I_0 (2) $4\ I_0$
    (3) $\frac{I_0}{4}$ (4) $\frac{I_0}{16}$

23. A parallel beam of monochromatic light of wavelength 450 nm passes through a long slit of width 0.2 mm. What is angular divergence in which most of the light is diffracted?
    (1) 4.5×10^{-3} rad
    (2) 2×10^{-4} rad
    (3) 4×10^{-3} rad
    (4) 4.5×10^{-4} rad

24. Monochromatic light is passed through double slit and interference pattern is observed on screen 2.5 m away. The separation between slits is 0.5 mm. The first bright fringe is 3.5 mm away from central fringe. The wavelength of light used is
    (1) 600 nm
    (2) 500 nm
    (3) 650 nm
    (4) 700 nm

25. When a drop of oil is spread on water surface, it displays beautiful colours in daylight because of
    (1) Dispersion of light
    (2) Reflection of light
    (3) Polarisation of light
    (4) Interference of light

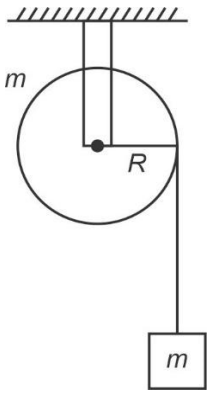
26. At what distance from a convex mirror of focal length 2.5 m should a small object be kept so that its image has height of half of original height of object
    (1) 2 m (2) 2.5 m
    (3) 4 m (4) Infinity

27. The rays of different colours fail to converge at a point after going through a converging lens. This defect is called
    (1) Spherical aberration
    (2) Chromatic aberration
    (3) Distortion
    (4) Coma

28. A convex lens is made of material having refractive index 1.25. Both the surfaces are convex. It if is dipped in a liquid (transparent) of refractive increase 1.4, it will behaves like
    (1) A convergent lens
    (2) A sheet
    (3) A divergent lens
    (4) A prism

29. A compound microscope has lens with objective of focal length 0.5 cm and eye piece of focal length 5 and the lenses are separated by 7 cm. What is the magnification of microscope when final image is formed at infinity?
    (1) 12 (2) 14
    (3) 15 (4) 18

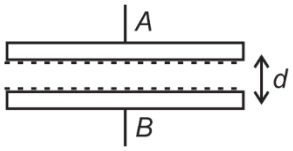
30. A mass m supported by a massless string wound around a uniform solid cylinder of mass m and radius R. If the string does not slip on the cylinder, with what acceleration will the mass fall after release?



(1) $\frac{g}{3}$ (2) $\frac{4g}{3}$

(3) $\frac{2g}{3}$ (4) g

31. Suppose the parallel metal plates shown in figure at 0.50 cm apart and are connected to 90 V battery. What is surface charge density of plates?



(1) 159 nC/m^2 (2) 212 nC/m^2

(3) 116 nC/m^2 (4) 516 nC/m^2

32. An oil drop carries six electronic charge, has mass of 1.6×10^{-12} g and falls with terminal velocity in air. What magnitude of vertical electric field is required to make drop upward with same speed as it was for only moving downward.

(1) 16 kN C^{-1} (2) 32.7 kN C^{-1}

(3) 48.5 kN C^{-1} (4) 0.68 kN C^{-1}

33. How much charge is stored in capacitor consisting of two concentric spheres of radii 30 cm and 31 cm of potential difference is 500 V (assume $K = 1$ for air)?

(1) 516 nC (2) 432 nC

(3) 318 nC (4) 192 nC

34. An ideal gas mixture filled inside a balloon expands according to the relation $PV^{2/3}$ = constant. The temperature inside the balloon is

(1) Constant (2) Increasing

(3) Decreasing (4) Can't predict

35. A storage battery has an emf of 25 V and internal resistance is 0.20 Ω. What is its terminal voltage when it is being charged by a current of 8 A?

(1) 23.4 V

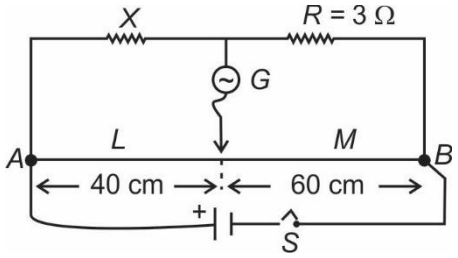
(2) 24.5 V

(3) 26.6 V

(4) 25 V

SECTION-B

36. The slide wire meter bridge shown in the figure is balanced when the uniform slide wire AB is divided as shown, the value of resistance X is



(1) 6 Ω (2) 4 Ω

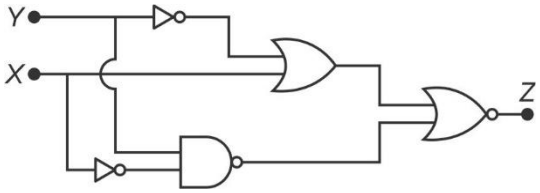
(3) 3 Ω (4) 2 Ω

37. A 500 W heater is used to heat 250 mL of water from 20°C to 100ºC. What is minimum time in which this can be done?

(1) 142 s (2) 190 s

(3) 167 s (4) 210 s

38. Figure gives a system of logic gates. It can be found that to produce a high output (I) at Z. Which of the following option is correct?



(1) $X = 1$; $Y = 0$ (2) $X = 0$; $Y = 1$

(3) $X = 1$; $Y = 1$ (4) $X = 0$; $Y = 0$

39. A He^{2+} ion travels at right angles to a magnetic field of 0.80 T with a velocity of 10^5 m/s. What is magnitude of force acting on the ion?

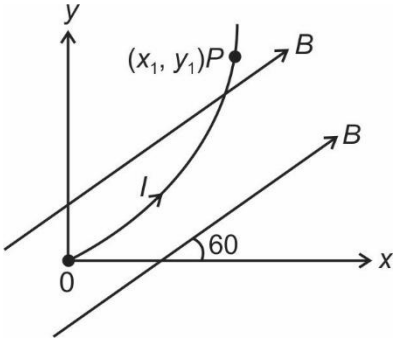
(1) 1.5×10^{-14} N

(2) 2.56×10^{-14} N

(3) 3.2×10^{-14} N

(4) 1.28×10^{-14} N

40. A parabolic section is located in x-y plane and carries a current of 12 A. A uniform magnetic field B = 0.4 T making an angle of 60º with x-axis exits throughout the plane. What is total force on wire between origin and point x_1 = 0.25 m, y_1 = 1.00 m?



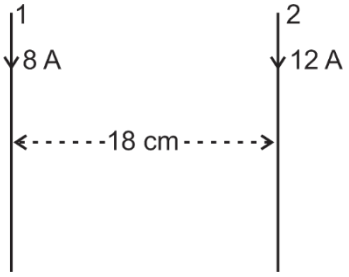
(1) $-1.36\hat{k}$ N

(2) $-2.4\hat{k}$ N

(3) $-1.72\hat{k}$ N

(4) $1.42\hat{k}$ N

41. Figure shows two long parallel wires separated by a distance of 18 cm. There is current of 8 A in wire 1 and 12 A in wire 2. At what point on line joining of the wires, the magnetic field is zero?



(1) 5.2 cm from wire 1

(2) 9.4 cm from wire 2

(3) 7.2 cm from wire 1

(4) 10.3 cm from wire 2

42. A flux of 900 μWb is produced in the iron core of a solenoid. When core is removed a flux (in air) of 0.5 μWb is produced in same solenoid by same current. What is relative permeability of iron?

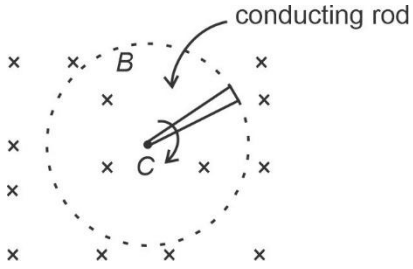
(1) 1200

(2) 900

(3) 1600

(4) 1800

43. A conducting rod shown in figure rotates about point C as pivot with constant frequency of 5 rev/s. What is potential difference across its ends 80 cm apart, due to magnetic field of 0.3 T?



(1) 3 V (2) 0.2 V

(3) 8 V (4) 5.2 V

44. A sample of radioactive material contains 10^{18} atoms. The half life of the material is 2 days. Then initial activity of the sample is

(1) 2×10^{10} Bq (2) 6×10^{9} Bq

(3) 4×10^{12} Bq (4) 2×10^{10} Bq

45. The current amplification factor for common emitter amplifier is 59. If emitter current is 5 mA . What is value of collector current?

(1) 1.62 mA (2) 4.58 mA

(3) 4.72 mA (4) 4.92 mA

46. An ideal heat engine working between temperature T_H and T_L has efficiency η. If both the temperature are raised by 50 K each then the new efficiency of heat engine will be

(1) Equal to η

(2) Less than η

(3) Greater than η

(4) Can't predict

47. 4 moles of an ideal gas expand from initial volume $2V$ to final volume $4V$ at constant temperature 27°C. The work done by gas is nearly

(1) 7.5 kJ (2) 6.9 kJ

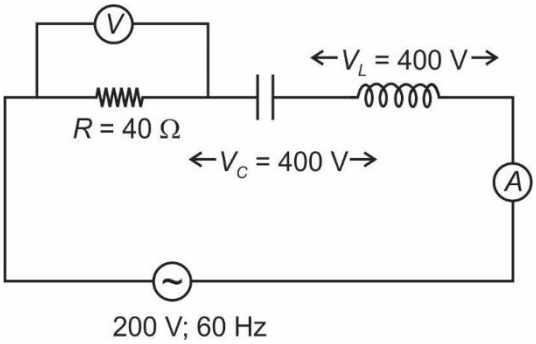
(3) 8.3 kJ (4) 6.2 kJ

48. If the radiations of wavelength 200 nm and 400 nm are incident on a substance of work function 2 eV one by one then the ratio of the stopping potentials for the emitted photoelectrons will be (approx)

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

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

49. In given LCR circuit, the voltage across the terminals of a resistance *R* and current through ammeter will be



(1) 200 V; 5 A (2) 400 V; 5 A

(3) 400 V; $5\sqrt{2}$ A (4) 200 V; $5\sqrt{2}$ A

50. Oscillating magnetic field in a plane, electromagnetic wave is given by

$\vec{B}_y = 4 \times 10^{-6}\sin[9 \times 10^9 t - 30x]$ tesla. Expression for oscillating electric field (in N C^{-1}) will be

(1) $\vec{E}_z = 600\sin[9\times10^9 t - 30x]\hat{k}$

(2) $\vec{E}_z = -600\sin[9\times10^9 t - 30x]\hat{k}$

(3) $\vec{E}_z = 1200\sin[9\times10^9 t - 30x]\hat{k}$

(4) $\vec{E}_z = -1200\sin[9\times10^9 t - 30x]\hat{k}$

CHEMISTRY

SECTION-A

51. A compound on analysis gave the following results C = 40%, H = 6.7% and O = 53.3%.

The empirical formula of the compound is

(1) C_2H_4O (2) C_2H_6O

(3) CH_2O (4) C_3H_6O

52. If 2.8 g of a metal oxide contains 0.8 g oxygen, then the equivalent mass of the metal is

(1) 16 g (2) 20 g

(3) 12 g (4) 8 g

53. An electron has a speed of 50 m/s with uncertainty of 0.02%. The uncertainty in locating its position is

(1) 1.1×10^{-1} m (2) 3.2×10^{-7} m

(3) 1.2×10^{-5} m (4) 5.8×10^{-3} m

54. The total number of atomic orbitals in the third energy level of an atom is

(1) 9 (2) 8

(3) 18 (4) 32

55. The IUPAC official name of an element having symbol Unt is

(1) Seaborgium (2) Lawrencium

(3) Bohrium (4) Mendelevium

56. The compound which has the highest lattice energy is

(1) NaF (2) NaCl

(3) NaBr (4) NaI

57. In which of the following pairs, both the species are paramagnetic and have the same bond order?

(1) O_2^{2-}, O_2^- (2) N_2, CN^-

(3) N_2^+, O_2^+ (4) C_2, O_2

58. The ratio of most probable speed to root mean square speed of N_2 at 298 K is

(1) $\sqrt{3}:\sqrt{1}$ (2) $\sqrt{2}:\sqrt{3}$

(3) $\sqrt{3}:\sqrt{2}$ (4) $\sqrt{2}:1$

59. Amount of heat evolved when 500 cm^3 of 0.2 M H_2SO_4 is mixed with 200 cm^3 of 0.5 M NaOH solution is

(1) 11.4 kJ (2) 2.85 kJ

(3) 5.71 kJ (4) 28.5 kJ

60. Under what conditions, a reaction is spontaneous at all temperatures?

(1) $\Delta H > 0, \Delta S > 0$ (2) $\Delta H < 0, \Delta S < 0$

(3) $\Delta H > 0, \Delta S < 0$ (4) $\Delta H < 0, \Delta S > 0$

61. Which one of the following pairs of solution is an acidic buffer?

(1) H_2SO_4 + NaOH

(2) CH_3COOH + HCOONa

(3) HCN + NaCN

(4) NH_4OH + NH_4Cl

62. If a solution has 100 times as many hydroxide ions as in pure water at 25ºC, then the pH of the solution at the same temperature will be
(1) 9 (2) 6.4
(3) 7 (4) 13.2

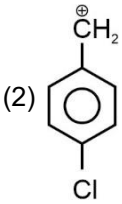
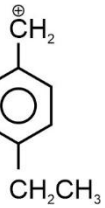
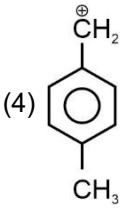
63. Oxidation state of Cr in CrO_5 is
(1) + 3 (2) + 5
(3) + 6 (4) + 4

64. In 'Coal gasification' process, the products obtained are
(1) $CH_3CH_3 + N_2$ (2) $H_2CO_3 + O_2$
(3) $CO_2 + H_2$ (4) $CO + H_2$

65. The compound which forms hydrates is
(1) LiCl (2) NaCl
(3) KCl (4) RbCl

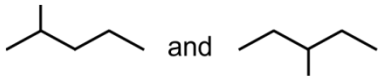
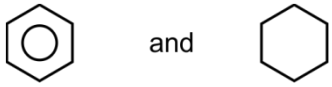
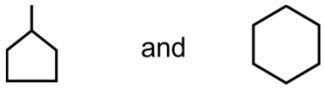
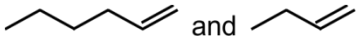
66. In pyrosilicates, the total number of oxygen atom(s) shared per SiO_4^{4-} tetrahedron is
(1) 1 (2) 2
(3) 3 (4) 4

67. Incorrect statement about buckminsterfullerene is
(1) Shape like soccer ball
(2) Impure form of carbon
(3) All carbons are sp^2 hybridized
(4) It contains six membered and five membered rings

68. Most stable carbocation among the following is
(1) 
(2) 
(3) 
(4) 

69. Sodium fusion extract on reaction with Fe^{3+} gives blood red colour indicates the presence of
(1) Nitrogen only
(2) Sulphur only
(3) Nitrogen and sulphur both
(4) Nitrogen and chlorine both

70. The correct order of decreasing priority of the functional group is
(1) – COOR > – COCl > – $CONH_2$
(2) – COCl > – COOR > – $CONH_2$
(3) – $CONH_2$ > – COCl > – COOR
(4) – COOR > – $CONH_2$ > – COCl

71. Major products obtained when n-hexane is heated in the presence of anhydrous $AlCl_3$ and HCl gas are
(1) 
(2) 
(3) 
(4) 

72. Most acidic compound among the following is
(1) $CH_2 = CH_2$ (2) $CH_3–CH_3$
(3) $CH_3 – C \equiv C – CH_3$ (4) $CH \equiv CH$

73. Which of the following is not a green house gas?
(1) Ozone (2) Methane
(3) Nitrogen (4) Nitrous oxide

74. Antiferromagnetic substance among the following is
(1) MnO (2) Fe_3O_4
(3) CrO_2 (4) NaCl

75. Which of the following aqueous solutions has the highest boiling point?
(1) 0.01 m NaCl (2) 0.2 m Urea
(3) 0.02 m Glucose (4) 0.1 m Sucrose

76. The standard electrode potential (E°) values of A^+/A, B^+/B, C^+/C and D^+/D are 2.19 V, 1.87 V, –2.93 V and –1.7 V respectively. The correct decreasing order of reducing power of the metal is
(1) A > B > C > D (2) C > D > B > A
(3) A > B > D > C (4) D > C > A > B

77. In a zero order reaction, for every 10° rise of temperature, the rate is doubled. If the temperature is increased from 10°C to 60°C, the rate of the reaction becomes
(1) 32 times (2) 16 times
(3) 64 times (4) 128 times

78. Positively charged sol among the following is

(1) Gold sol (2) As_2S_3

(3) Haemoglobin (4) Gelatin

79. In the froth floatation method, the froth stabiliser used is

(1) Pine oil (2) Cresol

(3) Fatty acids (4) Xanthates

80. Mond's process is used for refining of

(1) Ni (2) Zr

(3) Ti (4) Ge

81. Incorrect statement among the following is

(1) I^{st} IE of O_2 is nearly identical with that of Xe

(2) Partial hydrolysis of XeF_6 gives XeO_3

(3) $XeOF_4$ is a colourless volatile liquid

(4) Ne is used in fluorescent bulbs for advertisement display purposes

82. Iodine on reaction with concentrated nitric acid gives

(1) HOI (2) HIO_3

(3) HIO_4 (4) HI_3

83. The metal which is present in both brass and bronze is

(1) Tin (2) Zinc

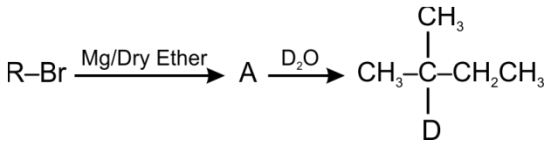
(3) Copper (4) Aluminium

84. Diamagnetic species among the following is

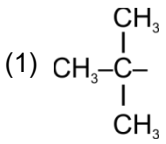
(1) $[Co(C_2O_4)_3]^{3-}$ (2) $[Fe(CN)_6]^{3-}$

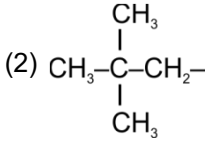
(3) $[Mn(CN)_6]^{3-}$ (4) $[FeF_6]^{3-}$

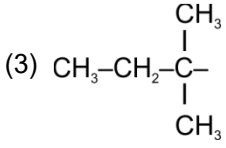
85. Consider the following reaction,

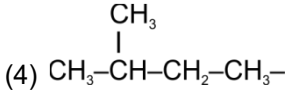


R is

(1) 

(2) 

(3) 

(4) 

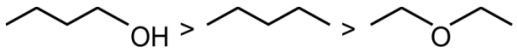
SECTION-B

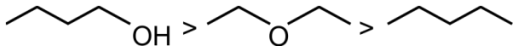
86. Phenol on reaction with chromic acid produces

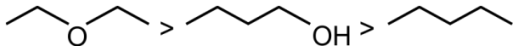
(1) Benzoic acid (2) Benzaldehyde

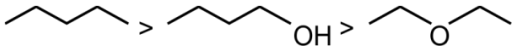
(3) Benzoquinone (4) Resorcinol

87. Correct order of boiling point is

(1) 

(2) 

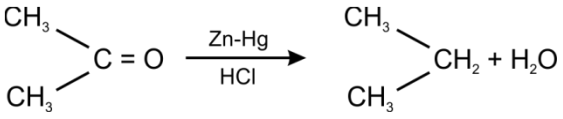
(3) 

(4) 

88. The compound which is most reactive towards nucleophilic substitution reaction is

(1) CH_3COCl (2) CH_3CONH_2

(3) $(CH_3CO)_2O$ (4) CH_3COOCH_3

89. 

The above reaction is known as

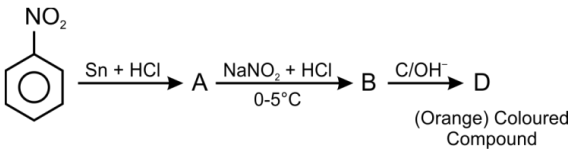
(1) Etard Reaction

(2) Clemmensen Reduction

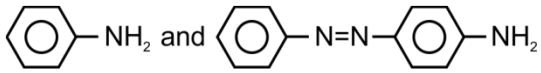
(3) HVZ Reaction

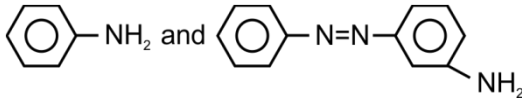
(4) Wolff-Kishner Reduction

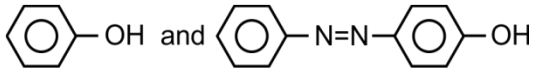
90. Consider the following reaction

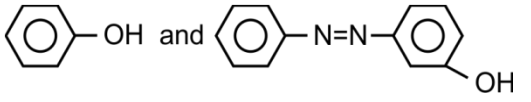


The compound C and D respectively are

(1) 

(2) 

(3) 

(4) 

91. Nitrobenzene on electrolytic reduction in strongly acidic medium followed by rearrangement gives
(1) Hydrazobenzene (2) p-aminophenol
(3) Azobenzene (4) Azoxybenzene

92. Non-essential amino acid among the following is
(1) Proline (2) Lysine
(3) Valine (4) Arginine

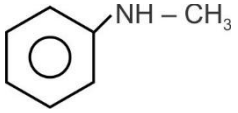
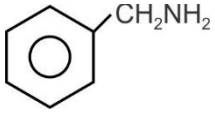
93. Monomer of neoprene is
(1) 2-chloro-1, 3-butadiene
(2) Tetrafluoroethene
(3) 2-methyl-1, 3-butadiene
(4) 1, 3-butadiene

94. Ranitidine is a/an
(1) Tranquilizer (2) Antihistamine
(3) Analgesic (4) Antacid

95. When butan-2-one reacts separately with 2, 4-DNP and I_2 in the presence of NaOH, the colour of the precipitates so formed respectively are
(1) Orange - Red and White
(2) Orange - Red and Yellow
(3) Black and Yellow
(4) Yellow, Green and White

96. Shape of I_3^- is
(1) Linear (2) Bent
(3) Trigonal planar (4) Pyramidal

97. Most acidic compound among the following is
(1) C_6H_5COOH (2) $NC - CH_2COOH$
(3) $O_2N - CH_2COOH$ (4) CF_3COOH

98. The compound which gives isocyanide test is
(1) 
(2) 
(3) $CH_3 - NHCH_3$
(4) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{N}}}} - CH_3$

99. In which of the following reactions, N_2O is formed?
(1) Zn + conc. HNO_3 (2) Cu + conc. HNO_3
(3) Zn + dil. HNO_3 (4) Cu + dil. HNO_3

100. If the bond dissociation enthalpy of H_2, I_2 and HI are x, y and z kJ/mol, then the enthalpy of formation of HI is
(1) x + 2y – 2z (2) $x + y - \frac{z}{2}$
(3) $\frac{x}{2} + \frac{z}{2} - y$ (4) $\frac{x}{2} + \frac{y}{2} - z$

BOTANY

SECTION-A

101. Which of the following is **not** a defining property of all living organisms?
(1) Reproduction
(2) Metabolism
(3) Cellular organisation
(4) Consciousness

102. Which of the following is a taxonomic category related to wheat?
(1) Dicotyledonae (2) Sapindales
(3) *Mangifera* (4) Poales

103. Select the **odd** one w.r.t Fungi
(1) Cell wall is composed of chitin
(2) Some of them are photosynthetic
(3) Nucleus is present
(4) Endoplasmic reticulum is present

104. Diatoms are
(1) Members of deuteromycetes
(2) Photosynthetic organisms
(3) Included in kingdom Monera
(4) Organisms without cell wall

105. Select the **mismatched** pair
(1) Deuteromycetes - Imperfect fungi
(2) Phycomycetes - Coenocytic mycelium
(3) Ascomycetes - Includes *Ustilago* and *Puccinia*
(4) Basidiomycetes - Sex organs are absent

106. Which of the following feature is related to Pteridophytes?
(1) The juvenile stage of gametophyte is the leafy stage
(2) Companion cells are present in phloem
(3) They are first terrestrial plants to have vascular tissues system
(4) They produce cones as well as seeds

107. Select the **odd** one w.r.t sapwood
(1) Responsible for water conduction in dicot trees
(2) The peripheral region of secondary xylem
(3) Involved in mineral transport from soil to other parts of plant
(4) Provides mechanical support

108. Valvate type of aestivation is found in the petals of
(1) China rose (2) *Calotropis*
(3) Pea (4) *Cassia*

109. Read the statements and select the **correct** option.
Statement-A : Leaves of pea are converted into tendrils for climbing.
Statement B: In racemose type of inflorescence the main axis terminates in a flower, hence has limited growth.
(1) Only statement A is correct
(2) Both A and B are correct
(3) Only statement B is correct
(4) Both A and B are incorrect

110. Which of the following is a characteristic feature of red algae?
(1) Motile stage is absent
(2) Cell wall has pectose and algin
(3) Chlorophyll 'c' is present
(4) Always found in fresh water bodies

111. All of the given cell organelles are single membrane bound, **except**
(1) Lysosome (2) Golgi body
(3) Ribosome (4) ER

112. Select the **incorrectly** matched pair
(1) RER – Secretion
(2) Amyloplast – Stores oil and protein
(3) SER – Synthesis of steroidal hormones
(4) Polysome – Synthesis of protein

113. Process A- NH_3 □ NO_2
Process B - NH_3 □ N_2
Process A and process B is respectively done by
(1) *Rhizobium* and *Nitrobacter*
(2) *Pseudomonas* and *Azotobacter*
(3) *Nitrococcus* and *Pseudomonas*
(4) *Rhizobium* and *Nostoc*

114. Which of the following is **correct** statement for the reductional division?
(1) It involves two sequential cycles of DNA replication
(2) It involves recombination between non-sister chromatids of homologous chromosomes
(3) Anaphase-I involves the splitting of centromere holding the sister chromatids
(4) Diplotene is the first stage of prophase-I

115. Read the following statements and select the **correct** option.
Statement A: Facilitated diffusion does not require any energy expenditure.
Statement B: Active transport cannot be inhibited by inhibitors.
(1) Both A and B are correct
(2) Only statement A is correct
(3) Both A and B are incorrect
(4) Only statement B is correct

116. Water potential of a solution at room temperature and pressure
(1) Is greater than pure water
(2) Can be increased by adding more solute
(3) Is less than zero
(4) Decrease when pure water is added

117. Reappearance of the nuclear envelope during mitosis occurs
(1) In second phase of mitosis
(2) In first phase of mitosis
(3) At the end of metaphase
(4) In telophase

118. Which of the following is **not** a function of potassium?
(1) It is required in pollen germination
(2) Helps to maintain anion-cation balance in cells
(3) It is involved in opening and closing of stomata
(4) Activates many enzymes and maintain the turgidity of cells

119. Read the statements and select the **correct** option.

Statement A: OEC is located near the PS-II.

Statement B: Only PS-II is involved in cyclic photophosphorylation.

(1) Both A and B are correct
(2) Only statement A is correct
(3) Only statement B is correct
(4) Both A and B are incorrect

120. In C3 plants, first product formed during carbon fixation, is
(1) A two carbon compound
(2) Catalysed by PEPCase enzyme
(3) Catalysed by RuBisCO enzyme
(4) Has four carbons

121. Which of the following is **not** true w.r.t glycolysis?
(1) It occurs mainly in mitochondrial matrix
(2) $NADH_2$ are formed
(3) Magnesium is necessary for the activation of most of the enzymes in it
(4) Two pyruvate are formed from one glucose molecule during glycolysis

122. Cytochrome c oxidase of respiratory electron transport system
(1) Is located in outer membrane of mitochondria
(2) Transfer the electron to oxygen from cyt c
(3) Is also called complex V
(4) Oxidize $FADH_2$

123. __A__ are the derivatives of adenine and responsible for cell division. Here 'A' is
(1) ABA (2) GA
(3) Cytokinin (4) Auxin

124. Male gametophyte of flowering plants
(1) Has outer layer composed of sporopollenin
(2) Is a 8 celled structure
(3) Always enter into the embryo sac via antipodal cells
(4) Has four male gametes

125. Conidia are
(1) Asexual spores produced by *Penicillium*
(2) Sexual spores produced by *Chlamydomonas*
(3) Produced by members of imperfect fungi only
(4) Produced only under unfavourable conditions

126. All of the following plants are pollinated by water **except**
(1) *Vallisneria* (2) *Zostera*
(3) *Hydrilla* (4) Water hyacinth

127. Which of the following is a main effect of auxin in plants?
(1) Breaks seed and bud dormancy
(2) Promote senescence in plant
(3) Increase respiration rate in ripening fruits
(4) Responsible for apical dominance

128. ZZ-ZW type sex determination can be seen in
(1) Humans (2) All mammals
(3) Birds (4) Most of the insects

129. Chromosome complement of a person affected from the Klinefelter's syndrome is
(1) 44+XO (2) 44+XXY
(3) 44+XX (4) 44+YY

130. Which ribosomal subunit act as catalyst in prokaryotes?
(1) 28 S rRNA (2) 23 S rRNA
(3) 18 S rRNA (4) 16 S rRNA

131. Select the **incorrect** statement w.r.t DNA replication
(1) RNA primer is important to start the DNA replication
(2) DNA ligase breaks apart the Okazaki fragments
(3) Helicase cleaves the hydrogen bonds of DNA duplex
(4) It is a semi-conservative process

132. Permease of *Lac* operon in bacteria
(1) Is the product of *Lac* 'z' gene
(2) Catalyze the breakdown of lactose
(3) Is the product of *Lac* 'a' gene
(4) Is important for uptaking of lactose

133. Variety of Okra which is resistant to shoot and fruit borer is
(1) Pusa Gaurav (2) Pusa Sawani
(3) Pusa Komal (4) Pusa Sadabahar

134. Which of the following is a commercial product formed by a fungus named *Trichoderma*?
(1) Acetic acid (2) Citric acid
(3) Streptokinase (4) Cyclosporin A

135. Organism which form the symbiotic association with plant roots forming the mycorrhiza is
(1) *Nostoc* (2) *Anabaena*
(3) *Glomus* (4) *Pseudomonas*

SECTION-B

136. Which of the following breaks seed dormancy?
(1) Gibberellic acid (2) Abscisic acid
(3) Para ascorbic acid (4) Phenol

137. Considering the global biodiversity, maximum proportionate number of species amongst the vertebrates is of
(1) Amphibians (2) Fishes
(3) Mammals (4) Reptiles

138. Which of the following is an example of commensalism?
(1) An orchid growing as an epiphyte on a mango branch
(2) Antibiotic production by fungi
(3) *Cuscuta*, growing on hedge plants
(4) *Balanus* and *Chathalamus* interaction in intertidal area

139. Select the **incorrect** statement w.r.t. decomposition process.
(1) It is largely an anaerobic process
(2) Bacterial and fungal enzymes degrade fragmented detritus into simpler inorganic substances
(3) Warm and moist environment favours decomposition
(4) Decomposition rate is slower if detritus is rich in lignin

140. Pioneer species in the hydrarch succession is
(1) Lichens (2) Reed swamp
(3) Zooplanktons (4) Phytoplanktons

141. How many organisms given below are primary consumers?
Phytoplanktons, Wolf, Zooplanktons, Large fish, Grasshopper
(1) Two (2) Three
(3) Four (4) Five

142. Which of the following is **incorrectly** matched pair w.r.t extinct animals?
(1) Dodo – Mauritius
(2) Steller's Sea Cow – Russia
(3) *Quagga* – India
(4) *Thylacine* – Australia

143. Sacred grooves located in Meghalaya are
(1) Khasi and Jaintia Hills
(2) Western Ghats
(3) Chanda and Baster
(4) Aravalli Hills

144. Select the **correct** statement w.r.t. catalytic converters
(1) It can remove over 99 percent particulate matter present in the exhaust from a thermal power plant
(2) Can be used in the vehicles to remove poisonous gases like CO
(3) It has electrode wires that are maintained at several thousand volts, which produce a corona that releases electrons
(4) Vehicles fitted with these should use leaded petrol

145. Read the statements and select the **correct** option
(i) Eutrophication is the natural aging of a lake by nutrient enrichment of its water.
(ii) Friends of the Arcata Marsh or FOAM are a group of citizens in California
(iii) There are many 'EcoSan' toilets in many areas of Kerala and Sri Lanka
(1) Only (i) and (ii) are correct
(2) All are correct except (ii)
(3) Only (ii) and (iii) are correct
(4) All (i), (ii) and (iii) are correct

146. Which of the following are components of ribosomes?
(1) Protein and tRNA
(2) rRNA and proteins
(3) RNA, DNA and proteins
(4) DNA and proteins

147. Commercial production of blood cholesterol lowering agent statins is through
(1) *Monascus purpureus*
(2) *Streptococcus*
(3) *Aspergillus niger*
(4) *Pseudomonas*

148. Non motile gametes are produced by
(1) *Cladophora* (2) *Chlamydomonas*
(3) *Gelidium* (4) *Volvox*

149. Molybdenum is a part of
(1) Nitrogenase (2) Nitrate reductase
(3) Catalase (4) Both (1) and (2)

150. Both chlorophyll a and chlorophyll b are main photosynthetic pigments in
(1) *Polysiphonia* (2) *Porphyra*
(3) *Gracilaria* (4) *Chlamydomonas*

ZOOLOGY

SECTION-A

151. Menstrual flow results due to the breakdown of
(1) Perimetrium lining of the uterus
(2) Myometrium lining of the uterus
(3) Myometrium lining of the cervix
(4) Endometrium lining of the uterus

152. How many spermatozoa and ova are formed from four secondary spermatocytes and three secondary oocytes respectively?
(1) 4 spermatozoa, 4 ova
(2) 8 spermatozoa, 3 ova
(3) 16 spermatozoa, 12 ova
(4) 3 spermatozoa, 8 ova

153. Complete the analogy with respect to contraception.
Natural method : Periodic abstinence :: Barrier method : _____
(1) Coitus interruptus (2) Vasectomy
(3) Diaphragm (4) LNG-20

154. Read the following given statements w.r.t. MTP
Statement A: As per MTP (Amendment) Act, 2017, a pregnancy may be terminated on certain considered grounds within the 1st trimester of pregnancy on the opinion of one registered medical practitioner.
Statement B: The MTP (Amendment) Act, 2017 was enacted by government of India with the intention of increasing the incidence of illegal abortion and consequent maternal mortality and morbidity.
Choose the **correct** option.
(1) Both statements A and B are incorrect
(2) Both statements A and B are correct
(3) Statement A is correct, statement B is incorrect
(4) Statement A is incorrect, statement B is correct

155. The similarities in the pattern of bones of forelimbs of whales, bats, cheetah and human depicts
(1) Convergent evolution
(2) Divergent evolution
(3) Natural selection
(4) Adaptive convergence

156. As per origin and evolution of man, _____ was termed as the first human-like being, the hominid.
Fill the blank with the **correct** option.
(1) *Dryopithecus* (2) *Ramapithecus*
(3) *Homo erectus* (4) *Homo habilis*

157. Identify the **incorrect** match
(1) Ringworms – *Epidermophyton*
(2) Elephantiasis – *Wuchereria malayi*
(3) Ascariasis – *Ascaris*
(4) Amoebic dysentery – *Plasmodium vivax*

158. Cell-mediated immune response is mediated by
(1) B-lymphocytes (2) T-lymphocytes
(3) Monocytes (4) Macrophages

159. Effects of consuming hashish, ganja etc. can be seen on
(1) Gastrointestinal tract only
(2) CNS only
(3) Cardiovascular system of the body
(4) Transportation of dopamine

160. A patient visits a neurologist complaining of severe headache, numbness, weakness, confusion and seizures. The neurologist suggests the patient to get his M.R.I done. Upon comprehending M.R.I results, the neurologist diagnosed the patient with a tumor. This form of tumor spreads to other parts, causing more damage in the body.
Which of the following statement holds true for such tumor?
(1) It is a form of benign tumor; no angiogenesis
(2) It is a form of malignant tumor; no angiogenesis
(3) It is a form of malignant tumor; shows new blood vessel formation
(4) It is a form of benign tumor; shows new blood vessel formation

161 Which of the following given statement is **incorrect** w.r.t. inbreeding in animals?

(1) Inbreeding increases heterozygosity

(2) Inbreeding is necessary to evolve a pureline in any animal

(3) Inbreeding exposes harmful recessive genes that are eliminated by selection

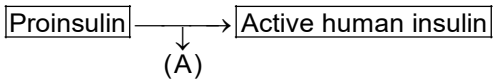
(4) Inbreeding helps in the accumulation of superior genes and elimination of less desirable genes

162. Select the **odd one** w.r.t. the categorization of fish on the basis of habitat

(1) *Catla* (2) *Rohu*

(3) *Hilsa* (4) Common carp

163.



Identify 'A' in the above drawn step of formation of human insulin (active form) from proinsulin:

(1) Removal of A-polypeptide chain

(2) Removal of B-polypeptide chain

(3) Removal of C-polypeptide chain

(4) Removal of D-polypeptide chain

164. **Correctly** match Column-I with Column-II.

	Column-I		Column-II
a.	ADA deficiency	(i)	Milk contains alpha-lactalbumin
b.	Rosie, transgenic cow	(ii)	Gene therapy
c.	Validity of GM research	(iii)	Single stranded RNA or DNA
d.	Probe	(iv)	GEAC

Choose the most appropriate option.

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

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

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

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

165. Read the following given statements:

Statement A: Plasmid is closed, circular extra-chromosomal DNA.

Statement B: Plasmids are possessed only by eukaryotic cells.

Choose the **correct** option.

(1) Both statements A and B are correct

(2) Both statements A and B are incorrect

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

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

166. Orange coloured bands of DNA in a ethidium bromide stained gel can be seen, when the gel is exposed to

(1) X-rays (2) UV light

(3) β-rays (4) Radio waves

167. Acromegaly is a resultant of

(1) Hyposecretion of growth hormone in children

(2) Hypersecretion of growth hormone in children

(3) Hyposecretion of growth hormone in adults

(4) Hypersecretion of growth hormone in adults

168. Select the **incorrect** match

(1) Iodothyronines – Thyroid hormones

(2) Amino-acid derivative – Epinephrine

(3) Protein hormone – GnRH

(4) Steroid – Insulin

169. Catecholamines in a normal person induces

(1) Alertness

(2) Pupillary constriction

(3) Reduction in heart beat

(4) Reduction in rate of respiration

170. Vestibular apparatus of inner ear is composed of

(1) 3 semi-circular canals only

(2) Otolith only

(3) 3 semi-circular canals and otolith

(4) Saccule and utricle only

171. Identify the **incorrect** statement

(1) Space between cornea and lens is called aqueous chamber

(2) Space between lens and retina is called vitreous chamber

(3) Vitreous humor is a thin watery fluid

(4) Aqueous humor is a thin watery fluid

172. _____ is the point where visual acuity is the greatest.

Fill the blank with the **correct** option.

(1) Blind spot (2) Fovea centralis

(3) Pupil (4) Iris

173. Identify the **incorrect** match

(1) Knee joint – Hinge joint

(2) Between humerus and pectoral girdle – Ball and socket joint

(3) Saddle joint – Between the carpals

(4) Pivot joint – Between atlas and axis

174. In the patients suffering with gouty arthritis, high level of which compound is found in the joints?

(1) Amino acid crystals (2) Uric acid crystals

(3) Protein crystals (4) Nucleic acid crystals

175. A fall in GFR activates

(1) Macula densa cells to release renin

(2) JG cells to release rennin

(3) JG cells to release renin

(4) Macula densa cells to release rennin

176. Identify the analogy

Antennal glands : Prawns :: _____ : *Planaria*

Choose the **correct** option.

(1) Nephridia (2) Flame cells

(3) Green glands (4) Malpighian tubules

177. Match column-I correctly with column-II.

	Column-I		Column-II
a.	Angina pectoris	(i)	BP is 160/100 mmHg
b.	Cardiac arrest	(ii)	BP is 70/50 mm Hg
c.	Hypotension	(iii)	Heart stops beating
d.	Hypertension	(iv)	Acute chest pain

Choose the **correct** option.

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

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

178. Choose the **correct** statement w.r.t. structure of blood vessels

(1) Tunica intima is the middle layer of smooth muscle and elastic fibres

(2) Tunica externa is the outermost layer of fibrous connective tissue with collagen fibres

(3) Tunica media is the innermost layer of squamous endothelium

(4) Tunica externa is the outermost layer of squamous endothelium

179. Which of the following conditions are **not** favourable for dissociation of oxygen from oxyhaemoglobin?

(1) Low pO_2 and high pCO_2

(2) High pCO_2 and high H^+ concentration

(3) High temperature and acidosis

(4) High pO_2 and alkalosis

180. Select the **incorrect** match

(1) FRC = ERV + RV (2) IC = TV – IRV

(3) TLC = VC + RV (4) VC = ERV + IRV + TV

181. Select the **incorrect** statement

(1) Physiologic calorific value of carbohydrates is 4.0 kcal/g

(2) Physiologic calorific value of proteins is 4.0 kcal/g

(3) Gross calorific value of lipids is 9 kcal/g

(4) Gross calorific value of carbohydrates is 4.1 kcal/g

182. Which of the following juice in the body is devoid of all enzymes?

(1) Succus entericus (2) Bile juice

(3) Pancreatic juice (4) Intestinal juice

183. Mucus neck cells and peptic cells, respectively in stomach secrete

(1) Mucus and vitamin B_{12}

(2) Vitamin B_{12} and mucus

(3) Mucus and pepsinogen

(4) Pepsinogen and mucus

184. Choose the **incorrect** match w.r.t. enzymes and their role in digestive system

Enzyme	Function
(1) Trypsinogen	– Upon activation, it helps in the digestion of proteins
(2) Pancreatic lipase	– It helps in the digestion of fats
(3) Pancreatic amylase	– About 70% of starch is hydrolyzed under its action
(4) Nucleases	– Present in succus entericus, aids in digestion of nucleic acids

185. Which of the following are homopolysaccharides?

(1) Starch, peptidoglycan

(2) Inulin, insulin

(3) Cellulose, inulin

(4) Peptidoglycan, collagen

SECTION-B

186. Complete the analogy

Haemoglobin : Quaternary structure :: Myoglobin : _____

(1) Primary structure (2) Secondary structure

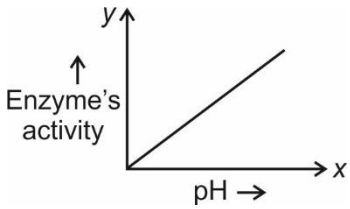
(3) Tertiary structure (4) Quaternary structure

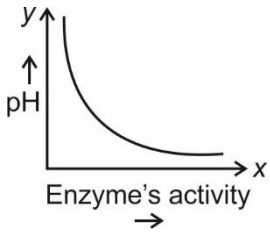
187. Which of the following falls under the category of secondary metabolite?

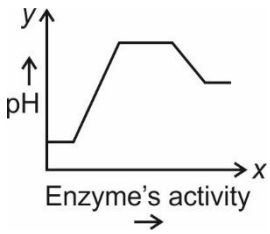
(1) Serine (2) 2-deoxyribose

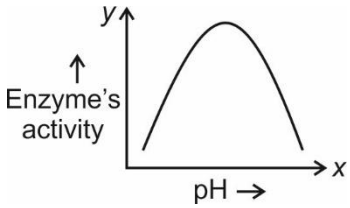
(3) Curcumin (4) Thymidylic acid

188. Which of the following graph **correctly** shows the effect of pH on enzyme's activity for most enzymes?

(1) 

(2) 

(3) 

(4) 

189. How many of the given organisms exhibit radial symmetry?

(a) *Pleurobrachia* (b) *Adamsia*

(c) *Aurelia* (d) *Ctenoplana*

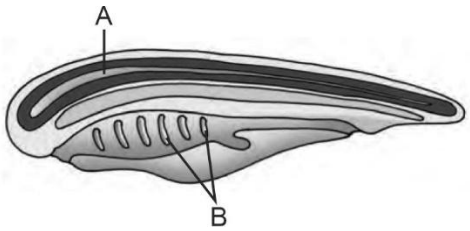
(e) *Aedes* (f) *Taenia*

Choose the **correct** option

(1) Two (2) Three

(3) Four (4) Six

190. Observe the following figure and label A and B respectively



Choose the **correct** option.

	A	B
(1)	Notochord	Post-anal part
(2)	Nerve cord	Gill slits
(3)	Gill slits	Nerve cord
(4)	Post-anal part	Nerve cord

191. Complete the analogy

Fusiform: Smooth muscle fibres :: Intercalated discs : _____

(1) Skeletal muscle tissue

(2) Voluntary muscle tissue

(3) Non-striated muscle tissue

(4) Cardiac muscle tissue

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

	Column-I		Column-II
a.	Bone	(i)	Stores fat
b.	Adipose tissue	(ii)	Site of haemopoiesis
c.	Ligament	(iii)	Act as a support framework for epithelium
d.	Areolar tissue	(iv)	Connects bone to bone

Choose the **correct** option.

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

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

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

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

193. _____ are transparent, membranous and are used in flight.

Fill the blank with the **correct** option.

(1) Tegmina (2) Elytra

(3) Hindwings (4) Forewings

194. Female *Periplaneta americana* produces how many oothecae?
(1) 14-16 (2) 10-20
(3) 9-10 (4) 10-12

195. Identify the **incorrect** statement w.r.t. *Periplaneta americana*
(1) The brain is represented by sub-oesophageal ganglia which supplies nerves to antennae and compound eyes
(2) Excretion is performed by malpighian tubules, fat body, nephrocytes and uricose glands.
(3) Blood vascular system is open type where blood vessels are poorly developed and open into space
(4) The hind gut is broader than midgut and is differentiated into ileum, colon and rectum

196. Thymosin is a hormone which is released by
(1) Thymus gland (2) Thyroid gland
(3) Parathyroid gland (4) Pineal gland

197. Complete the analogy w.r.t. Islets of Langerhans of pancreas.
Insulin : β-cells : : Somatostatin : _____
(1) F-cells (2) PP-cells
(3) δ-cells (4) α-cells

198. Select the **incorrect** statement w.r.t. characteristic features of *Spongilla*.
(1) Cellular level of organization
(2) Coelom is absent
(3) Digestive system is absent
(4) Segmentation is present

199. A soft and spongy layer of skin forms a ___A___ over the ___B___ in *Pila*.
Fill the blanks A and B with a suitable option.

	A	B
(1)	Head	Muscular foot
(2)	Muscular foot	Visceral hump
(3)	Mantle	Visceral hump
(4)	Mantle	Head

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

Column-I	Column-II
a. *Scoliodon*	(i) Notochord is persistent throughout life
b. *Clarias*	(ii) Gills slits are separate and without operculum
	(iii) Air bladder is present which regulates buoyancy
	(iv) Skin is tough, containing minute placoid scales.
	(v) Skin is covered with ctenoid scales

Select the **correct** option.

	a	b
(1)	(i), (ii), (iv)	(iii), (v)
(2)	(i), (ii)	(iii), (iv), (v)
(3)	(i), (ii), (v)	(iii), (iv)
(4)	(iii), (iv)	(i), (ii), (v)

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