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DISTANCE LEARNING PROGRAMME
(ACADEMIC SESSION 2014-2015)

LEADER TEST SERIES COURSE
TARGET : MH-CET 2015

TEST # 04	DATE : 01 - 03 - 2015
Test Type : MAJOR	Test Pattern : MH-CET

TEST SYLLABUS : FULL SYLLABUS

INSTRUCTIONS	Duration : 3:00 hours	Total Marks : 720

1. This question booklet contains 180 Objective Type Questions in the subjects of Physics(45), Chemistry (45) and Biology (90).

2. The question paper and OMR (Optical Mark Reader) Answer Sheet is issued separately at the start of the examination.

3. Choice and sequence for attempting questions will be as per the convenience of the candidate.

4. Candidate should carefully read the instructions printed on the Question Booklet and Answer Sheet and make the correct entries on the Answer Sheet. As Answer Sheets are designed to suit the OPTICAL MARK READER (OMR) SYSTEM, special care should be taken to mark the entries correctly. Special care should be taken to fill accurately. The correctness of entries has to be cross-checked by the invigilators. **Paper code and Form No.**

5. Read each question carefully.

6. Select the correct answer from the four available options given for each question.

7. Mark the appropriate circle completely like this ●, for answering a particular question. Mark with Black ink ball point pen only.

8. Each question with correct response shall be awarded four (4) marks. There shall be no negative marking.

9. **Use of whitener or any other material to erase/hide the circle once filled is not permitted.**

10. Avoid overwriting and/or striking of answers once marked.

11. Rough work should be done only on the blank space provided on the Question Booklet. **Rough work should not be done on the Answer Sheet.**

12. The required Log-Antilog table will be provided along with the Question Booklet.

13. Immediately after the prescribed examination time is over, the Answer sheet is to be returned to the Invigilator.

14. No candidate is allowed to leave the examination hall till the end of examination.

15. No marks will be deducted if a particular question is not attempted.

Do not open this Test Booklet until you are asked to do so.

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(**BEWARE OF NEGATIVE MARKING**)

1. A coil of 10 cm radius carrying a current of 1 A produce a magnetic field of induction 6.284 x 10^{-3} Wb/m^2 at it's center. What is the number of turns of the coil?
(1) 100 (2) 200 (3) 500 (4) 1000

2. Match the followings.

Column -I	Column -II
A. Volume charge density	p. $[M^1L^2T^{-3}\ A^{-1}]$
B. Electric potential	q. $[M^0L^1T^1\ A^1]$
C. Electric dipole moment	r. $[M^1L^1T^{-3}\ A^{-1}]$
D. Intensity of electric field	s. $[M^0L^{-3}A^1\ T^1]$

(1) A - p   B - q   C - r   D - s
(2) A - s   B - p   C - q   D - r
(3) A - q   B - r   C - s   D - p
(4) A - s   B - p   C - r   D - q

3. In the motion of the rocket, _____ is the quantity, which is conserved.
(1) force (2) mass
(3) linear momentum (4) kinetic energy

4. The acceleration of a particle in m/s^2 is given by $a = 3t^2 + 3t + 5$. What is its velocity at the end of 2 sec, if its initial velocity is 3 m/s?
(1) 17 m/s (2) 22 m/s
(3) 27 m/s (4) 32 m/s

5. A bulb of 220 volt and 300 watt is connected across 110 V circuit. What is the percentage reduction in power?
(1) 100% (2) 25% (3) 70% (4) 75%

6. At what distance, an object must be placed from a lens of focal length 15 cm, to get an inverted image of unit magnification?
(1) 15 cm (2) 20 cm
(3) 25 cm (4) 30 cm

7. A body weighs 90 N on the surface of the earth. What is the gravitational force acting on it, at a height equal to 1/4th the radius of the earth, from the surface?
(1) 60 N (2) 53.2 N
(3) 57.6 N (4) 80 N

8. A person sitting in a chair in a satellite feels weightlessness because
(1) the earth does not attract the objects in the satellite.
(2) the normal force by the chair on the person balances the earth's attraction.
(3) the normal force is zero.
(4) the person in the satellite is not accelerated.

9. A hot liquid takes 10 minutes to cool from 70^0 C to 60^0 C. The time taken by the liquid to cool from 60^0 C to 50^0 C is
(1) 10 minutes
(2) less than 10 minutes
(3) more than 10 minutes
(4) more or less than 10 min depending upon the liquid and the surrounding.

10. Which colour will give maximum resolving power for a telescope?
(1) Red (2) Blue
(3) Green (4) Violet

11. A vessel contains oil (density = 0.8 gm/cm^3) over mercury (density = 13.6 gm/cm^3). A homogeneous sphere floats with half of its volume immersed in mercury and the other half in oil. The density of material of the sphere in gm/cm^3 is
(1) 3.3 (2) 6.4
(3) 7.2 (4) 2.8

SPACE FOR ROUGH WORK

12. The product of linear momentum and angular momentum of an electron of the hydrogen atom in n^{th} orbit is proportional to n^x, where x is

(1) 0   (2) 1   (3) -2   (4) 2

13. In an a.c. circuit E and I are given by

$E = 100\sin(100t)$ (in V) and $I = 100\sin\left(100t + \dfrac{\pi}{3}\right)$

(in mA), the power dissipated in the circuit is

(1) 250 W   (2) 25 W   (3) 2.5 W   (4) 5 W

14. Modulation is a process of superposing

(1) high frequency audio signal on low frequency carrier waves.

(2) low frequency radio signals on low frequency audio signals.

(3) high frequency radio signals on low frequency audio signals.

(4) Low frequency audio signals on high frequency carrier waves.

15. A string of length 'L' fixed at both ends, vibrates in its first overtone, then the wavelength will be

(1) L/4   (2) L/2   (3) L   (4) 2L

16. A body of mass 1kg is suspended from a string 1 m long, is rotated in a verticle circle. What is the tension in the string, when it is horizontal and the speed is 2m/s?

(1) 4 N   (2) 3 N   (3) 2 N   (4) 1N

17. A particle executes a linear S.H.M. of amplitude A and period T. If starts from the mean position, the time required to cover a distance A/2 is

(1) T/4   (2) T/3   (3) T/8   (4) T/12

18. What is the nature of the graph between K.E. and P.E. of a particle performing a linear S.H.M.?

(1) A straight line passing through the origin.

(2) A straight line parallel to KE axis.

(3) A straight line having intercepts on the PE and KE axes.

(4) Straight lines parallel to PE axis.

19. If a long spring is stretched by 2 cm, its potential energy is U. If the spring is stretched by 10 cm, the potential energy stored in it will be

(1) U / 25   (2) U / 5

(3) 5U   (4) 25U

20. If a sonometer experiment is performed in a lift and if the lift starts falling down freely then the fundamental frequency of the sonometer wire will

(1) be very high   (2) be very low

(3) be zero   (4) remain the same

21. In a simple harmonic progressive wave, the maximum particle velocity is twice the wave velocity. If λ is the wavelengths, then its amplitude is given by

(1) $\dfrac{\lambda}{\pi}$ (2) $\dfrac{2\lambda}{\pi}$

(3) $\dfrac{\lambda}{2\pi}$ (4) $\dfrac{2\pi}{\lambda}$

22. If 'T' is the period of a satellite revolving very close to the surface of the earth and if ρ is the density of the earth, then

(1) $T \propto \rho$ (2) $T \propto \dfrac{1}{\rho}$

(3) $T \propto \dfrac{1}{\sqrt{\rho}}$ (4) $T \propto \sqrt{\rho}$

23. A block of mass 2 kg rests on a rough inclined plane making an angle of 30° with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is

(1) 9.8 N   (2) $0.7 \times 9.8 \times \sqrt{3}$ N

(3) $9.8 \times \sqrt{3}$ N   (4) 0.7×9.8 N.

SPACE FOR ROUGH WORK

24. The molar specific heat at constant pressure of an ideal gas is $\frac{7}{2}$R. The gas cannot be made up of molecules which are
(1) monoatomic
(2) Diatomic
(3) Triatomic
(4) Polyatomic

25. In a biprism experiment the fringe width is 0.4mm. The distance between the fourth dark fringe and the sixth bright fringe is
(1) 0.5 mm
(2) 0.75 mm
(3) 1mm
(4) 1.5 mm

26. The potential of a spherical conductor of radius 5cm is 10V. What is the potential at the centre of the sphere?
(1) 2V   (2) 10V   (3) zero   (4) 50V

27. The resistance of each arm of a wheat stone is bridge is 10Ω. A resistance of 10Ω is connected in series with the galvanometer the equivalent resistance of the bridge across battery will be
(1) 40 Ω   (2) 30 Ω   (3) 20Ω   (4) 10 Ω

28. A balloon is going vertically upwards with velocity 12 m/s. When it is at a height of 65 m above the ground, it gently releases a stone. In how much time the stone will reach the ground? Take g = 10 m/s^2
(1) $\sqrt{13}$ sec
(2) 5 sec
(3) 6.5 sec
(4) 10 sec

29. A body is hanging from a rigid support by an inextensible string of length L. It is struck completely inelastically by an identical body of mass m with a horizontal velocity $v = \sqrt{2gL}$. What is the increase in the tension in the string just after it is struck by the body?
(1) 2mg   (2) mg   (3) 3mg   (4) $\sqrt{3mg}$

30. Which one of the following units denotes the dimensions ML^2/Q^2? (Q denotes the electric charge, M is mass and L is length)
(1) H/m^2
(2) weber (wb)
(3) wb/m^2
(4) Henry (H)

31. The ionisation energy of hydrogen atom is 13.6eV. What is the ionisation energy of He$^+$?
(1) –27.2 eV
(2) +27.2eV
(3) +54.4 eV
(4) -54.4 eV

32. A spring has a certain mass suspended from it and its period for vertical oscillations is T_1. The spring is now cut into two equal halves and the same mass is suspended from one of the halves. The period of vertical oscillations is now T_2. The ratio of T_2/T_1 is
(1) 1/2   (2) $1/\sqrt{2}$ (3) $\sqrt{2}$ (4) 2

33. When the electrical conductivity of a P-N-diode is only due to the breaking of its covalent bonds, then the pn-diode is said to be
(1) Forward bias state
(2) Breakdown state
(3) Rectifier
(4) None of these

34. The height of a T.V. tower is 300m. What is the maximum distance upto which T.V. signals can be received?
(1) 50 km
(2) 55km
(3) 62 km
(4) 75 km

35. A stone of mass 'm' is tied to a string of length 'L' and moved in a vertical circle, if the angular speed at the lowest point is ω rad/s then the tension in the string when it is at its lowest point is
(1) m[g + 4π^2 L]
(2) m[g - ω^2 L]
(3) m[g + ω^2 L]
(4) 2m[g + ω^2 L]

36. A man can safely jump from height of 2m on the surface of earth. What would be safest height for jumping on planet, where value of g is 1.96 m/s^2
(1) 4m   (2) 6m   (3) 10m   (4) 2/3 m

SPACE FOR ROUGH WORK

37. When an ideal diatomic gas is heated at constant pressure, the fraction of the heat energy supplied which increases the internal energy of the gas is

(1) 2/5   (2) 3/5]

(3) 3/7   (4) 5/7

38. The frequency of sound wave is n and its velocity is V. If the frequency is increased to 4n, then the velocity of wave in the same medium will be

(1) 4V   (2) 3V

(3) 2V   (4) V

39. A particle is moved from position

$\vec{r_1} = (3\hat{i} + 2\hat{j} - 6\hat{k})m$ to $\vec{r_2} = (14\hat{i} + 13\hat{j} + 9\hat{k})m$ under

action of force $(4\hat{i} + \hat{j} + 3\hat{k})N$. Find workdone.

(1) 10 J   (2) 100J

(3) 0.01 J   (4) 1J

40. The real image produced by a convex lens is magnified 4 times. What is focal power of lens, if distance between the object and image is 50cm.

(1) 6.5 D   (2) 8.5 D

(3) 10.5 D   (4) 12.5 D

41. Water is flowing through cylindrical pipe of diameter 1.5m. The coefficient of viscosity of water is 80 N-s/m² and Reynold's number is 1500. What is maximum velocity of water to avoid a turbulent flow?

(1) 60 m/s   (2) 80 m/s

(3) 100 m/s   (4) 40 m/s

42. A light body and heavy body has same momentum, which one has more kinetic energy?

(1) heavy body

(2) lighter body

(3) both have equal

(4) Insufficient data

43. Two plane mirrors are inclined to each other at an angle 60^0. An object is placed between the mirrors. The number of images formed by two mirrors are

(1) 4   (2) 6

(3) 5   (4) 7

44. A particle of mass m is projected with a velocity v making an angle of 45° with the horizontal. The magnitude of angular momentum of the projectile about an axis passing through origin and perpendicular to the plane of projection when the particle is at maximum height h is

(1) 0   (2) $mv^3 / 4\sqrt{2}\, g$

(3) $mv^2 / \sqrt{2}\, g$ (4) $mv^3 / 2\sqrt{2}\, g$

45. An uncharged sphere of metal is placed inside a charged parallel plate capacitor. The lines of force look like
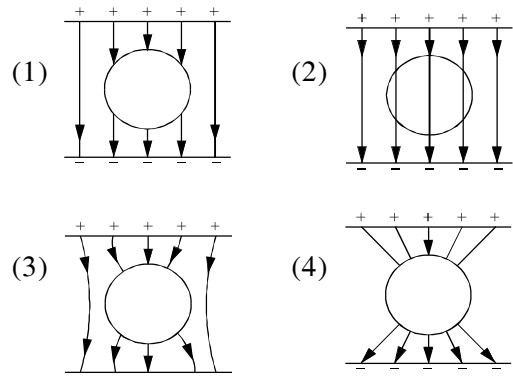

SPACE FOR ROUGH WORK

46. Concentrated HNO_3, upon long standing, turns yellow-brown due to formation of _____

(1) NO (2) NO_2

(3) N_2O (4) N_2O_4

**47.** As per IUPAC nomenclature, the name of the complex $[Co(H_2O)_4(NH_3)_2]Cl_3$ is _____

(1) Tetraaquadiaminecobalt (III) Chloride

(2) Tetraquadiamminecobalt (III) Chloride

(3) Diaminetetraaquacobalt (III) Chloride

(4) Diamminetetraaquacobalt (III) Chloride

48. The number of aldol reactions that occurs in the given transformation is _____

CH_3-CHO + 4 HCHO $\xrightarrow{\text{conc.aq.NaOH}}$
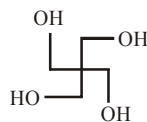
(1) 1 (2) 2

(3) 3 (4) 4

49. The compound that undergoes decarboxylation most readily under mild condition is_____.
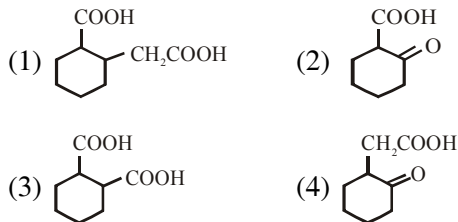
50. Oxidation states of the metal in the minerals haematite and magnetite respectively, are____

(1) 2, 3 in haematite and 3 in magnetite

(2) 2, 3 in haematite and 2 in magnetite

(3) 2 in haematite and 8/3 in magnetite

(4) 3 in haematite and 2, 3 in magnetite

51. How many grams of concentrated nitric acid solution should be used to prepare 250 mL of 2.0 M HNO_3? The concentrated nitric acid is 70%(w/w) HNO_3?

(1) 45.0 g conc. HNO_3

(2) 90.0 g conc. HNO_3

(3) 70 g conc. HNO_3

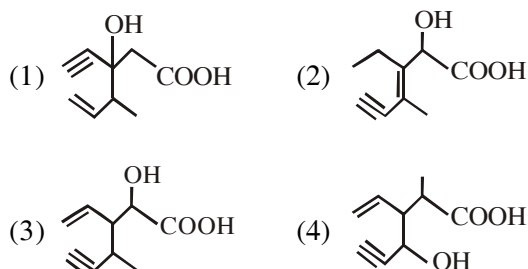(4) 54.0 g conc. HNO_3

52. A reaction having equal energies of activation for forward and reverse reaction has

(1) $\Delta S = 0$ (2) $\Delta G = 0$

(3) $\Delta H = 0$ (4) $\Delta H = \Delta G = \Delta S = 0$

53. What is the maximum number of electrons that can be associated with the following set of quantum numbers n = 3, l = 1, $|m_l|$ = 1?

(1) 10 (2) 6

(3) 4 (4) 2

54. Structure of the compound whose IUPAC name is 3-Ethyl-2-hydroxy-4-methylhex-3-ene-5-yne-1-oicacid is
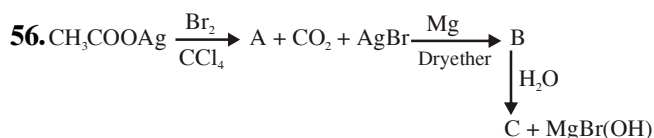

55. $CH_3 - \underset{\underset{O}{\|}}{C} - CH_3 + CH_3 - OH \underset{\text{(excess)}}{\overset{H^+}{\rightleftharpoons}} A + H_2O$

The number of ether linkages are present in the compound A is _____

(1) 1 (2) 2

(3) 3 (4) 4

SPACE FOR ROUGH WORK

56. $CH_3COOAg \xrightarrow[CCl_4]{Br_2} A + CO_2 + AgBr \xrightarrow[Dry\ ether]{Mg} B$

$B \xrightarrow{H_2O} C + MgBr(OH)$

The compound 'C' in the above reaction is ___.
(1) Ethyl alcohol   (2) Methane
(3) Ethane   (4) Ethyl bromide

57. Fool's gold is
(1) Cu_2S (2) FeS_2
(3) Al_2O_3 (4) $CuFeS_2$

58. Which one of the following is not an isomer of others?
(1) n-Pentane
(2) 2,2-Dimethylpropane
(3) 2,3-Dimethylbutane
(4) 2-Methylbutane

59. Which of the following statements is false?
(1) 40% solution of HCHO is known as formalin.
(2) HCHO is least reactive in homologous series
(3) The boiling point of isovaleraldehyde is less than n-valeraldehyde
(4) The boiling point of ketones is higher than that of aldehydes.

60. A solution contains Cl^-, I^- and SO_4^{2-} ions in it. Which of the following ions is capable to precipitate all the above when added in the solution?
(1) Pb^{2+} (2) Ba^{2+}
(3) Hg^{2+} (4) Cu^{2+}

61. Which of the following can exist as enantiomers?
(1) cis-$[Cr(NH_3)_4Cl_2]$
(2) trans-$[Pt(H_2O)_2(ox)_2]$
(3) $[Cr(H_2O)_6]^{+3}$
(4) $[Rh(en)_2(H_2O)(Br)]SO_4$

62. The volume strength of hydrogen peroxide having 6.8%(w/v) concentration will be
(1) 5   (2) 11.2
(3) 22.4   (4) 20

63. n-type of semiconductor is formed when trace amount of impurity is added to silicon. The number of electrons in the impurity must be
(1) 3   (2) 5
(3) 1   (4) 2

64. The shape of XeO_2F_2 is _____
(1) See-saw   (2) T-shape
(3) square planar   (4) tetrahedral

65. Electrolysis of dilute aqueous NaCl solution was carried out by passing 10 milli ampere current. The time required to liberate 0.01 mol of H_2 gas at the cathode is _____
(1 Faraday = 96500 $Cmol^{-1}$)
(1) 9.65×10^4 sec   (2) 19.3×10^4 sec
(3) 28.95×10^4 sec   (4) 38.6×10^4 sec

66. For the process
$H_2O_{(1)}$ (1bar, 373K) $\longrightarrow H_2O_{(g)}$ (1bar, 373K)
the correct set of thermodynamic parameters is _____
(1) $\Delta G = 0$, $\Delta S = +ve$ (2) $\Delta G = 0$, $\Delta S = -ve$
(3) $\Delta G = +ve$, $\Delta S = 0$ (4) $\Delta G = -ve$, $\Delta S = +ve$

67. The number of stereo isomers obtained by bromination of trans-2-butene is _____
(1) 1   (2) 2
(3) 3   (4) 4

68. When phenyl magnesium bromide reacts with tertiary-butyl alcohol, which of the following is formed?
(1) Tertiary-butyl methyl ether
(2) Benzene
(3) phenol
(4) Tertiary-butyl benzene

SPACE FOR ROUGH WORK

69. If ΔE is the heat of reaction at constant volume and ΔH is the heat of reaction at constant pressure. Then the relation between ΔH & ΔE for the reaction,

$C_2H_5OH_{(l)} + 3O_{2(g)} \to 2CO_{2(g)} + 3H_2O_{(l)}$ at constant temperature is _____.

(1) $\Delta H = \Delta E + RT$ (2) $\Delta H = \Delta E - RT$

(3) $\Delta H = \Delta E - 2RT$ (4) $\Delta H = \Delta E + 2RT$

70. Among the following, the number of elements showing only one non-zero oxidation state is_____. O, Cl, F, N, P, Sn, Tl, Na & Ti

(1) 1   (2) 2

(3) 3   (4) 5

71. In the reaction $\langle\!\!\!\bigcirc\!\!\!\rangle$—$OCH_3 \xrightarrow{HBr}$ products: Products are

(1) Br—$\langle\!\!\!\bigcirc\!\!\!\rangle$—$OCH_3 + H_2$ (2) $\langle\!\!\!\bigcirc\!\!\!\rangle$—$Br + CH_3Br$

(3) Br—$\langle\!\!\!\bigcirc\!\!\!\rangle + CH_3OH$ (4) $\langle\!\!\!\bigcirc\!\!\!\rangle$—$OH + CH_3Br$

72. Which one of the following properties is not shown by NO?

(1) It combines with oxygen to form nitrogendioxide

(2) Its bond order is 2.5

(3) It is diamagnetic in gaseous state

(4) It is a neutral oxide

73. The vapour pressure of benzene at a certain temperature is 640 mm of Hg. A non-volatile and non-electrolyte solid weighing 2.175g is added to 39.08g of benzene. If the vapour pressure of solution is 600 mm of Hg, what is the molecular weight of solid substance?

