NEET
MODEL QUESTION PAPER 5

NATIONAL TESTING AGENCY
Excellence in Assessment

PHYSICS

1. If minute is the unit of time, 10 ms^{-2} is the unit of acceleration and 100 kg is the unit of mass, the new unit of work in joule is

   1) 10^5

   2) 10^6

   3) 6×10^6

   4) 36×10^6

2. Three particles each 1kg mass are placed at the corners of a right angled triangle AOB, O being the origin of the co-ordinate system OA and OB along +ve x-direction and +ve y-direction. The position vector of the centre of mass is (OA = OB = 1m) (in meters)

   1) $\frac{i+j}{3}$

   2) $\frac{i-j}{3}$

   3) $\frac{2(i+j)}{3}$

   4) $(i - j)$

3. Electron volt is the unit of

   1) Power

   2) Potential difference

   3) Charge

   4) Energy

4. The bodies of 6 kg and 4 kg masses have their velocity $5\hat{i} - 2\hat{j} + 10\hat{k}$ and $10\hat{i} - 2\hat{j} + 5\hat{k}$ respectively. Then the velocity of their centre of mass is

   1) $5\hat{i} + 2\hat{j} - 8\hat{k}$

   2) $7\hat{i} + 2\hat{j} - 8\hat{k}$

   3) $7\hat{i} - 2\hat{j} + 8\hat{k}$

   4) $5\hat{i} - 2\hat{j} + 8\hat{k}$

5. The sum of the given two numbers with regard to significant figures is $(5.0 \times 10^{-8}) + (4.5 \times 10^{-6}) =$

   1) 4.55×10^{-6}

   2) 4.5×10^{-6}

   3) 4.6×10^{-6}

   4) 4×10^{-6}

6. Moment of Inertia of a body depends upon

   1) distribution of mass of the body

   2) position axis of rotation

   3) temperature of the body

   4) all the above

7. The fundamental physical quantities that have same dimensions in the dimensional formula of force and Energy are ____

   1) mass, time

   2) time, length

   3) mass, length

   4) time, mole

8. Three particles each of mass 2kg are at the corners of an equilateral triangle of side $\sqrt{3}m$. If one of the particles is removed, the shift in the centre of mass is

   1) 0.2 m

   2) 0.5 m

   3) 0.4 m

   4) 0.3 m

9. If energy E, velocity v and time T are taken as fundamental quantities, the dimensional formula for surface tension is

   1) $[Ev^{-2}T^{-2}]$

   2) $[E^2vT^{-2}]$

   3) $[Ev^{-2} T^{-1}]$

   4) $[E^{-2}v^{-2}T^{-1}]$

10. The angle between the vectors $(\hat{i} + \hat{j} + \hat{k})$ and $(\hat{i} - \hat{j} - \hat{k})$ is

    1) $sin^{-1} \frac{\sqrt{8}}{3}$

    2) $sin^{-1} \left(\frac{1}{3}\right) + \frac{\pi}{3}$

    3) $cos^{-1} \frac{\sqrt{8}}{3}$

4) $cos^{-1}\sqrt{\dfrac{8}{3}}$

11. A body of mass 2 kg is projected with an initial velocity of 5 ms^{-1} along a rough horizontal table. The work done on the body by the frictional forces before it is brought to rest is

1) 250 J

2) 25 J

3) $-$ 250 J

4) –25 J

**12.** Identify the increasing order of radius of gyration of following bodies of same radius.

I) About natural axis of circular ring

II) About diameter of circular ring

III) About diameter of circular plate

IV) About diameter of solid sphere

1) II, III, IV, I
2) III, II, IV, I
3) III, IV, II, I
4) II, IV, III, I

13. A block is constrained to move along x-axis under a force $F = -(2x)N$. Find the work done by the force when the block is displaced from x = 2m to x = 4m

1) 12 J

2) 8 J

3) $-$ 12 J

4) $-$ 8 J

14. Two identical thin uniform rods of length L each are joined to form T shape as shown in the figure. The distance of centre of mass from D is
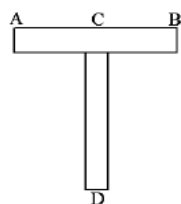
1) 0

2) L/4

3) 3L/4

4) L

15. An electric motor operates with an efficiency of 90%. A pump operated by the motor has an efficiency of 80%. The overall efficiency of the system is

1) 85%

2) 100%

3) 72%

4) 60%

16. An electric motor exerts a constant torque 5Nm on a fly wheel by which it is rotated at the rate of 420 rpm. The power of motor is

1) 110 watt

2) 150 watt

3) 220 watt

4) 300 watt

17. If 'E' represents total mechanical energy of a system while 'U' represents the potential energy, then E – U is

1) always zero

2) negative

3) either positive or negative

4) positive

18. Consider a two particle system with particles having masses m_1 and m_2. If he first particle is pushed towards the centre of mass through a distance d, by what distance should the second particle be moved, so as to keep the centre of mass at the same position?

1) d

2) $\dfrac{m_2 d}{m_1}$

3) $\dfrac{m_1 d}{m_1 + m_2}$

4) $\dfrac{m_1 d}{m_2}$

19. A sphere of mass m moving with constant velocity u, collides with another stationary sphere of same mass. If e is the coefficient of restitution, the ratio of the

final velocities of the first and second sphere is

1) $\frac{1+e}{1-e}$

2) $\frac{1-e}{1+e}$

3) $\frac{e}{1-e}$

4) $\frac{1+e}{e}$

20. The linear and angular velocities of a body in rotator motion are 3 ms⁻¹ and 6 rad/s respectively. If the linear acceleration is 6 m/s² then its angular acceleration in rads⁻² is

1) 6

2) 10

3) 12

4) 2

21. A mass of 10 kg is suspended by a rope of length 2.8 m from a ceiling. A force of 98 N is applied at the midpoint of the rope as shown in figure. The angle which the rope makes with the vertical in equilibrium is

1) 30°

2) 60°

3) 45°

4) 90°
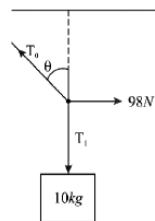
22. Four point size bodies each of mass M are fixed at four corners of a light square frame of side length L. The moment of inertia of the four bodies about an axis perpendicular to the plane of frame and passing through its centre is

1) $4ML^2$

2) $2\sqrt{2}\ ML^2$

3) $2ML^2$

4) $\sqrt{2}ML^2$

23. A truck of mass 500kg is moving with constant speed $10ms^{-1}$. If sand is dropped into the truck at the constant rate 10kg/min, the force requited to maintain the motion with constant velocity is

1) $\frac{3}{2}N$

2) $\frac{5}{4}N$

3) $\frac{7}{5}N$

4) $\frac{5}{3}N$

24. Centre of mass of the earth-moon system lies

1) on the surface of the earth

2) on the surface of the moon

3) within the earth

4) at the midpoint of the line joining their centres

25. A ball of mass 0.2 kg strikes an obstacle and moves at 60° to its original direction. If its speed also changes from 20m/s to 10m/s, the magnitude of the impulse received by the ball is

1) $2\sqrt{7}N\ s$

2) $2\sqrt{3}N\ s$

3) $2\sqrt{5}\ N\ s$

4) $3\sqrt{2}\ N\ s$

26. A circular disc is rotating about its own axis at constant angular acceleration. If its angular velocity increases from 210 rpm to 420 rpm during 21 rotations then the angular acceleration of disc is

1) 5.5 rad/s^2

2) 11 rad/s^2

3) 16.5 rad/s^2

4) 22 rad/s^2

27. A marble block of mass 2 kg lying on ice when given a velocity of $6ms^{-1}$ is stopped by friction is 10s. Then the coefficient of friction is ($g = 10ms^{-2}$)
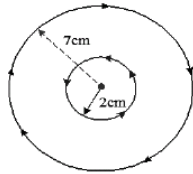
1) 0.02

2) 0.03

3) 0.06

4) 0.01

28. The earth were to suddenly contract to $1/n^{th}$ of its present radius without any change in its mass, the duration of the new day will be nearly

1) 24/n hours

2) 24n hours

3) 24/n² hours

4) 24n² hours

29. A body is allowed to slide from the top along a smooth inclined plane of length 5m at an angle of inclination 30°. If g = 10 ms⁻², time taken by the body to reach the bottom of the plane is

1) $\frac{\sqrt{3}}{2}\ s$

2) $1.414\ s$

3) $\frac{1}{\sqrt{2}}\ s$

4) $2s$

30. A circular disc is rotated along clockwise direction in horizontal plane. The direction of torque is

1) horizontally right side

2) horizontally left side

3) vertically upwards

4) vertically downwards

31. A man is standing on a spring platform. Reading of spring balance is 60kg wt. If man jumps outside the platform, then the reading of the spring balance

1) remains same

2) decreases

3) increases

4) firs increases and then decreases to zero

32. Two identical circular plates each of mass 0.1 kg and radius 10 cm are joined by side as shown in the figure. their

moment of inertia about an axis passing through their common tangents is
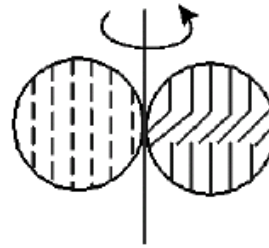
1) $1.25 \times 10^{-3}\ kgm^2$

2) $2.5 \times 10^{-3} kgm^2$

3) $1.25 \times 10^{-2} kgm^2$

4) $2.5 \times 10^{-2} kgm^2$

33. Figure shows a coil of radius 2 cm concentric with a coil of radius 7 cm Each coil has 1000 turns with a current of 5A. In larger coil, then the current needed in the smaller coil to give the total magnetic field at the centre equal to 2m T is

1) 1.49A

2) 1.84A

3) 2.88A

4) 3.4A

34. A circular disc of radius 20 cm is cut from one edge of a larger circular disc of radius 50cm. The shift of centre of mass is

1) 5.7 cm

2) − 5.7 cm

3) 3.2 cm

4) − 3.2 cm

35. A cyclotron's oscillator frequency is 10 MHz. The operating magnetic field for accelerating protons is

1) 0.66 T

2) 0.12 T

3) 1.67 T

4) 0.36 T

36. The moment of inertia of a uniform rod of length 21 and mass m about an axis xy passing through its centre and inclined at an enable α is
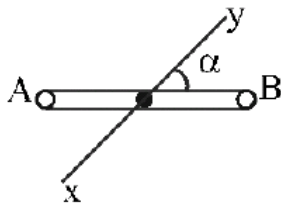

1) $\frac{ml^2}{3} \sin^2\alpha$

2) $\frac{ml^2}{12} \sin^2\alpha$

3) $\frac{ml^2}{6} \cos^2\alpha$

4) $\frac{ml^2}{2} \cos^2\alpha$

37. A long solenoid has 200 turns per cm and carries a current i. The magnetic field at its centre is $6.28 \times 10^{-2}\ Wb/m^2$. Another long solenoid has 100 turns per cm and it carries a current i/3. The value of the magnetic field at its centre is

1) $1.05 \times 10^{-4}\ Wb/m^2$

2) $1.05 \times 10^{-2}\ Wb/m^2$

3) $1.05 \times 10^{-5}\ Wb/m^2$

4) $1.05 \times 10^{-4}\ Wb/m^2$

38. A ballet dancer spin about a vertical axis at 60 rpm with his arms closed. Now he stretches his arms such that M.I. increases by 50%. The new speed of revolution is

1) 80 rpm

2) 40 rpm

3) 90 rpm

4) 30 rpm

39. A current 'i' flows along an infinitely long straight conductor. If 'r' is the perpendicular distance of a point from the lower end of the conductor, then the magnetic induction B is given by

1) $B = \frac{\mu_0}{4\pi} \frac{2i}{r}$

2) $B = \frac{\mu_0}{4\pi} \frac{i}{r}$

3) $B = \frac{\mu_0}{4\pi} \frac{\pi i}{r}$

4) $B = \frac{\mu_0}{4\pi} \frac{2\pi i}{r}$

40. Two copper circular discs are of the same thickness. The diameter of A is twice that of B. The moment of inertia of A as compared to that of B is

1) twice as large

2) four times as large

3) 8 times as large

4) 16 times as large

41. In a galvanometer 5% of the total current in the circuit passes through it. If the resistance of the galvanometer is G, the shunt resistance 'S' connected to the galvanometer is

1) 19G

2) G/19

3) 20G

4) G/20

42. Two blocks of equal mass are tied with a light string, which passes over a mass less pulley as shown in figure. The magnitude of acceleration of centre of mass of both the blocks is (neglect friction everywhere)
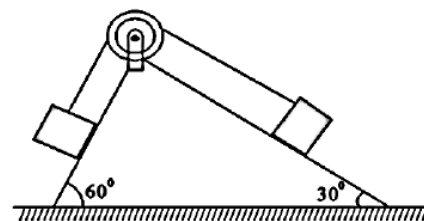
1) $\left(\frac{\sqrt{3}-1}{4\sqrt{2}} g\right)$

2) $(\sqrt{3} - 1)g$

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

4) $\left(\frac{\sqrt{3}-1}{\sqrt{2}}\right) g$

43. The magnitude of the force between a pair of conductors, each of length 110 cm, carrying a current of 10A and separated by a distance of 10 cm is

1) $55 \times 10^{-5} N$

2) $44 \times 10^{-5} N$

3) $33 \times 10^{-5} N$

4) $22 \times 10^{-5} N$

44. Two identical circular plates each of mass M and R are attached to each other with their planes $\perp$ r to each other. The moment of inertia of system about an axis passing through their centres and the point of contact is

1) $\frac{MR^2}{4}$

2) $\frac{5MR^2}{4}$

3) $\frac{3}{4} MR^2$

4) MR^2

45. In a P-N-P transistor, the collector is 10 mA. If 90% of the holes reach the collector, then emitter current will be:

1) 13 mA

2) 12 mA

3) 11 mA

4) 10 mA

CHEMISTRY

46. The compound which has the lowest boiling point is

1) H_2O

2) C_5H_5OH

3) $\underset{OH}{\overset{CH_2}{|}} - \underset{OH}{\overset{CH_2}{|}}$

4) CH_3OCH_3

47. Which of the following the most acidic hydrogen?

1) 3-Hexanone

2) 2,4-Hexanedione

3) 2,5-Hexanedione

4) 2,3- Hexanedione

48. Which of the following is strongest Lewis Base

1) H_2O

2) CH_3OH

3) CH_3OCH_3

4) C_6H_5OH

49. Schiff's reagent is

1) P-Rosaniline hydrochloride decolourised by passing SO_2

2) P-Rosaniline hydrochloride decolourised by chlorine

3) Acidic solution of phenolphthalein

4) Rochelle salt solution $+CuSO_4 + NaOH$

50. Phenol is

1) a base weaker than ammonia

2) an acid stronger than carbonic acid

3) a neutral compound

51. Aldol condensation does not occur between

1) two different aldehydes

2) two different ketones

3) an aldehyde and a ketone

4) an aldehyde and an ester

52. The conversion of O-acylated phenol in presence of $AlCl_3$ to P-acylated phenol is an example for this type of organic reaction

1) Addition reaction

2) Substitution reaction

3) Molecular rearrangement

4) Elimination reaction

53. Benzaldehyde and acetone in 2 : 1 molar ration is treated with base $Ba(OH)_2$ as follows

$$2 \text{ benzaldehyde} + acetone \xrightarrow[-H_2O]{OH^-}$$

Product is

1) Ph—CH=CH—C(=O)—H

2) Ph—CH=CH—C(=O)—CH2—C(=O)—H

3) Ph—CH=CH—C(=O)—CH2—Ph

4) Ph—C(=O)—CH2—C(=O)—Ph

54. A compound reacts with sodium and liberates hydrogen and on oxidation

gives ketone. The formula of the compound could be

1) CH_3CH_2OH
2) $CH_3CHOHCH_3$
3) $CH_3CH_2CH_2OH$
4) $CH_3CH_2CH_2CH_2OH$

55. The Alkene which on ozonolysis gives acetaldehyde and acetone is

1) $CH_3 - CH = C - CH_3$ (with CH_3 substituent on the carbon)
2) $CH_3 - CH = CH - CH_2 - CH_3$
3) $CH_2 = CH - CH_3$
4) $(CH_3)_2C = C(CH_3)_2$

56. Which of the following alcohols is the least soluble in water?

1) Ethanol
2) 1-Propanol
3) 1-Butanol
4) 1-Pentanol

57. IUPAC name of a α-hydroxybutyraldehyde

1) 1-hydroxy butanal
2) 2-hydroxy butanol
3) 2-hydroxy butanal
4) 2-hydroxy butyraldehyde

**58.** In aryl halides carbon atom holding halogen is

1) sp^2 hybridised
2) sp hybridised
3) sp^3 hybridised
4) sp^3d hybridised

59. A compound 'A' has a molecular formula C_2Cl_3OH. It reduces Fehling solution and on oxidation produces a mono carboxylic 'B'. A can also be obtained by the action of Cl_2 on ethanol 'A' is

1) Chloral
2) $CHCl_3$
3) CH_3Cl
4) Chloroacetic acid

60. Which compound among the following, undergoes fastest S_N1 reaction?

1)

2)

3)

4)
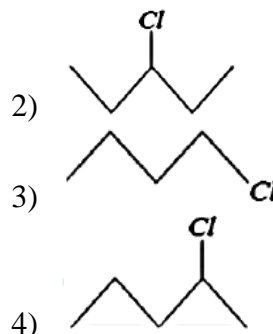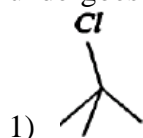
61. Grignard reagents do not give carbonyl compounds with

1) CO_2
2) $RCOCl$
3) RCN
4) $RCOOR$

62. For a nucleophillic substitution reaction the rate was found in the order RI > RBr > RCl > RF then the reaction could be

1) S_N1 Only
2) S_N2 Only
3) Either S_N1 or S_N2
4) Neither SN_1 nor S_N2

63. Isopropyl alcohol on oxidation forms

1) Acetaldehyde
2) Ethylene
3) Ether
4) Acetone

64. On treatment of Toluene with CL_2 in presence of Fe, dark the product formed is

1) o-and p-chloro Toluene
2) benzyl chloride
3) m-chloro Toluene
4) only p-chloro Toluene

65. $4 - heptanone \xrightarrow{KMnO_4/H^+/\Delta} A + B$. Identify A and B.

1) Ethanoic acid pentanoic acid
2) Ethanal and butanone
3) Butanoic acid and propanoic acid
4) Acetic acid and pentanoic acid

66. The reaction $C_6H_5I + 2Na + CH_3I + C_6H_5CH_3 + 2NaI$ is

1) Wurtz reaction
2) Fittig reaction
3) Wurtz-Fittig reaction
4) Sandmeyer reaction

67. Acetaldehyde and Acetone on reaction with chlorine respectively gives
1) Mono chloro acetone, methane
2) Chloral and Dichloro acetone
3) Chloral and Tri chloro acetone
4) Tetra chloro Ethanal, Hexa chloro acetone

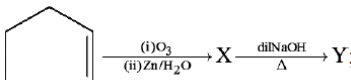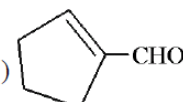**68.** Carbon-carbon bond length is same in
1) Butene-1
2) Benzene
3) Butene-2
4) Propyne-1

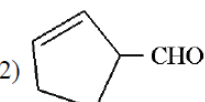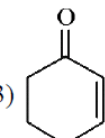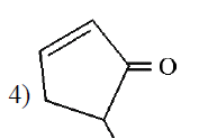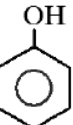**69.** Haloform reaction is not given by
1) CH_3COCH_3
2) $CH_3COC_2H_5$
3) $C_6H_5COC_2H_5$
4) $CH_3CH(OH)CH_3$

70. The function of anhydrous $AlCl_3$ in the Friedel-Craft's reaction is to
1) Absorb water
2) Absorb HCl
3) Produce electrophile
4) Produce nucleophile

71.

Y is

72.

$+ Zn \rightarrow X$ Here the product X is used as a
1) Insecticide
2) For welding purpose
3) For dry cleaning
4) Artificial ripening of fruits

73. An organic compound readily undergoes cannizaro reaction but does not react with Fehling's solution
1) $HCHO$
2) CH_3CHO
3) $PhCHO$
4) CH_3COCH_3

74. Which of these will not react with acetylene?
1) $NaOH$
2) Na
3) Ammonical $AgNO_3$
4) HCl

75. Formaldehyde is used as
1) Disinfectant
2) Germicide
3) Antiseptic
4) All

76. What is the product formed when acetylene reacts with hypochlorous acid
1) CH_3COCl
2) $ClCH_2CHO$
3) Cl_2CHCHO
4) $ClCH_2COOH$

77. The weaker acid among the following is
1) CH_3COOH
2) $ClCH_2COOH$
3) Cl_3CCOOH
4) $(CH_3)_2CHCOOH$

**78.** Cold and dil.Alk.KMnO₄ will oxidize acetylene to
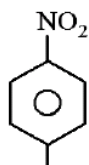1) Ethylene glycol
2) Ethyl alcohol
3) Oxalic acid
4) Acetic acid

79. Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in the above reaction is
1) 2-Butanone
2) Ethyl chloride
3) Ethyl ethanoate
4) Diethyl ether

80. Kjeldahl's method cannot be used for the estimation of nitrogen in
1) $C_6H_5 - N = N - C_6H_5$

2)

3)
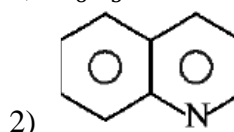
4) All of these

81. In the anion $HCOO^-$ the two carbon-oxygen bonds are found to be of equal length. What is the reason for it?
1) The anion $HCOO^-$ has two equivalent resonating structures
2) The anion is obtained by removal of a proton from the acid molecule
3) Electronic orbitals of carbon atom are hybridised
4) The $C = O$ bond is weaker than the $C - O$ bond

82. What is the IUPAC name of the following
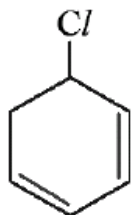
1) 3- chloro cyclor hexa – 1,5,-diene
2) 1- chloro cyclo hexa – 1,3-diene
3) 1- chloro cyclo hexa – 2, 5 –diene
4) 2 – chloro cyclos hexa – 1.4-diene

83. Which is false about acetic acid
1) it is a polar molecule
2) it forms H bonds
3) it is stronger than mineral acids
4) it has higher boiling point than corresponding a

84. 0.197g of a substance when heated with strong nitric acid and silver nitrate gave 0.3525g of silver iodine. Percentage of iodine is
1) 95%
2) 96.70%
3) 95.50%
4) 98.05%

85. Which of the following is not a derivative of carboxylic acids?
1) anhydrides
2) esters
3) amines
4) amides

86. Which of the following pairs of compounds are tautomers?
1) Propanol & propanone
2) Ethanol & vinyl alcohol
3) Ethanol & allyl alcohol
4) Vinyl alcohol & ethanol

87. $CH_3CH_2COOH \xrightarrow[Fe]{Cl_2} X \xrightarrow[KOH]{Alc} Y$ the compound Y is:
1) CH_3CH_2OH
2) CH_3CH_2CN
3) $CH_2 = CHOOH$
4) $CH_2CHClCOOH$

88. In a Friedel – Craft's reaction, the electrophile is
1) Cl^- or X^-
2) CH_3^+ or CH_3CO^+
3) CH_3Cl
4) CH_3COCl

89. Lower carboxylic acids are soluble in water due to
1) Low molecular weight
2) Hydrogen bonding
3) Dissociation into ions
4) Easy hydrolysis

90. Which one of the following carbocations is most stable?
1) $CH_3 - CH_2 - \overset{\oplus}{C} H_2$
2) $CH_3 - CH_2 - CH_2 - \overset{\oplus}{C} H_2$
3) $CH_3 - \overset{\oplus}{C} H - CH_3$
4) $CH_3 - CH_2 - \overset{\oplus}{C} H - CH_3$

BOTANY

91. Ratio of progeny when a red coloured neterozygous is crossed with a white coloured plant in which red colour is dominant to white colour is
1) 1 : 3
2) 3 : 1
3) 1 : 1
4) none

92. Bioremediation means

1) using microbes for therapeutic purposes
2) making environment free of microbes
3) using microbes as insecticides
4) using microbes to break down or recycle environmental pollutants

93. If cross is made between AA and aa the nature of F – 1 progemey will be
1) genotype AA, phenolype – a
2) genotype – Aa, phenotype – A
3) genotype Aa, phenotype – a
4) genotype – AA, phenotype – A

94. How many of the following statements are incorrect regarding uses of GM crops?
I) increased reliance on chemical pesticides
II) helped to reduce post harvest losses
III) their cultivation leads to early exhaustion of fertile soil
IV) enhanced nutritional value of food
V) made crops more tolerant to abiotic stress

1) 3   2) 4
3) 2   4) 5

95. A true breeding plant producing red flower is crossed with pure plant producing white flower. Allele for red colour of flower is dominant after selting of first filial generations, the proportion of plants producing white flower in the progens would be
1) 2/4   2) 1/4
3) 3/4   4) 1/3

96. Find out incorrect match regarding insects killed by proteins of bacillus thuringiensis
1) lepidopterans-army worm
2) dipterans-mosquitoes
3) lepidopterans-tobacco bud worm
4) coleopterans-flies

97. For the preparation of genet maps, the recombination frequencies between genes are additive over short distances but not over long distances due to
1) recombination
2) gene mapping
3) multiple cross overs
4) linkage

98. Which gene isolated from bacillus thuringiensis controls the inset population of corn borer?
1) cry I Ab
2) cry IAc
3) cry IIAb
4) HLA

99. In a mendelian dihybrid cross when tall and yellow seeded plant was crossed with dwarf and green seeded plant in F_2 generation, 36 tall and green plants were obtained. What is the total number of progenies obtained
1) 224   2) 192
3) 144   4) 186

100. Andrew fire and C. Mello shared Nobel prize in physiology / Medicine for their work on RNAi in a nematode
1) meloidegyme incognitia
2) caenorhabditis elegans
3) ascaris lumbricodis
4) agrobacterium tumefaciens

101. Co-dominance diffess from incomplete dominance as in co-dominance
1) the hybrid is intermediate
2) both the genes are expressed equally
3) dominant gene is expressed in F_1 generation
4) genotypic ration is 1 : 1

102. In terms of regulation mechanisms Lac operon and RNAi are
1) transcriptionally, translationally regulated mechanisms respectively
2) translationally, transcriptionally regulated mechanisms respectively
3) both are translationally regulated mechanisms
4) both are transcriptionally regulated mechanisms

103. Which of the mendel's laws will always prove to be universally true in all cases?
1) all the three law
2) only the 2nd law
3) 2nd & 3rd law

4) 1st & 2nd law

104. The activated toxin of Bt bacterium binds to …… insect
1) hind gut epithelial cells
2) mid gut epithelial cells
3) foregut epithelial cells
4) any of the above

105. Blood grouping in humans is controlled by
1) 4 alleles in which 'A' is dominant
2) 3 alleles in which AB is co-dominant
3) 4 alleles in which none is dominant
4) 3 alleles in which 'A' is dominant

106. GEAC makes decisions regarding
1) safety of GMOs for public services
2) regarding validity of GM research
3) creating GM foods
4) more than one option correct

107. From the re-appearance of recessive traits in F$_2$ generation, mendel concluded that
1) factor do not mix with each other in engeneraion
2) factors remain together in F$_1$ generation
3) factor mix with each other is F$_1$ generation
4) both 1 & 2

108. Biopiracy refers to
1) the use of biotechnology
2) use of bio resources for mutual benefit among different countries
3) use of bio resources by multinational companies and other organizations without proper authorization or without compensatory payment to the people concerned
4) legal exploitation of bio resources

109. The types of genetically different gametes formed by a heterozygous plant having genotype AA Bb Cc is
1) 1   2) 3
3) 2   4) 4

110. Some of the characteristics of Bt cotton are
1) long fibre and resistance to aphids

2) medium yield, long fibre and resistance to beetle pests
3) high yield and production of toxic protein crystals which kill dipteran pests
4) high yield and resistance to bollworms

111. Variation is
1) difference between parents and off springs
2) difference between individuals of the same species
3) difference among the offspring of the same parent
4) All the above

112. A probe which is a molecule used to locate specific sequences in a mixture of DNA or RNA molecules could be
1) a single stranded RNA
2) a single stranded DNA
3) either ssRNA or ssDNA tagged with radioactive molecule
4) can be ss DNA but not ssRNA

113. How many kinds of proteins are coded by a lac operon
1) Histones   2) Primers
3) Nucleosomes   3) Cistorns

114. Crop breeding for food quality improvement involves
1) elimination of antinutritional factors and accomplishment of biofortification
2) introduction of antinutritional gene in crop
3) with the objective of improving micronutrient and mineral content only
4) none

115. In prokaryotes, the predominant target site for control of gene expression is
1) Transcriptional termination
2) Translational initiation
3) Transcriptional initiation
4) Termination of translation

116. Increase in level of minerals, vitamins, complete proteins and healthier fats is
1) called springfication

2) called yarovisation
3) not possible by modern biotechnology
4) purpose in bio fortification

117. Sequence of amino acids in a polypeptide I dictated by
1) DNA
2) HnRNA
3) mRNA
4) tRNA

118. Cereals and millet grains possess proteins which are deficient in two amino acids ___ and _____
1) lysine, tryptophan
2) leucine, isoleucine
3) methinine, cysteine
4) phenylalanine, tyrosine

119. Functional unit of inheritance is
1) Nucleotide
2) Nucleoside
3) Exon
4) Gene

120. Atlas – 66 have high _____ content
1) protein
2) oil
3) vitamin
4) mineral

121. In molecular biology, the terms "blue print" (master copy) and "working copy" respectively refer to
1) DNA and protein
2) mRNA and polypeptide
3) DNA template and mRNA
4) mRNA and tRNA

122. Find incorrect pair w.r.t. vegetable crops released by ICAR
1) protein rich-broad bean, garden pea
2) iron and calcium rich-spinach, bathua
3) vitamin C rich – french bean
4) vitamin A rich carrot, pumpkin

123. The removal of introns and the joining of exons in a defined order during transcription is called
1) Slicing
2) Topping
3) Looping
4) Splicing

124. Solid or semi solid medium used in tissue culture
1) lack agar agar
2) lack auxin
3) lack cytokinin
4) have either gelatin or agar

125. Which of the following isotopes are separated based only on their densities?
1) ^{14}C and ^{13}C
2) ^{16}O and ^{18}O
3) ^{14}N and ^{15}N
4) ^{35}S and ^{32}P

126. Evidence of plant breeding dates back to
1) 9000-1000 years age
2) 900-100 years age
3) 180-200 years age
4) 1000 years age

127. DNA as an acidic substance present in nucleus was first identified by
1) Francis Crick
2) Rosalind Franklin
3) Erwin Chargoff
4) Friedrich Meischer

128. Which of the follow is a modern method of plant breeding
1) domestication
2) selection
3) hybridization
4) mutation breeding

129. Arithmetic growth
1) Can be expressed mathematically as $Lt + L_0 + rt$
2) Occurs when zygote divides first to form embryo
3) Results in typical sigmond curve when growth and time is plotted on a graph
4) Both 1 and 2 are correct

130. Trait or character that breeders have tried to incorporate first into crop is
1) increased crop yield and improved quality
2) increased tolerance to environmental stresses
3) resistance to pathogen
4) resistance to pest

131. Growth inhibiting hormone ABA.
1) Can help in seed development, maturity and seed dormancy
2) Acts as an antagonist to Gas
3) Stimulates the closure of stomata
4) All of these

132. Main steps in breeding a new genetic variety of a crop are
a) collection of variability
b) evaluation and selection of parents
c) cross hybridization
d) selection and testing of superior recombinants
e) testing, release and commercialization of new cultivars

The correct sequence is

1) a-b-c-d-e
2) e-d-c-b-a
3) a-c-b-d-e
4) d-a-b-c-e

133. Environmental plasticity can be observed in
1) Buttercup
2) Larkspur
3) Coriander
4) Mustard

134. Which of the following step is not followed before hybridization
1) evaluation of germplasm
2) selected parents are multiplied
3) purelines are created
4) comparison to reference cultivar

135. During Krebs cycle 6C, 5C, 4C intermediates are formed and converted to other compounds. The correct sequence of these intermediate is
1) Isocitrate, oxalosuccinate, oxaloacetate, succinyl CoA
2) α – ketogutarate, succinyl CoA, oxaloacetate, Malate
3) Cis aconitic acid, α – ketoglutarate, succinate, fumaric acid
4) C is aconitic acid, fumarates

ZOOLOGY

136. Muscles get fatigue due to accumulation of

1) lactic acid
2) ATP
3) phosphate molecules
4) CO_2

137. The process of evolution of different species in a given geographical area starting from a point andradiating to other areas of geography can be exemplified by
1) long neck in giraffe
2) drug resistance by microbes
3) peppered moth selection
4) Darwin finches

138. Which of the following is made up of a single bone in mammals?
1) lower jaw
2) hyoid
3) zygomatic arch
4) upper jaw

139. Lamarckism did explain all among the following except?
1) evolution organism were driven by use and disuse of organs
2) Giraffe passed on acquired character of elongated neck to succeeding generations
3) Snakes had lost their limbs as they adapted to live in fossorial habitat
4) individuals which have high fitness value would leave more fertile off springs

140. In human body, which one of the following is anatomically correct?
1) collar bones – 3 pairs
2) salivary glands – 1pair
3) cranial nerves – 10 pairs
4) floating ribs – 2 pairs

141. Based on the chance events in nature and chance mutations in the organisms evolution is not a
1) direct process in the sense of determinism
2) random process
3) stochastic process
4) none of the above

142. Erythroblastosis foetalis is caused when fertilization takes place between gametes of
1) Rh^- female and Rh^+ male
2) Rh^+ female and Rh^- male
3) Rh^+ female and Rh^+ male
4) Rh^- female and Rh^- male

143. Identify the incorrect statement about genetic equilibrium
1) allele frequencies in a population are stable
2) the gene pool remains constant
3) allele frequency is constant from generation to generation
4) it can be established only when the ratio between number of dominant allele to recessive allele is 1 : 1

144. On which group MTP cannot be done
1) Rape
2) Contraceptive failure
3) Continuation of pregnancy if harmful to either mother or foetus or both
4) If foetus is identified as female and not wanted by the couple

145. In the simulation experiments following substances were identified by Miller
1) amino acids
2) sugars
3) nitrogen bases
4) fats

146. In those infertile couples if usual corrections are not possible, than they go for special techniques known as
1) Genetic engineering
2) DNA fingerprinting
3) MTP
4) Assisted reproductive techniques

147. Which among the following is incorrect about special creation
1) the universe is about 4000 years old
2) all living organisms that we see today were created as such
3) it was a conventional religious literature
4) the diversity was always the same since creation and will be the same in future.

148. Periodic abstinence is a method in which
1) Barrier is created
2) Contraceptives are taken orally
3) Coitus is avoided for a particular duration
4) Ovulation is inhibited

149. What kind of selection is involved in the creation of various new breeds in the dogs which differ from normal wild dogs?
1) directional selection
2) disruptive selection
3) stabilizing selection
4) centripetal selection

150. In cochlea, which option is best suitable

	Scala vestibule	Scala tympani
1)	Perilymph	Perilymph
2)	Perilymph	Endolymph
3)	Endolymph	Endolymph
4)	Endolymph	Perilymph

151. Hardy Weinberg equation is $p^2 + q^2 + 2pq = 1$, p^2 indicates
1) homozygous genotypic frequency
2) recessive genotypic frequency
3) heterozygous genotypic frequency
4) homozygous dominant genotypic frequency

152. All findings of HGP are correctly indicated except
1) An average gene possess 3000 nucleotide bases
2) Less than 2% of the genome code for proteins
3) Almost 90% nucleotide bases in all individuals are similar
4) A large proportion of human genome is made up of repeated DNA sequences

153. The novelty and brilliant insight of Darwin concept was
1) single step large mutations resulted the variations
2) variations are heritable which are important for reproductive success
3) acquired characters are inherited

4) changes in the germplasm would inherit to next generation

154. Human Genome Project (HGP) was launched in
1) 1973
2) 1985
3) 1990
4) 2003

155. Appearance of first cellular forms of life was preceded by the formation of
1) anaerobic heterotrophs
2) chaemo autotrophs
3) bio molecules
4) photo autotrophs

156. Which of the following disease can be represented by the given pedigree analysis?
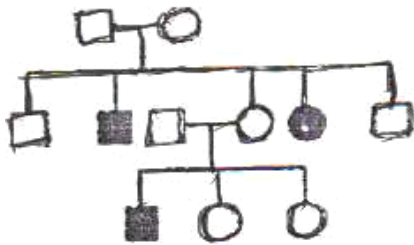
1) Myotonic dystrophy
2) Sickle cell anemia
3) Testis determining factor
4) Colour blindness

157. Name the process in which heritable variations enabling better survival are enabled to reproduce and leave great number of progeny
1) mutation
2) genetic load
3) natural selection
4) genetic drift

158. Which of the following pair is of autosomal recessive disorders?
1) Phenylketonuria and Sickle cell anemia
2) Colour blindness and Turner's syndrome
3) Down's syndrome and Turner's syndrome
4) Down's syndrome and Cystic fibrosis

159. Homology is accounted for by the idea of

1) homoplasy
2) branching descent
3) anagenesis
4) convergent evolution

160. Haemophiliac man marries a normal woman. Their offsprings will be all
1) haemophiliac
2) boys haemophiliac
3) girls
4) normal

161. Who proposed that the first form of life could have come from pre-existing non living organic molecules?
1) von helmonth & thales
2) hard & Weinberg
3) miller & urey
4) Haldane & oparin

162. Chromosome number 47, sterile male with feminine features are observed in
1) Klinefelter's syndrome
2) Turner's syndrome
3) Down's syndrome
4) Phenylketonuria

163. The ancestor of insectivorous finch was
1) seed eating
2) cactus feeding
3) vegetarian finch
4) also insectivorous

164. During IVF-ET (In vitro fertilization embryo transfer), after fertilization if embryo is having 8 or less number of blastomeres, than it is transferred to …. A…. while if the number is more than 8, it is transferred to ….B….
1) A = Fallopian tube, B=Fallopian tube
2) A=Fallopian tube, B= Uterus
3) A = Uterus, B= Fallopian tube
4) A = Uterus, B = Uterus

165. The heart of crocodile, pigeon, monkey is an example for
1) homologous organs
2) analogous organs
3) convergent evolution
4) centripetal selection

166. Which technique will be useful for a female to have children, who can't produce ovum but have suitable

environment for fertilization and implantation?

1) ICSI
2) GIFT
3) IVF
4) IUI

167. All else being equal, among the population demographics of various islands as 50 (island A), 100 (island B) 500 (island C), 1000 (island D), the impact of genetic drift is lowest in

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

168. Which of the following contraceptive measures have similar mechanism of action?

1) Progestasert, LNG-20
2) Saheli, Nirodh
3) Lippe's loop, Multiload 375
4) Vaults, Pills

169. As per Big bang theory galaxies of the present day universe formed as

1) fragmentation of gases under lightening
2) contraction of gases under collision
3) flattening of meteorites under volcanos
4) Condensation of gases under gravitation

170. Which of the following will not be useful as a prevention in a acquiring STDs?

1) Avoid sex will unknown partner
2) Use of condoms during coitus
3) Use of oral pills
4) Avoid sex with multiple partners

171. Evolutionary concept which believed that life came out of decaying and rotten matter was disproved by

1) astronomers
2) leuis pasteur
3) miller
4) lamarck

172. Parts of fallopian tubes in contact with uterus and ovary, respectively are

1) Infundibulum and isthmus
2) Ampulla and Fimbriae
3) Infundibulum and ampulla
4) Isthmus and fimbriae

173. Whales, bats cheetah and humans share similiarities in the pattern of bones of fore limbs because of

1) all of them have humerus, radius, ulna, carpals, meta rarsals, and phalanges
2) their fore limbs developed along same direction
3) all of them were evolved in aquatic habitat
4) those animals had common ancestry

174. Which of the following male productive structure is not related / matched with the given feature /function?

Male Reproductive structure	Feature / Function
1. Testis	Possess 250 lobules
2. Penis	Erectile tissues
3. Prostate gland	Contributes in seminal plasma
4. Epididymis	Location of ermatogenesis

175. Evolution is gradual. According to

1) Lamarck
2) Darwin
3) Wallace
4) All of those

176. During oo genesis primary oocytes are arrested at

1) Prophase – I
2) Metaphase – I
3) Prophase – II
4) Anaphase – II

177. More than one adaptive radiation appeared to have occurred in an isolated geographical area is called

1) genetic drift
2) convergent evolution
3) phyletic evolution
4) divergent evolution

178. How many sperms must have normal shape and size for normal fertility?

1) 20%
2) 40%
3) 60%

4) 80%

179. There are N individuals in a diploid population. At a given locus there are two alleles A and a. The number of copies of alleles A is X where as for a is Y. What is the frequency of allele a?

1) $2N - Y / X + Y$
2) $2N - X / X + Y$
3) $N - Y / X + Y$
4) $N - X / X + Y$

180. Which of the following is having 23 chromosomes?

1) