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NEET – 2022
Free Online Coaching Programme
Model Test

The important points to note:

I. Each question carries 04 (four) marks and, for each correct answer candidate will get 04 (four) marks.
II. For each incorrect answer, 01(one) mark will be deducted from the total score.
III. To answer a question, the candidate has to find, for each question, the correct answer/ best option.
IV. However, after the process of the challenge of key, if more than one option is found to be correct then all/any one of the multiple correct/best options marked will be given four marks (+4).
- Any incorrect option marked will be given minus one mark (-1).
- Unanswered/Unattempted questions will be given no marks. In case, a question is dropped/ ignored, all candidates will be given four marks (+4) irrespective of the fact whether the question has been attempted or not attempted by the candidate.

V. The Test pattern comprises of two Sections. Each subject will consist of two sections. Section A will consist of 35 Questions and Section B will have 15 questions, out of these 15 Questions, candidates can choose to attempt any 10 Questions.

Total Marks: 720 ***Duration: 3 Hours***

PHYSICS
Section-A

Answer all the questions

1. Dimensional formula of angular momentum is
(1) $[M^1L^2T^{-1}]$ (2) $[M^2L^2T^{-2}]$ (3) $[M^1L^2T^{-3}]$ (4) $[M^1L^1T^{-1}]$

2. A physical quantity E is calculated using the formula $E = xy^2z^{-1/3}$ where x, y, and z are experimentally measure quantities. If the fractional percentage error in the measurement of x,y, and z are 2%, 1% and 3% respectively, then the fractional percentage error in E will be
(1) 0.5% (2) 5% (3) 6% (4) 7%

3. A Car runs at a constant speed on a circular track of radius 100m taking 62 seconds for every circular lap. The average velocity and average speed for each circular lap respectively is:
(1) 0, 0 (2) 0,10m/s (3) 10m/s, 10m/s (4) 10m/s, 0m/s

4. The speed of a projectile at its maximum height is half of its initial speed, the angle of projection is:
(1) 15 degree (2) 30 degree (3) 45 degree (4) 60 degree

5. A motion of a particle along a straight line is described by equation $x = 8+12t-t^3$ where x is in meters and t in seconds. The retardation of the particle when its velocity becomes zero is
(1) $6m/s^2$ (2) $12\ m/s^2$ (3) $24m/s^2$ (4) Zero

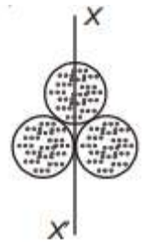
6. A 0.5kg ball is moving with a speed of 12m/s strikes a hard wall at an angle of 30 degree with the wall. It is reflected with the same speed and at the same angle. If the ball is in contact with the wall for 0.25 seconds, the average force acting on the wall is
(1) 48N (2) 24N (3) 12N (4)96N

7. 300J of work is done in sliding a 2 Kg block up an inclined plane of height 10m. the work done against friction is : (g = 9.8m/s2)
(1) 0 (2) 100J (3) 200J (4) 300J

8. Two identical balls A and B having velocities of 0.5 m/s and -0.3m/s respectively collide elastically in one dimension. The velocities of B and A after collision respectively will be

(1) –03m/s and 0.5 m/s (2) 0.3m/s and 0.5m/s
(3) –0.5m/s and 0.3m/s (4) 0.5m/s and -0.3m/s

9. Three identical spherical shells, each of mass m and radius r are placed as shown in figure. Consider an axis XX^1 which is touching to two shells and passing through diameter to third shell. Moment of inertia of the system consisting of these three spherical shells about XX^1axis is



(1) $4mr^2$ (2) $(11/5)mr^2$
(3) $3mr^2$ (4) $(16/5)\ mr^2$

10. A solid cylinder of mass 50Kg and radius 0.5m is free to rotate about the horizontal axis. A massless string is wound round the cylinder with one end attached to it and other hanging freely. Tension in the string required to produce an angular acceleration of 2 revolutions per second square is
(1) 25N (2) 50N (3) 78.5N (4) 157N

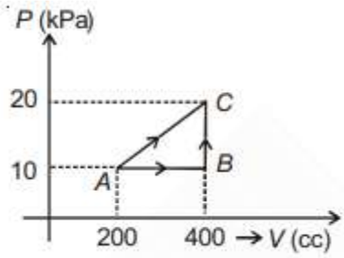
11. The time period of a satellite in a circular orbit of radius R is T. The period of another satellite in a circular orbit of radius 4R is
(1) 4T (2) T/4 (3) 8T (4) T/8

12. An object is taken to a height 2R above the surface of the earth, the increase in potential energy is (R is radius of earth)
(1) MgR/2 (2) MgR/3 (3) 2MgR/3 (4) 2MgR

13. A vertical tube of uniform cross section contains water in both arm. A 10cm glycerin column (R.D = 1.2) is added to one of the limbs. The level difference between the two free surfaces in the two limbs will be
(1) 4cm (2) 2cm (3) 6cm (4) 8cm

14. A spherical black body with radius 12cm radiates 450W power at 500K. if the radius is halved and temperature is doubled, the power radiated in watt would be
(1) 225 (2) 450 (3) 900 (4) 1800

15. If a gas is taken from A to C through B then heat absorbed by the gas is 8J. Heat absorbed by the gas in taking it from A to C directly is
(1) 8J (2) 9J
(3)11J (4) 12J



16. 14g of CO at 27 degree Celsius is mixed with 16g of O2 at 47 Degree Celsius. The temperature of mixture is
(1) 37 (2) –5 (3) 27 (4) 32

17. A spring of force constant K is cut into lengths of ration 1:2:3. They are connected in series and the new force constant is C. Then they are connected in parallel and force constant is Q. Then K:C is
(1) 1:9 (2) 1:11 (3) 1:14 (4) 1:16

18. A mass of diatomic gas at a pressure of 2 atmospheres is compressed adiabatically so that its temperature rises from 27^0C to 927^oC. The pressure of gas in final state is
(1) 256 atm (2) 8 atm (3) 28 atm (4) 66.7 atm

19. A train moving at a speed of 220m/s towards a stationary object, emits a sound of frequency 1000Hz. Some of the sound reaching the object gets reflected back to the train as echo. The frequency of the echo as detected by the driver of the train is (speed of sound in air is 330m/s)
(1) 3500 Hz (2) 4000 Hz (3) 5000 Hz (4) 3000 Hz

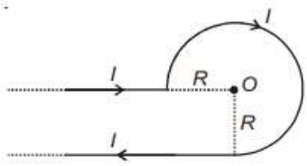
20. A closed pipe of length 10cm has its fundamental frequency half that of the second overtone of an open pipe. The length of open pipe is
(1) 10cm (2) 20 cm (3) 30cm (4) 40 cm

21. Electric charges having same magnitude of electric charge Q are placed at x =1m, 2m, 3m… so on. If any two consecutive charges have opposite sign but the first charge is necessarily positive, what will be the potential at x =0
(1) Zero (2) 2kQ/3 (3) 3kQ/2 (4) Infinity

22. If a copper wire is stretched to make its radius decrease by 0.1%. then the percentage increase in resistance is nearly
(1) 0.4% (2) 0.1% (3) 0.2% (4) 0.8%

23. A current of 2 A flows through a 2 ohm resistor when connected across a battery. The same battery supplies a current of 0.5A when connected across a 9 ohm resistor. The internal resistance of the battery is
(1) 1 ohm (2) 0.5 ohm (3) 0.33 ohm (4) 0.25 ohm

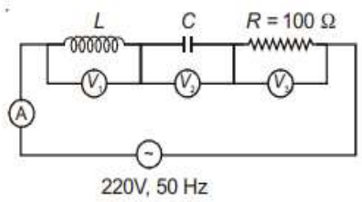
24. Magnetic field at the centre *O* due to the given structure is



(1) $\frac{\mu_0 I}{4R}\left[\frac{3}{2}+\frac{1}{\pi}\right]\odot$ (2) $\frac{\mu_0 I}{2R}\left[3+\frac{1}{\pi}\right]\otimes$ (3) $\frac{\mu_0 I}{4R}\left[\frac{3}{2}+\frac{1}{\pi}\right]\otimes$ (4) $\frac{\mu_0 I}{4R}\left[3+\frac{2}{\pi}\right]\odot$

25. A conducting circular loop is placed in a uniform magnetic field 0.04 T with its plane perpendicular to the magnetic field. The radius of the loop starts shrinking at 2 mm/s. The induced emf in the loop when the radius is 2 cm is
(1) 4.8 $\pi\mu V$ (2) 0.8 $\pi\mu V$ (3) 1.6 $\pi\mu V$ (4) 3.2 $\pi\mu V$

26. In the given circuit the reading of voltmeter V_1 and V_2 are 300 volts each. The reading of the voltmeter V_3 and ammeter *A* are respectively:



(1) 150 V, 2.2 A (2) 220 V, 2.2 A (3) 220 V, 2.0 A (4) 100 V, 2.0 A

27. If the focal length of objective lens is increased then magnifying power of
(1) Microscope will increase but that of telescope decrease
(2) Microscope and telescope both will increase
(3) Microscope and telescope both will decrease
(4) Microscope will decrease but that of telescope will increase

28. Slit widths in a young double slit experiment are in the ratio 9:4 Ratio of intensity at minima to that at maxima is
(1) 4:9 (2) 1:25 (3) 16:81 (4) 25: 1

29. Two Polaroid's are kept crossed to each other. Now one of them is rotated through an angle of 45 degree. The percentage of incident light now transmitted through the system is
(1) 15% (2) 25% (3) 50% (4) 75%

30. The magnetic field in a plane electromagnetic wave is given by 2×10^{-1} sin $(0.5x + 1.5x10^{11}t)$. This electromagnetic wave is
(1) Visible light (2) Infrared light (3) Microwave (4) Radio wave

31. When a metallic surface is illuminated with light of wavelength λ, the stopping potential is X volt. When the same surface is illuminated by light of wavelength 2λ, the stopping potential is X/(3) threshold wavelength for the metallic surface is
(1) 4λ/3 (2) 4λ (3) 6λ (4) 8λ/3

32. The width of depletion region in a p-n junction diode
(1) Increases when reverse bias is applied
(2) Decreases when reverse bias is applied
(3) Increases when forward bias is applied
(4) Remains same irrespective of bias voltage

33. Electrons used in an electron microscope are accelerated by a voltage of 25 kV. If the voltage is increased to 100 kV then the de-Broglie wavelength associated with the electron would
(1) Increase by 4 times (2) Increase by 2 times
(3) Decrease by 2 times (4) Decrease by 4 times

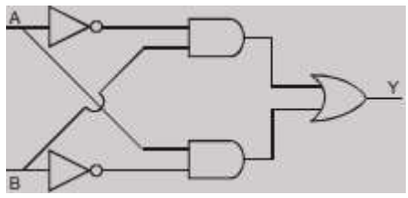
34. The energy of hydrogen atom in its ground state is −13eV, the energy of the level corresponding to n =7 is
(1) –0.544 eV (2) –5.40 eV (3) –0.85 eV (4) –0.28 eV

35. The radioactivity of a certain radioactive element drops to 1/64 of its initial value in 30 seconds. Its half- life is
(1) 8 seconds (2) 15 seconds (3) 7.5 seconds (4) 5seconds

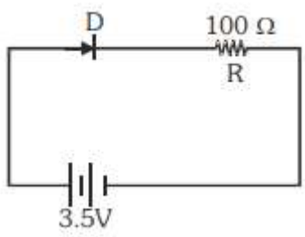
Section – B

Out of these 15 Questions, candidates can choose to attempt any 10 Questions

36. The combination of the gates shown in will produce
(1) AND gate (2) NAND gate
(3) NOR gate (4) XOR gate



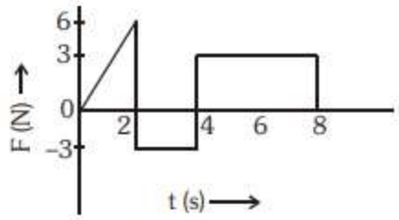
37. In the given figure, a diode D is connected to an external resistance R = 100 ohm and an e.m.f of 3.5 V. If the barrier potential developed across the diode is 0.5V, the current in the circuit will be
(1) 35 mA (2) 30 mA
(3) 40 mA (4) 20 mA



38. An NPN transistor is connected in common emitter configuration in a given amplifier. A load resistance of 800 ohm is connected in the collector circuit and the voltage drop across it is 0.8V. if the current amplification

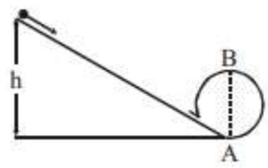
factor is 0.96 and the input resistance of the circuit is 192 ohm, the voltage gain and the power gain of the amplifier will respectively be :
(1) 4, (3)84 (2) (3)69, (3)84 (3) 4, 4 (4) 4, (3)69

39. A force F acting on a particle of mass m is indicated by the force time graph shown below. The change in momentum of the particle over the time interval from zero to 8 seconds is



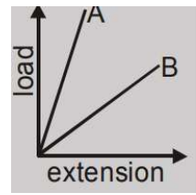
(1) 24 Ns (2) 20 Ns
(3) 12 Ns (4) 6 Ns

40. A body initially at rest and sliding along a frictionless track form a height h just completes a vertical circle of diameter AB= D. The height h is equal to



(1) 3/2 D (2) D
(3) 7/5 D (4) 5/4 D

41. The dimensions of two wires A and B are the same. But their materials are different. Their load extensions graphs are shown. If Ya and Yb are the values of Young's modulus of elasticity of A and B respectively then



(1) Ya > Yb (2) Ya = Yb
(3) Ya < Yb (4) Yb = 2 Ya

42. Spring is oscillating with frequency 4 Hz having spring constant K. An identical spring is connected in series in a new system as shown in figure. The new frequency is

(1) 2Hz (2) $2\sqrt{2}$Hz
(3) 4Hz (4) 8Hz

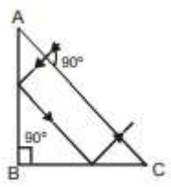
43. A particle of mass *m* carrying charge *q* is accelerated by a potential difference *V*. It enters perpendicularly in a region of uniform magnetic field *B* and executes circular arc of radius *R*, then $\frac{q}{m}$ equals

(1) $\frac{2V}{B^2R^2}$ (2) $\frac{V}{2BR}$ (3) $\frac{VB}{2R}$ (4) $\frac{mV}{BR}$

44. A charge Q is enclosed by a Gaussian spherical surface of Radius R. if the radius is increased 4 times, then the outward flux will be
(1) Doubled (2) Reduced to half (3) Remains same (4) Quadrupled

45. Electromagnetic wave of intensity 1400 W/m2 falls on a metallic surface on area 1.5m2 is completely absorbed by it. Find out the force exerted by beam
(1) 14 x 10^{-5} N (2) 14 x 10^{-6} N (3) 7x 10^{-5} N (4) 7x10^{-6} N

46. A ray falls on a prism ABC (AB = BC) and travels as shown in the figure. The minimum refractive index of the prism material should be



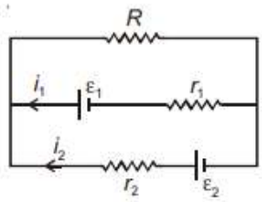
(1) $\frac{4}{3}$ (2) $\sqrt{2}$ (3) 1.5 (4) $\sqrt{3}$

47. What is the torque of the force $\vec{F} = 2\hat{i} - 3\hat{j} + 4\hat{k}$ N acting at the point $\vec{r} = 3\hat{i} + 2\hat{j} + 3\hat{k}$ m about origin?

(1) $-6\hat{i} + 6\hat{j} - 12\hat{k}$ (2) $-17\hat{i} + 6\hat{j} + 13\hat{k}$ (3) $6\hat{i} - 6\hat{j} + 12\hat{k}$ (4) $17\hat{i} - 6\hat{j} - 13\hat{k}$

48. A body starting from rest is moving under a constant acceleration upto 20 seconds. If it moves S_1 distance in first 10 sec and S_2 distance in next 10 sec, the S_2 will be equal to
(1) S_1 (2) $2S_1$ (3) $3S_1$ (4) $4S_1$

49. See the electric circuit shown in this figure. Which of the following equations is a correct equation for it?



(1) $\varepsilon_2 - i_2 r_2 - \varepsilon_1 - i_1 r_1 = 0$
(2) $-\varepsilon_2 - (i_1 + i_2)R + i_2 r_2 = 0$
(3) $\varepsilon_1 - (i_1 + i_2)R + i_1 r_1 = 0$
(4) $\varepsilon_1 - (i_1 + i_2)R - i_1 r_1 = 0$

50. The magnetic moment of a diamagnetic atom is
(1) 1 (2) Between 0 and 1
(3) Zero (4) Greater than 1

CHEMISTRY
Section - A

Answer all the questions

51. When 22.4 L of $H_{2\,(g)}$ is mixed with 11.2 L of Cl_2, each at STP, the moles of HCl(g) formed is equal to
(1) 1 mole of HCl (g) (2) 2 moles of HCl (g)
(3) 0.5 mole of HCl (g) (4)1.5 moles of HCl (g)

52. The energies E_1 and E_2 of two radiations are 25 eV and 50 eV respectively .The relation between their wavelength , *i.e.* λ_1 and λ_2 will be
(1) $\lambda_1 = 2\lambda_2$ (2) $\lambda_1 = 4\lambda_2$ (3) $\lambda_1 = ½\lambda_2$ (4) $\lambda_1 = \lambda_2$

53. Be^{2+} is isoelectronic with which of the following ions?
(1) H^+ (2) Li^+ (3) Na^+ (4) Mg^{2+}

54. Which one of the following species has a triangular shape?
(1) N_3^- (2) NO_3^- (3) NO_2^- (4) CO_2

55. Bond order of 1.5 is shown by
(1) O_2^+ (2) O_2^- (3) O_2^{2-} (4) O_2

56. In the case of alkali metals , the covalent character decreases in the order
(1) MCI > MI >MBr > MF (2) MF > MCI > MBr > MI
(3) MF > MCI > MI > MBr (4) MI >MBr >MCI > MF

57. Of the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression?
(1) KCI (2) $C_6H_{12}O_6$ (3) $Al_2(SO_4)$ (4) K_2SO_4

58. A solution containing 10g per dm^3 of urea (molar mass 250 g mol^{-1}) is isotonic with a 5% solution of non – volatile solute. The molecular mass of this non –volatile solute is
(1) 250 g mol^{-1} (2) 300 g mol^{-1} (3) 350 g mol^{-1} (4) 200 g mol^{-1}

59. Equals masses of H_2, O_2 and methane have been taken in a container of volume V at temperature 27 degrees celsius in identical conditions . The ratio of the volumes of gases $H_2 : O_2 : CH_4$ would be
(1) 8 : 16 : 1 (2) 16 : 8 :1 (3) 16 : 1 : 2 (4) 8 : 1 : 2

60. Copper crystallised in a face centered cubic (fcc) lattice with a unit cell length of 361 pm. What is the radius of copper atom in pm?

(1) 128 pm (2)157 pm (3) 181 pm (4)108 pm

61. According to Le-chatelier's principle , adding heat to a solid ⇌liquid equilibrium will cause the
(1) temperature to increase (2) temperature to decrease
(3) amount of liquid to decrease (4) amount of solid to increase

62. Which is the strongest acid in the following
(1) KCI (2) NaCI (3) Na_2CO_3 (4) $CuSO_4$

63. pH of a saturated solution of $Ba(OH)_2$ is 12.The value of solubility product K_{sp} of $Ba(OH)_2$ is
(1) 3.3×10^{-7} (2) 5.0×10^{-7} (3) 4.0×10^{-6} (4) 5.0×10^{-6}

64. Which one of the following is correct option for free expansion of an ideal gas under adiabatic condition
(1) $q \neq 0, \Delta T = 0, W = 0$ (2) $q = 0, \Delta T = 0, W = 0$
(3) $q = 0, \Delta T < 0, W \neq 0$ (4) $q = 0, \Delta T \neq 0, W = 0$

65. The rate of reaction between two reactants A and B decreases by a factor of 4, if the concentration of reactant B is doubled, the order of this reaction with respect to reactant B is
(1) –1 (2) –2 (3) 1 (4) 2

66. A hydrogen gas electrode is made by dipping platinum wire in a solution of HCI of pH = 10 and by passing hydrogen gas around the platinum wire at 1 atm pressure.The oxidation potential of electrode would be
(1) 0.059 V (2) 0.59 V (3) 0.118 V (4) 1.18 V

67. In Freundlich adsorption isotherm , the value of 1/n is
(1) Between 0 and 1 in all cases (2) Between 2 and 4 in all cases
(3) 1 in case of physical adsorption (4) 1 in case of chemisorption

68. Which one of this following is a mineral of iron ?
(1) Malachite (2) cassiterite (3) pyrolusite (4) Magnetite

69. The correct order of decreasing second ionisation enthalpy of Ti (22), V (23), Cr(24) and Mn(25) is
(1) Cr > Mn > V > Ti (2) V > Mn > Cr > Ti
(3) Mn > Cr > Ti > V (4) Ti > V > Cr > Mn

70. XeF_2 is isostructural with
(1) TeF_2 (2) ICl_2 (3) $SbCl_3$ (4) $BaCl_2$

71. The stability of +1 oxidation state increases in the sequences
(1) Al > Ga > In > Tl (2) Tl < In < Ga < Al
(3) In < Tl < Ga <Al (4) Ga < ln < Al < Tl

72. The sequences of ionic mobility in aqueous solution is
(1) $K^+ < Na^+ < Rb^+ < Cs^+$ (2) $Cs^+ > Rb^+ > K^+ > Na^+$
(3) $Rb^+ > K^+ > Cs^+ > Na^+$ (4) $Na^+ > K^+ > Rb^+ > Cs^+$

73. Which of the following statement is Not true ?
(1) HOCl is stronger acid than HOBr
(2) HF is a stronger acid than HCl
(3) Among halide ions , iodide is the most powerful reducing agent
(4) Fluorine is the only halogen that does not shows a variable Oxidation state

74. The acid which has a peroxy linkage is
(1) Sulphurous acid (2) pyrosulphuric acid
(3) dithionic acid (4) caro's acid

75. Which one of the following atoms will have the smallest size ?
(1) Mg (2) Na (3) Be (4) Li

76. Which of the following statements about the interstitial compounds is incorrect ?
(1) They retain metallic conductivity
(2) They are chemically reactive
(3) They are much harder than the pure metals
(4) They have higher melting points than the pure metals

77. The aqueous solution containing which one of the following ions will be colourless?
(At. no. Sc = 21, Fe = 26 , Ti = 22 , Mn = 25)
(1) Sc^{3+} (2) Fe^{2+} (3) Ti^{+} (4) Mn^{2+}

78. Which one of the following element shows maximum numbers of different oxidation states in its compound?
(1) Eu (2) La (3) Gd (4) Am

79. Ethyl chloride is converted into diethyl ether by
(1) Wurtz synthesis (2) Grignard reaction
(3) Perkins reaction (4) Williamson's synthesis

80. Crystal field Stabilisation energy for high spin d^4octahedral complex is
(1) $-1.8\ \Delta_o$ (2) $-1.6\Delta_o$+p (3) $-1.2\Delta_o$ (4) $-0.6\Delta_o$

81. 31.According to IUPAC nomenclature sodium nitroprusside is named as
(1) sodium pentacyanidonitrosyl ferrate (ll)
(2) sodium pentacyanidonitrosyl ferrate (lll)
(3) sodium nitroferricyanide
(4) sodium nitroferrocyanide

82. Shape of $Fe(CO)_5$is
(1) octahedral (2) square planar
(3) trigonal bipyramidal (4) square pyramidal

83. The lassaigne's extract is boiled with conc. HNO_3while testing halogens by doing so it
(1) helps in the precipitation of AgCl
(2) increase the solubility product of AgCl
(3) Increase the concentration of NO_3^- ions
(4) decomposes $Na_2S$and NaCN if formed

84. Which of the following organic compounds has same hybridisation as its combustions (CO_2) product?
(1) Ethane (2) Ethyne (3) Ethene (4) Ethanol

85. Nitrobenzene can be prepared from benzene by using a mixture of conc. $HNO_3$and conc.H_2SO_4.In the mixture , nitric acid acts as a/an
(1) reducing agent (2) acid (3) base (4) Catalyst

Section - B

Answer any ten questions.

86. Which of the following compounds will exhibit cis-trans (geometrical) isomerism?
(1) 2 – butane (2) butanol (3) 2 – butyne (4) 2 - butenol

87. The IUPAC name of the compound having the formula CH≡C - CH =$CH_2$is
(1) 3 - butene - 1 – yne (2) 1 - butyn - 3 - ene
(3) but - 1 - yne - 3 – ene (4) 1 - butene - 3 - yne

88. Reaction of HBr with propene in the presence of peroxide gives
(1) iso - propyl bromide (2) 3 - bromo propane

(3) allyl bromide (4) n - propyl bromide

89. Given are cyclohexanol (I), acetic acid (II), 2, 4, 6 – trinitrophenol (III) and phenol (IV) In these, the order of decreasing acidic character will be
(1) III > II > IV > I (2) II > III > I > IV (3) II > III > IV I (4) III > IV > II > I

90. Which of the following reaction will not result in the formation of carbon - carbon bonds ?
(1) Reimer - Tiemann reaction (2) Cannizaro reaction
(3) Wurtz reaction (4) Friedel - Crafts's acylation

91. When phenol is treated with $CHCl_3$and NaOH the product formed is
(1) benzaldehyde (2) salicylaldehyde (3) salicylic acid (4) benzoic acid

92. CH_3CHO and $C_6H_5CH_2CHO$ can be distinguished chemically by
(1) Benedict test (2) iodoform test
(3) Tollen's reagent test (4) fehling solution test

93. The product formed in aldol condensation is
(1) a bata - hydroxy acid
(2) a beta - hydroxy aldehyde or a beta - hydroxy ketone
(3) an alpha - hydroxy aldehyde or ketone
(4) an alpha , beta unsaturated ester

94. Reduction of aldehydes and ketone into hydrocarbons using zinc amalgam and conc HCl is called
(1) Clemmensen reduction (2) Cope reduction
(3) Dow reduction (4) Wolff - kishner reduction

95. The relative reactivities of acyl compounds towards nucleophilic substitution are in the order of
(1) Acyl chloride > acid anhydride > ester > amide
(2) ester > acyl chloride > amide > acid anhydride
(3) acid anhydride > amide > ester > acyl chloride
(4) acyl chloride > ester > acid anhydride > amide

96. Amides can be converted into amines by a reaction named after.
(1) Perkin (2) claisen (3) Hofmann (4) kekule

97. Mark the correct statement
((1)Methyl amine is slightly acidic
((2)Methyl amine is less basic than ammonia
((3)Methyl amine is stronger base than NH_3
((4)Methyl amine forms salt with alkalies

98. Nylon is an example
(1) Polyester (2) polysaccharide (3) polyamide (4) polythene

99. Antiseptics and disinfectants either kill or prevent growth of microorganisms. Identify which of the following is not true
(1) A 0.2% solution of phenol is an antiseptic while 1% solution acts like disinfectant
(2) Chlorine and iodine are used as strong disinfectants
(3) Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics
(4) Disinfectants harm the living tissue

100. The correct statement in respect of protein haemoglobin is that it
(1) Functions as a catalyst for biological reactions
(2) Maintains blood sugar level
(3) Acts as an oxygen carrier in the blood
(4) Forms antibodies and offer resistance to diseases

BOTANY
Section: A

Answer all questions.

101. Root pressure
(1) Is positive (2) Is driving force for guttation
(3) Is responsible for exudation (4) All the above

102. Identify the incorrect statement
(1) Diakinesis represents transition to metaphase –I
(2) Recombinase is involved in crossing over
(3) Sister chromatids are separated from each other in Anaphase – I
(4) Diakinesis is marked by terminalisation of chiasmata

103. Heterophylly is shown by
(1) Buttercup (2) Larkspur (3) Coriander (4) All the above

104. How many plants in the given list show axile placentation?
Pea, Mustard, Dianthus, Tomato, Argemone, China rose, Primrose, Lemon, Sunflower
(1) Two (2) Three (3) Five (4) Six

105. Phosphate granules, cyanophycean granules and glycogen granules in prokaryotic cells
(1) Are amembranous (2) Store reserve food
(3) Useful in buoyancy (4) More than one option is correct

106. Identify the stage of cell division where chromosome structure (morphology) study
(1) Anaphase (2) Metaphase (3) Anaphase – II
(4) Transition to metaphase

107. Asexual reproduction occurs through budding in
(1) Yeast (2) Rhizopus (3) Hydra (4) 1 and 3

108. In dicot roots the vascular cambium is derived from
(1) Pericycle (2) endodermis (3) 1 and 2 (4) Cortex

109. Unrelated to Baculoviruses
(1) These are excellent candidates for species specific narrow spectrum insecticidal application
(2) They have been shown to have no negative impacts on plants mammals, birds etc
(3) They attack insects and other arthropods
(4) They are cellular biocontrol agents

110. Trichomes take part in
(1) Climbing (2) Protection and reduction of transpiration
(3) Exudation of water drops (4) Desiccation

111. The 'living state'
(1) Can never anyhow be related to metabolism
(2) Is a non-equilibrium state with molecules in a metabolic flux
(3) Is an equilibrium steady-state without any metabolic flux
(4) Is a constant effort to prevent attaining equilibrium without energy input

112. Primary e^- acceptor in non-cyclic photophosphorylation is
(1) Mn-Protein towards inner side of thylakoid membrane
(2) Phaeophytin, a special chlorophyll 'a' molecule without Mg
(3) Plastoquinone (PQ) (4) Fe-S protein

113. Total number of ATP produced through ETS only from one molecule of PGAL in aerobic respiration is
(1) 5 (2) 20 (3) 17 (4) 10

114. Uncommon (Non-conventional taxon encountered during taxonomic studies is
(1) Class (2) Tribe (3) Order (4) Family

115. Which of the following is not related to Volvox?
(1) It belongs to Chlorophyceae
(2) It shows oogamous type of sexual Reproduction
(3) It's plant body is called 'plasmodium'
(4) Plant body is colonial

116. The fruit of mango differs from that of coconut with respect to
(1) Mesocarp (2) Endocarp (3) Drupe (4) Single Seeded

117. Mismatch of the following is
(1) Palmately compound leaves - Silk cotton
(2) Whorled phyllotaxy - Alstonia
(3) Tendril – *Ipomoea*
(4) Stilt roots - Sugarcane

118. Identify the mismatch
(1) Asparagus – Vegetables (2) Lupin – Ornamental
(3) Muliathi – Ornamental (4) Tulip - Ornamental

119. Companion cell, mature sieve tube element, tracheid, guard cell, sclereid, root hair, vessel element. How many of the above are living?
(1) 5 (2) 3 (3) 6 (4) 4

120. Identify the mismatch
(1) WBC – Amoeboid (2) RBC - long and narrow
(3) Tracheid – Elongated (4) Mesophyll cell - Round and oval

121. In potato the chromosome number is three times more than that of
(1) Rice (2) Pisum (3) Apple (4) Onion

122. Identify the incorrect regarding external fertilization
(1) A major advantage is that the offspring are extremely vulnerable to predators
(2) Syngamy occurs in the external medium (water)
(3) Shows great synchrony between the sexes
(4) Release a large number of gametes into the surrounding medium

123. Creation of a new character or trait not found in the parental type is possible by this method
(1) Hybridization (2) Introduction (3) Selection (4) 2& 3

124. Statement - I : In the photorespiratory pathway, there is no synthesis of ATP or NADPH.
Statement II: Photorespiration results in the release of CO_2 with the utilization of ATP.
(1) Both statement I and Statement II are correct
(2) Statement I is correct, Statement II is wrong
(3) Statement I is wrong; Statement II is correct
(4) Both Statement I and Statement II are wrong

125. In eukaryotes RNA polymerase I transcribes
(1) r RNAs (28 S, 18 S and 5.8 S) (2) t RNA, 5 srRNA and snRNA
(3) Heterogenous nuclear RNA (hnRNA) (4) All these

126. Mark the incorrect statement
(1) In Paramecium and Amoeba cell division itself a mode of reproduction
(2) Certain annual bamboo species a monocarpic plant
(3) Wheat and carrot have one flowering phase in their life
(4) Cucurbits have Staminate and pistillate flowers on same plant

127. Choose the wrong combination with reference to elements

(1) Structural element – Carbon
(2) Altering osmotic potential of cells - Potassium
(3) Activating Pep case – Magnesium (4) Component in chlorophyll – Zinc

128. In C_4- plants, the CO_2 -fixation in mesophyll cells is carried out by the enzyme
(1) pyruvate dehydrogenase (2) pyruvate decarboxylase
(3) PEP carboxylase (4) RubisCO

129. RQ value for protein is
(1) 1 (2) 0.7 (3) 0.9 (4) > 1

130. Which of the following technique is used for the separation of DNA fragments?
(1) Gel electrophoresis (2) Chromatography
(3) Transformation (4) Transduction

131. Large, empty, colourless cells present in upper epidermis of grass leaf are
(1) Accessory cells (2) Bulliform cells (3) Palisade parenchyma
(4) Spongy parenchyma

132. Find the incorrect match, with reference to ploidy
(1) Anther – Ovule (2) Microspore – Tapetum
(3) Stamen – Carpel (4) Pollen grain - Embryo sac

133. Peri spermic seeds are
(1) Black berry and turnip (2) Black berry and black pepper
(3) Black pepper and beet root (4) Turnip and beet root

134. Intercalary meristem is a
(1) Promeristem (2) Primary meristem
(3) Lateral meristem (4) Secondary meristem

135. Statement I: Mendel did not recognize the linkage phenomenon in his experiments
Statement II: The factors he considered were located on different chromosomes
(1) Both S-I and S-II are incorrect (2) Both S-I and S-II are correct
(3) S-I is correct but S-II is incorrect (4) S-I is incorrect but S-II is correct

Botany: Section: B

Answer any 10 questions

136. Percentage of progeny with green round seeds obtained in a cross involving YyRr x yyrr parents.
(1) 50% (2) 75% (3) 25% (4) 30%

137. Cross Phenotypic ratio/phenotypes
A) YyRr x yyrr I) 9:3:3:1
B) YYRR x yyrr II) All yellow round
C) YyRr x YyRr III) 1:1:1:1
D) YyRr x YYRR IV) All yellow round
The correct match is

	A	B	C	D		A	B	C	D
(1)	II	I	III	IV	(2)	IV	III	I	II
(3)	III	IV	I	II	(4)	III	IV	II	I

138. Primers get attached with DNA strands in:
(1) Denaturation step of PCR (2) Annealing step of PCR
(3) Extension step of PCR (4) Before denaturation step PCR

139. Chief producers of oceans are
(1) Chrysophytes (2) Euglenoids (3) Slime moulds (4) Protozoans

140. According to five kingdom classifications, organisms having non-cellulosic cell walls are included in
(1) Monera, Plantae & Animalia (2) Monera & Fungi
(3) Monera & Plantae (4) Plantae & Protista

141. Insect pollinated flowers have all except:
(1) Colour (2) Fragrance (3) Nectar (4) Feathery stigma

142. Which one of the following is commonly used in transfer to foreign DNA into crop plants?
(1) Meloidogyne incognita (2) Agrobacterium tumefaciens
(3) Penicillium expansum (4) Trichoderma harzianum

143. Common features of chloroplast and mitochondria is
A) Production of ATP B) $NADPH_2$ formation
C) Presence of 70S ribosomes D) Presence of DNA
(1) A,C,D (2) C, D only (3) A,B,C,D (4) B,C,D

144. Which plant growth regulator helps you to make your garden free from dicot weeds?
(1) 2, 4-D (2) BAP (3) Abscisic acid (4) Ethylene

145. Identify the mismatch
(1) LAB - vitamin B_{12} (2) Aspergillus niger - Butyric acid
(3) Penicillium notatum – Penicillin (4) Saccharomyces cerevisiae - Alcohol

146. Placentation, aestivation, bract side of flower can be observed in
(1) Floral formula (2) Floral diagram (3) Both 1 & 2
(4) Achlamydeous flowers only

147. Shoot apical meristem forms
(1) Axillary bud (2) Leaf primordia (3) Intercalary meristem
(4) More than one option is correct

148. The function of specialized parenchyma, closely associated with sieve tube elements helps in
(1) Giving mechanical support to the plant
(2) Translocation of water
(3) Maintaining the pressure gradient in sieve cell
(4) Maintaining the pressure gradient in sieve tube elements

149. Which of the following is wrongly matched?
(1) Zygomorphic flower – Cassia, bean
(2) Actinomorphic flower – Mustard, Datura
(3) Epigynous flower – plum, rose
(4) Hypogynous flower – Brinjal, mustard

150. Read the following statements:
A) Xylem transport only inorganic nutrients
B) Phloem transport only organic materials
C) Some of the nitrogen travels in xylem as inorganic ions
D) Transport in xylem (of water and minerals) is essentially bidirectional
How many of the above statement(s) is / are correct?
(1) Two (2) Three (3) Four (4) One

ZOOLOGY
Section: A

Answer all questions.

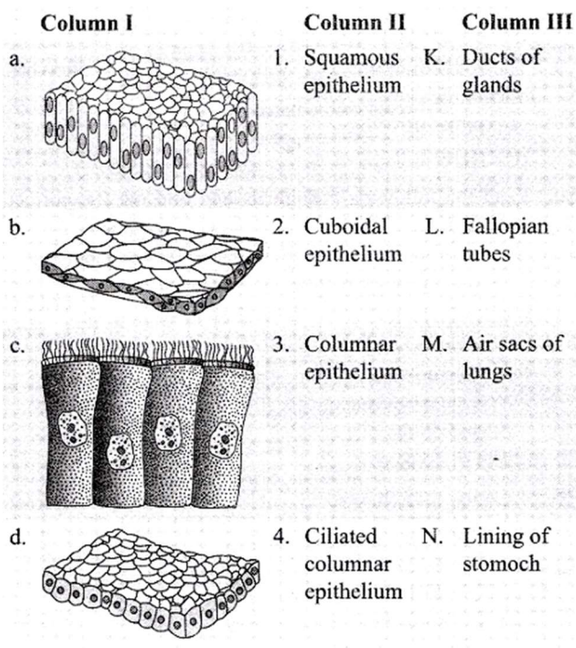
151. Triploblastic animals primarily show
(1) Radial symmetry (2) Bilateral symmetry
(3) Sexual dimorphism (4) True coelom

152. Comb plates are found in
(1) Pleurobrachia (2) Obelia (Sea-fur) (3) Physalia (4) All of the above

153. Cnidoblasts are used for
(1) Capture of the prey (2) Anchorage
(3) Defence (4) All of the above

154. Which of the following animals is not viviparous?
(1) Platypus (Ornithorhynchus) (2) Whale
(3) Flying fox (Bat) (4) Elephant

155. The animal having notochord throughout life is
(1) Bony Fish (2) Amphioxus (3) Snakes (4) Birds



156. Match the columns I,II and III and choose the correct combination from the options given.
(1) a – 3 – K, b – 2 – M, c – 1 – N, d – 4 – L
(2) a – 4 – N, b – 1 – K, c – 3 – L, d – 2 – M
(3) a – 3 – N, b – 1 – M, c – 4 – L, d – 2 – K
(4) a – 3 – N, b – 1 – M, c – 4 – K, d – 2 – L

157. Mucus, saliva, earwax, oil, milk and digestive enzymes are secreted by
(1) Exocrine glands (2) Endocrine glands
(3) Heterocrine glands (4) Compound glands

158. Pseudostratified epithelium is found in
(1) Oesophagus (2) Respiratory tract (3) Urinary tract (4) kidney

159. In female cockroach, brood or genital pouch is formed by
(1) 7^{th}, 8^{th} and 9^{th} sterna (2) 7^{th} sternum and ,8^{th} and 9^{th} terga

(3) 9^{th}, 10^{th} terga, and 9^{th} sternum (4) 9^{th} and 10^{th} sterna, and 9^{th} tergum

160. The most active phagocytic white blood cells are
(1) Neutrophils and monocytes (2) Neutrophils and eosinophils
(3) Lymphocytes and macrophages (4) Eosinophils and lymphocytes

161. The number of teeth that grow twice in human life is
(1) 4 (2) 12 (3) 20 (4) 28

162. The mucus and bicarbonates present in the gastric juice play an important role in
(1) Lubrication
(2) Protection of the mucosal epithelium from excoriation by the highly concentrated HCl
(3) Providing the acidic condition in the stomach for the action of pepsin and rennin the action of pepsin and rennin
(4) Both 1 and 2

163. Additional volume of air, a person can expire by a forcible expiration is called
(1) TV (2) ERV (3) IRV (4) EC

164. Dead space air in man is
(1) 1.5 *l* (2) 500 m*l* (3) 21% (4) 150 m*l*

165. Lymph consists of
(1) RBCs, WBCs and plasma (2) RBCs, proteins and platelets
(3) All components of blood except RBCs and some proteins
(4) WBCs and serum

166. Systemic heart refers to
(1) Heart that contract under stimulation from nervous system
(2) Left auricle and left ventricle in higher vertebrates
(3) Entire heart in lower vertebrates
(4) The two ventricles together in humans

167. In some of the nephrons, the loop of Henle is very long and runs deep into the medulla. These nephrons are called
(1) Cortical nephrons (2) Medullary nephrons
(3) Juxtamedullary nephrons (4) Juxtaglomerular nephrons

168. In nephron, water absorption is maximum in
(1) Proximal convoluted tubule (2) Loop of Henle
(3) Glomerulus (4) Distal convoluted tubule

169. Which of the following is the functional unit of muscle contraction?
(1) Muscle fibre (2) Sarcomere (3) Muscle bundle (4) Sarcolemma

170. Acromion process is part of
(1) Vertebral column (2) Pelvic girdle
(3) Femur (4) Pectoral girdle

171. During conduction of nerve impulse
(1) Na^+ moves out of axoplasm (2) Na^+ moves into axoplasm
(3) K^+ moves into axoplasm (4) Ca^{2+}moves into axoplasm

172. The diameter of the pupil is regulated by the
(1) Muscle fibres of ciliary body (2) Muscle fibres of iris
(3) Muscle fibres of lens (4) Ligaments of ciliary body

173. The gonadotropic hormone is secreted by
(1) Hypothalamus (2) Adrenal cortex
(3) Adenohypophysis of pituitary (4) Interstitial cells of testis

174. Which is not a secondary messenger?
(1) cAMP (2) IP_3 (3) Calcium (4) Sodium

175. The first meiotic division during oogenesis is completed at the stage of
(1) Primary oocyte within primary follicle
(2) Primary oocyte within secondary follicle
(3) Primary oocyte within tertiary follicle
(4) Secondary oocyte within tertiary follicle

176. Signals from the fully developed foetus and placenta ultimately lead to parturition which requires the release of
(1) Estrogen from placenta (2) Oxytocin from foetal pituitary
(3) Oxytocin from maternal pituitary (4) Relaxin from placenta

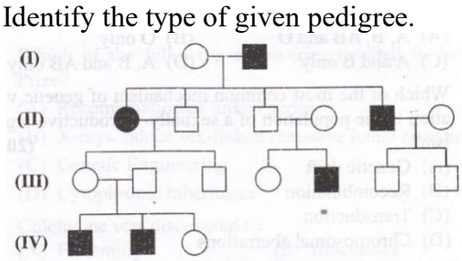
177. Tubectomy, a method of population control, is performed in
(1) Both males and females (2) Males only
(3) Females only (4) Only pregnant females

178. Female who cannot produce ovum, but can provide suitable environment for fertilization and further development, could be assisted by
(1) ZIFT (2) GIFT (3) ICSI (4) IUI

179. Which of the following genotype will show the diseased condition in sickle cell anaemia?
(1) Hb^AHb^A (2) Hb^AHb^S (3) Hb^SHb^S (4) Both 1 and 2

180. A colour blind man (X^C Y) has a colour blind sister (X^CX^C) and a normal brother (XY). What is the genotype of father and mother?
(1) X^C Y, X^C X^C (2) X^C Y, X^C X (3) XY, X^C X^C (4) XY, X^C X

181. In the following human pedigree, the filled symbols represent the affected individuals. Identify the type of given pedigree.



(1) X-linked recessive (2) Autosomal recessive
(3) X-linked dominant (4) Autosomal dominant

182. Match the columns I and II, and choose the correct combination from the options given

Column I	**Column II**
(a) Origin of earth	1. 4500 mya
(b) Origin of life	2. 4000 mya
(c) Origin of first cellular form of life	3. 3000 mya
(d) Origin of first non-cellular form of life	4. 2000 mya

(1) a-1, b-2, c-3, d-4 (2) a-2, b-1, c-4, d-3
(3) a-1, b-2, c-4, d-3 (4) a-2, b-1, c-3, d-4

183. Biogenetic law/recapitulation theory was proposed by
(1) Wallace (2) Lamarck (3) Haeckel (4) Mendel

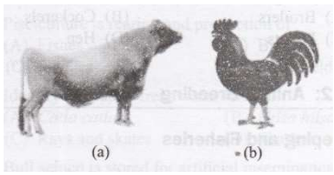
184. Which of the following had the smallest brain capacity?
(1) Homo neanderthalensis (2) Homo habilis
(3) Homo erectus (4) Homo sapiens

185. Internal bleeding, muscular pain, blockage of the intestinal passage and anaemia are some of the symptoms caused due to infection by
(1) Wuchereria (2) Trichophyton (3) Ascaris (4) Plasmodium

Zoology: Section: B

Answer any 10 questions.

186. Cancer is caused due to activation of …… to ……. and/or inactivation of ……
(1) Oncogene, tumour suppressor proto-oncogene
(2) Tumour suppressor gene, oncogenes, proto-oncogene
(3) Proto-oncogene, oncogene, tumour suppressor gene
(4) Oncogene, proto-oncogene, tumour suppressor gene



187. The following figure shows the improved breed of cattle and chickens where
(1) a-Jersey, b-Rhode Island (2) a-Leghorn, b-Jersey
(3) a-Rhode Island, b-Leghorn (4) a-Jersey, b-Leghorn

188. Maturation of proinsulin into insulin takes place after
(1) Joining of C peptide (2) Removal of C peptide
(3) Removal of disulphide bridge (4) Addition of disulphide bridge

189. Which of the following is likely to be found in the deepest waters?
(1) Red algae (2) Green algae (3) Brown algae (4) All of the above

190. Which statement is false about predators?
(1) Predators keep prey population under control
(2) Predators help in maintaining species diversity in a community
(3) If a predator is not efficient, the prey population will become extinct
(4) Tiger is an example of predator

191. The functional components of the ecosystems are
a. Productivity b. Decomposition c. Nutrient cycling
d. Energy flow e. Succession f. Stratification
(1) a,b and c (2) a,b,c and d (3) a,b,c d and e (4) a,b,c,d and f

192. Pyramid of numbers is
(1) Always upright (2) Always inverted
(3) Either upright or inverted (4) Neither upright nor inverted

193. Which scientist found that plots with more species showed less year to year variation intotal biomass?
(1) David Tilman (2) Paul Ehrlich (3) Robert May (4) Ernst Mayer

194. Smokestacks of thermal power plants, smelters and other industries release
(1) Gaseous air pollutants (2) Particulate pollutants
(3) Harmless gases (4) All of the above

195. First Chipko movement was started by
(1) Sundar Lal Bahuguna, in Garhwal, Himalaya, 1974
(2) Amrita Devi Bishnoi, 1731
(3) Ramesh Chandra Dagar, Sonipat Haryana, 1973
(4) Ahmed Khan, Bangalore city, 1986

196. Terrestrial amphibians and aquatic amphibians are
(1) Ammonotelic (2) Ureotelic
(3) Ammonotelic and Ureotelic respectively

(4) Ureotelic and Ammonotelic respectively

197. Rib cage is formed by
(1) Ribs and cervical vertebrae (2) Ribs and sternum
(3) Ribs, sternum and thoracic vertebrae (4) Ribs and thoracic vertebrae

198. Chemicals involve in the transmission of impulses of synapses known as
(1) Ions (2) Inhibitory chemicals
(3) Neurohormone (4) Neurotransmitters

199. Follicle stimulating hormone (FSH) in male regulates
(1) Follicle Maturation (development of ovarian follicles)
(2) Ovulation and maintenance of pregnancy
(3) Spermatogenesis (4) Sexual behaviour (libido)

200. Bile is stored and concentrated in
(1) Hepatic lobules (2) Cords (3) Gall bladder (4) Hepatic cells