(1) 49.50   (2) 59.60

(3) 69.60   (4) 79.82

74. If the reaction $C_{(s)} + CO_{2(g)} \rightleftharpoons 2CO_{(g)}$. The equilibrium pressure is 12 atm. If 50% of CO_2 reacts at equilibrium, then find the value of K_p?

(1) 4   (2) 16

(3) 32   (4) 64

75. Asprin is an acetylation product of

(1) o-Hydroxybenzoic acid

(2) o-Hydroxybenzene

(3) m-Hydroxybenzoic acid

(4) p-Dihydroxybenzene

76. IUPAC name of $H_3C - \underset{\underset{C_3H_7}{|}}{CH} - C_3H_7$ is

(1) 4-Propoxy pentane

(2) Pentylpropylether

(3) 2-Propoxypentane

(4) 2-Pentoxypropane

77. 16 g of SO_x occupies 5.6 litre at STP assuming ideal gas nature, the value of x is____

(1) 1   (2) 2

(3) 3   (4) none of the above

78. In the following reaction $xA \longrightarrow yB$

$$\log\left[\frac{-d[A]}{dt}\right] = \log\left[\frac{d[B]}{dt}\right] + 0.3$$

where -ve sign indicates rate of disappearance of the reactant. Thus x:y is_____. (Given log2 = 0.3)

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

(3) 3:1   (4) 3:10

79. The oxidation number and coordination number of the central metal atom in $[Ni(dmg)_2]$ are respectively _____.

(1) 2, 2   (2) 4, 2

(3) 4, 4   (4) 2, 4

SPACE FOR ROUGH WORK

80. A dihalo alkane 'X' having the formula $C_3H_6Cl_2$ on hydrolysis gives a compound that can reduce Tollen's reagent. The compound 'X' is
(1) 1,2-Dichloropropane
(2) 1,1-Dichloropropane
(3) 1,3-Dichloropropane
(4) 2,2-Dichloropropane

81. Antipyretics are used to
(1) Relieve pain
(2) Bring down body temperature
(3) To kill microorganisms
(4) To relieve from anxiety

82. In_____process, work is done at the expense of internal energy.
(1) Isothermal   (2) Isochoric
(3) Adiabatic   (4) Isobaric

83. Calculate pH of a solution prepared by adding 250 mL of 0.1M NaOH to 300 mL of 0.2M CH_3COOH?
(Given pKa of CH_3COOH = 4.74, log5 = 0.699, log7 = 0.845)
(1) 3.74   (2) 4.59
(3) 5.74   (4) 3.59

84. The common name of lower fatty acids are obtained from
(1) Their parent hydrocarbon
(2) Their reduction product
(3) The sources from which they are obtained
(4) IUPAC system

85. Which of the following orders is wrong?
(1) $NH_3 < PH_3 < AsH_3$ - Acidic nature
(2) Li < Be < B < C - IE_1
(3) $Al_2O_3 < MgO < Na_2O < K_2O$ -Basic nature
(4) $Li^+ < Na^+ < K^+ < Cs^+$ - Ionic radius

86. The IUPAC name of following compound is_____.

(1) 5-Bromo-6-chloro-1-cyclohexen-3-yne
(2) 6-Bromo-5-chlorocyclohexen-3-yne
(3) 6-Bromo-5-chloro-3-cyclohexen-1-yne
(4) 4-Bromo-3-chloro-1-cyclohexen-5-yne

87. For which of the following parameters the structural isomers C_2H_5OH & CH_3OCH_3 would expected to have the same values? (Assume ideal behaviour).
(1) Boiling points
(2) vapour pressure at the same temperature
(3) Heat of vapourization
(4) Gaseous densities at the same temperature and pressure.

88. A solution is prepared by mixing two liquids A and B at 70 °C in which mole fraction of A is 0.6. If the total pressure of this mixture is found to be 182 mm of Hg, then _____.
(Given: P_A^o = 150 & P_B^o = 200 mm of Hg)
(1) ΔV_{mix} = +ve   (2) ΔV_{mix} = 0
(3) ΔV_{mix} = -ve   (4) either +ve or -ve

89. Above what temperature, the following process would be nonspontaneous?

$A \longrightarrow B + C$

Given $\Delta H = -20kJ$, $\Delta S = -50$ J/K
(1) 100 K   (2) 200 K
(3) 300 K   (4) 400 K

90. The number of sp^2 and sp^3 hybridized carbon atoms in fructose are respectively _____.
(1) 4, 2   (2) 2, 4
(3) 1, 5   (4) 5, 1

SPACE FOR ROUGH WORK

91. What is the taxon catagory for China rose classification which is equivalent to Squamata (*Naja*)?
(1) Polypetalae   (2) Malvales
(3) Thalamiflorae   (4) Dicotyledonae

92. Symbiotic fungi or mycorrhizae are found in the roots of
(1) *Cycas*   (2) *Pinus*
(3) *Equisetum*   (4) *Hibiscus*

93. Which fatty acid do not contain double bond between carbon atoms?
(1) Saturated fatty acids
(2) Unsaturated fatty acids
(3) Oleic and linoleic acids
(4) Linoleic and linolenic acids

94. Carbon dioxide acceptor in C_3 plants is _____
(1) PEP   (2) RuBP
(3) PGA   (4) Pyruvic acid

95. Ribosome binding loop is present on _____
(1) DNA   (2) mRNA
(3) rRNA   (4) Clover leaf - tRNA

96. Synthesis of m-RNA is known as _____
(1) transcription   (2) translation
(3) translocation   (4) transduction

97. In which group of plants both homosporous and heterosporous conditions are observed?
(1) Algae   (2) Bryophytes
(3) Pteridophytes   (4) Gymnosperms

98. In which plant the gametophytic phase of the life cycle includes two stages namely protonema stage and leafy stage?
(1) Brown Algae   (2) Green algae
(3) Liverworts   (4) Mosses (Musci)

99. In eukaryotes, cell division may be of the following types -
(1) Prophase, Metaphase, Anaphase
(2) Amitosis, Mitosis and Meiosis
(3) Interphase, G_1 phase, S-phase
(4) Interphase, S phase, G_2 phase

100. Simple tunicated bulb is found in
(1) Garlic   (2) Lily
(3) *Dryopteris*   (4) Onion

101. Which of the following is TRUE for Fabaceae?
(1) $C_{1+2+(2)} A_{9+1}$ (2) $C_{1+(2)+2} A_{9+1}$
(3) $C_{1+(2)+2} A_{(9)+1}$ (4) $C_{1+2+(2)} A_{(9)+1}$

102. Select the CORRECT match
(1) Non endospermic dicot seed - Castor
(2) Endospermic dicot seed - Gram
(3) Seed attached to fruit by a small stalk - funicle
(4) The part of embryo between plumule and cotyledons - hypocotyl

103. $\overset{\frown}{P}_{(3+3)}\ A_{(3+3)}$ is observed in:
(1) Chilli
(2) Lupin
(3) *Asparagus*
(4) Pea

104. Which of the following statement is FALSE with respect to properties of meristems ?
(1) They do not show secondary wall deposition
(2) They have prominent vacuoles
(3) They have very little reserve food
(4) They have isodiametric cells

105. Select the CORRECT statement from the following
(1) In the symplast pathway water travels from intercellular spaces to root hairs.
(2) In osmosis water enters cortical cells by using ATP.
(3) In apoplast pathway, movement of water takes place exclusively through cell walls and intercellular spaces.
(4) Passive movement of water from roots to aerial parts against the force of gravity is called root pressure.

SPACE FOR ROUGH WORK

106. Which of the following is a day neutral plant?
(1) Shoe-flower
(2) *Chrysanthemum*
(3) Beet
(4) Spinach

107. Read the following statements_____.
(I) Ethylene is the only gaseous hormone produced naturally by plants
(II) ABA does not promote senescence in leaves
(III) Spray of gibberellins brings about increase in size of fruits
(IV) A balanced combination of cytokinin and auxin is useful for inducing organogenesis
How many of the above statements are correct?
(1) One (2) Two
(3) Three (4) Four

108. A test-cross distinguishes between
(1) a homozygous dominant and the heterozygous form
(2) a homozygous recessive and the heterozygous form
(3) two homozygous form
(4) two heterozygous form

109. Choose the INCORRECT match
(1) Emasculation - removal of stamens
(2) Pleiotropy - when a single gene controls two or more different traits
(3) Genetics - study of heredity and variations.
(4) Hybrid - It is a homozygous individual produced from any cross involving pure parents having one contrasting trait.

110. There are two factors for each character in an organism. In which stage these factors get separated?
(1) Crossing over
(2) Gamete formation
(3) Cell division
(4) Meiosis

111. Astral rays appearing between the centromeres of daughter chromatids, are called as
(1) inter-polar fibres
(2) chromosomal fibres
(3) inter zonal fibres
(4) polar fibres

112. Unwinding of DNA strands is done by which enzyme?
(1) *Amylase* (2) *Endonuclease*
(3) *Transcriptase* (4) *Helicase*

113. RNA *polymerase* III is required for
(1) t-RNA synthesis (2) m-RNA synthesis
(3) hn-RNA synthesis (4) r-RNA synthesis

114. DNA multiplication is called as _____.
(1) translation (2) transduction
(3) transcription (4) replication

115. A small DNA sequence which provides binding site for RNA-*polymerase* is called as ___.
(1) Primer (2) Promoter
(3) Processor (4) Polycistronic

116. What is the CORRECT sequence of PCR techniques?
(1) Isolation→Synthesis→Termination
(2) Initiation→Elongation→Termination
(3) Heat denaturation→Annealing→ Polymerisation
(4) Polymerisation→Synthesis→Annealing

117. In EcoRI, *Eco* stands for _____.
(1) Eco friendly (2) Economic
(3) *E. coli* (4) Extra coenzyme

118. In which of the following plant, the first transposon was discovered?
(1) *Pisum sativum* (2) *Zea mays*
(3) Wheat (4) Rice

119. Which is the classical method of plant breeding?
(1) Hybridization and Selection
(2) Mutational breeding
(3) Genetic engineering
(4) Tissue culture

SPACE FOR ROUGH WORK

120. Which of the following is not an advantage of biogas?
(1) It burns with blue flame without smoke
(2) It helps to improve sanitation of the surrounding
(3) It is highly expensive
(4) It can be used for domestic lighting

121. Which pigment is absent in chloroplast?
(1) Xanthophyll   (2) Anthocyanin
(3) Chlorophyll   (4) Carotene

122. CAM plants are mostly_____.
(1) tropical plants   (2) succulents
(3) monocots   (4) mangroves

123. Which of the following is the first stable product of photosynthesis in Maize?
(1) PGA   (2) PGAL
(3) PEPA   (4) OAA

124. Lactic acid fermentation does not involve the following step
(1) Hydrolysis   (2) Glycolysis
(3) Reduction   (4) Decarboxylation

125. RQ for anaerobic respiration is
(1) 0   (2) 1   (3) 0.9   (4) ∞

126. In Sunflower, self pollination is avoided by___
(1) protogyny   (2) unisexuality
(3) self sterlity   (4) protandry

127. In some plants, anthers and stigma grow and mature at the same time. This phenomenon is called _____.
(1) homogamy   (2) syngamy
(3) allogamy   (4) fusion

128. Autogamy means
(1) occurence of male and female sex organs in the same flower
(2) germination of pollen within the anther
(3) transfer of pollens from anther to the stigma within the same flower
(4) transfer of pollens from one flower to another on the same plant

129. Endosperm of gymnosperm is
(1) n   (2) 2n
(3) 3n   (4) 4n

130. Which type of pollination shows the following flower characteristics?
Large flowers with thick and fleshy floral part, tubular or funnel shaped corolla, bright coloured corolla, large amount of sugary nectar.
(1) Entomophily   (2) Ornithophily
(3) Epihydrophily   (4) Hydrophily

131. What is found most in Guano deposits?
(1) Sulphur   (2) Magnesium
(3) Phosphorous   (4) Calcium

132. Secondary productivity is rate of formation of new organic matter of _____.
(1) producer   (2) parasite
(3) consumer   (4) decomposer

133. Which of the following is correct set of greenhouse gases?
(1) CFC, CH_4, CO_2, N_2O
(2) CO_2, CH_4, N_2, O_2
(3) CO_2, CH_4, N_2, O_3
(4) CO_2, CFC, N_2, O_2

134. The degradation of humus by some microbes release inorganic nutrients and this process is called as _____.
(1) humification   (2) mineralization
(3) leaching   (4) catabolism

135. In which of these male and female flowers are produced on the same plant?
(1) Papaya   (2) Date palm
(3) Castor   (4) Water melon

136. Which of these show high power of regeneration?
(1) *Enterobius*   (2) *Tubipora*
(3) *Dugesia*   (4) *Dracunculus*

SPACE FOR ROUGH WORK

137. Name the structure which remains enclosed in thick muscular folds of body wall known as mantle.
(1) Visceral mass
(2) Exoskeleton
(3) Barnacles
(4) Parapodia

138. Which animal is having its body without well defined head?
(1) *Antedon*
(2) Millipede
(3) Grasshopper
(4) *Planaria*

139. Which is INCORRECT option
(1) Unsaturated lipid obtained by the aquatic animal.
(2) Cellulose is the most aboundent polysaccharide
(3) Collagen protein is the most aboundent protein in biosphere.
(4) In DNA helix, between guanine and cytosine triple hydrogen bond occurs.

140. *Balanoglossus* is also known as _____worms.
(1) Flat
(2) Round
(3) Tape
(4) Acorn

141. Which is the defining character of living thing?
(1) Growth
(2) Reproduction
(3) Metabolism
(4) None of these

142. 3D disorder is due to the deficiency of
(1) vit-B_1
(2) vit-B_2
(3) vit-B_5
(4) vit - B_6

143. Which gland is having an alternative name as Sudoriferous gland ?
(1) Oil gland
(2) Salivary gland
(3) Sweat gland
(4) Sebaceous gland

144. Bone is enclosed in thin layer of white fibrous connective tissue called as _____.
(1) endosteum
(2) trabeculae
(3) periosteum
(4) lacunae

145. Select the INCORRECT statement.
(1) Ligaments play an important role in preventing dislocation of bone
(2) Osteoblasts are inactive bone cells whereas osteocytes are active
(3) Fibrocartilage helps to support and for connection of different organs of the body
(4) Skeletal tissue supports the body by forming endoskeleton of organism

146. Name the muscular tissue which is responsible for peristaltic movements and help in passing food in the digestive tract.
(1) Cardiac muscles
(2) Unstriated muscles
(3) Striated muscle fibres
(4) Intercalated discs

147. Which of the following is not the part of male reproductive system of cockroach?
(1) Seminal vesicle
(2) Phallic gland
(3) Vas deferens
(4) Spermatheca

148. Which is the common house-hold pest with a very high ability of acclimatization?
(1) Rat
(2) Lizard
(3) Cockroach
(4) Housefly

149. Match the following:

Column - I	Column-II
1. Vit-C	a. *Pseudomonas denitrificians*
2. Vinegar (Acetic acid)	b. *Streptomyces venezuelae*
3. Vit-B_{12}	c. *Saccharomyces cerevisiae*
4. *Streptomycin*	d. *Aspergillus niger*
5. Invertase	e. *Streptomyces griseus*
6. *Chloromycetin*	f. *Acetobacter aceti*

SPACE FOR ROUGH WORK

(1) 1-C, 2-b, 3-a, 4-d, 5-e, 6-f

(2) 1-a, 2-c, 3-d, 4-b, 5-f, 6-e

(3) 1-d, 2-f, 3-a, 4-e, 5-c, 6-b

(4) 1-d, 2-f, 3-c, 4-b, 5-a, 6-e

150. Which is correct option

(1) Recombinant vaccine for prophylaxis of the human animal viral disease (Hepatitis-A)

(2) Human blood clotting factor-VII to treat haemophilia.

(3) TGF-B promotes new blood vessels and epidermal growth.

(4) HGH producing gene to treat Endocrine disorder of pancreas.

151. Malarial parasite infections prevented by the

(1) *Utricularia*   (2) Dragon flies

(3) *Gambusia*   (4) All of these

152. In Cockroach, Leathery, dark reddish & blackish structure called _____are formed by _____ gland and contain _____ eggs.

(1) coccoon, albuminous gland, 14 to 16

(2) ootheca/oo-case, utricular gland, 3 to 5

(3) oochamber, phalligland, 36 to 38

(4) oo-case, collaterial gland, 14 to 16

153. Brunners gland, Auribachs plexus and reticular connective tissues are present in

(1) submucosa, between mucosa and submucosa, lamina propria.

(2) mucosa, submucosa, muscularis layer

(3) submucosa, muscularis externa, lamina propria.

(4) mucosa, muscularis interna, submucosa.

154. Which is the correct sequence of Phagocytosis

(1) Agglutination→Opsonization→ Precipitation→Lysis→Neutralization

(2) Adherence→Agglutination→Precipitation →Lysis→Neutralization

(3) Precipitation→Adherence → Aglutination → Neutralization →Lysis

(4) Precipitation→Opsonization→Adherence → Lysis→Neutralization→Agglutination

155. In lung, maximum gaseous exchange is due to _____

(1) simple diffusion   (2) active transport

(3) passive transport (4) fascilitated diffusion

156. Bones act as _____during locomotion.

(1) levers   (2) fulcrum

(3) pulley   (4) points

157. Human body consists of about_____different types of muscles.

(1) 400   (2) 460

(3) 640   (4) 540

158. Antigen binding & antigen determinant sites are also called_____

(1) paratope & epitope respectively

(2) epitope & paratope respectively

(3) epitope only

(4) paratope only.

159. The cranial capacity of *Neanderthal* man was about _____.

(1) 1450 c.c   (2) 600 c.c.

(3) 940 c.c.   (4) 1600 c.c.

160. Which of the following is also called as bleeder's disease?

(1) Anaemia   (2) Thrombocytopenia

(3) Polycythemia   (4) Haemophilia

SPACE FOR ROUGH WORK

161. XXY chromosome compliment is found in
  (1) Down's syndrome
  (2) Turner's syndrome
  (3) Klinefelter's syndrome
  (4) Edward's syndrome

162. Down's syndrome is due to
  (1) Trisomy of 13th chromosome
  (2) Non-disjunction of 21st chromosome
  (3) Trisomy of 18th chromosome
  (4) Fusion of normal sperm with egg having 2X-chromosomes.

163. In DNA fingerprinting technique _____probe is used for hybridisation of DNA fragments.
  (1) double - stranded RNA
  (2) double - stranded non-radio active DNA
  (3) single - stranded radio active DNA
  (4) single - stranded radio active RNA

164. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by
  (1) Centrifugation
  (2) Polymerase chain reaction
  (3) Electrophoresis
  (4) Restriction mapping

165. Parkinson's disease is associated with
  (1) Basal nuclei
  (2) Thalamus
  (3) Hypothalamus
  (4) Cerebrum

166. Which of the following are called scavengers?
  (1) Lymphocytes
  (2) Thrombocytes
  (3) Erythrocytes
  (4) Monocytes

167. Match the following

Column-I	Column-II
1. Handyman/toolmaker	a. *Australopithecus afarensis*
2. Earliest Hominid fossil	b. *Cromagnonman*
3. Earliest fossil ape	c. *Homo habialis*
4. *Homo sapiens* fossils	d. *Dryopithecus*
5. Lucy	e. *Ramapithecus*

  1. 1-c, 2-e, 3-a, 4-d, 5-b
  2. 1-e, 2-d, 3-b, 4-c, 5-a
  3. 1-c, 2-e, 3-d, 4-b, 5-a
  4. 1-d, 2-b, 3-a, 4-c, 5-e

168. In terms of descending order of percentage of leucocytes in human blood, which one is correct?
  (1) Neutrophils→Lymphocytes→Monocytes→Acidophils→Basophils
  (2) Neutrophils→Basophils→Lymphocytes→Acidophils→Monocytes
  (3) Neutrophils→Monocytes→Lymphocytes→Acidophils→Basophils.
  (4) Neutrophils→Acidophils →Basophils→Lymphocytes→Monocytes

169. Which one is an INCORRECT option?
  (1) Darwin explained the "survival of the fittest" but not arrival of the fittest.
  (2) Darwin was not clearly aware of hereditary principles.
  (3) Darwin give the satisfactory explanation for the causes of origin and inheritance.
  (4) Darwin does not explained about vestigial organ.

SPACE FOR ROUGH WORK

170. Which alcoholic product is prepaired by the fermentation and distillation both?
    (1) Wine   (2) Beer
    (3) Whisky   (4) 1 & 2 both

171. The competition among the individuals of the same species is called
    (1) Intra-specific struggle
    (2) Environmental struggle
    (3) Inter-specific struggle
    (4) Seasonal struggle

172. Which is the correct match for the deductions, survival of the fittest or natural selection?
    (1) Over production and struggle for existence
    (2) Struggle for existence, variations and heredity
    (3) Survival of the fittest and environmental changes
    (4) Survivors remain constant and struggle for existence

173. Diabetes insipidus is caused by the deficiency of ____
    (1) Calcitonin   (2) Oxytocin
    (3) Prolactin   (4) Vasopressin

174. ART includes
    (1) ZIFT   (2) GIFT
    (3) ICSI   (4) All of these

175. Which endocrine gland becomes inactive in old age?
    (1) Adrenal   (2) Penial
    (3) Thymus   (4) Pituitary

176. Which of the following hormone is responsible for the emotional state as fear, anger, pain and causes rise of blood pressure and heart rate?
    (1) Insuline   (2) Adrenalin
    (3) Progesterone   (4) Thyroxin

177. Which of the following does not acts as a neurotransmitter?
    (1) Acetylcholine   (2) Epinephrine
    (3) Norepinephrine (4) Cortisone

178. In the human penis, urethra passes through _____.
    (1) Corpora cavernosum
    (2) Corpus spongiosum
    (3) Corpus luteum
    (4) Corpus albicans

179. Testosterone is secreted by _____
    (1) sertoli cells
    (2) leydig cells
    (3) spermatogonial cells
    (4) spermatids

180. Mating between male and female animals of two different related species called
    (1) out crossing
    (2) cross breeding
    (3) interspecific hybridization
    (4) inbreeding

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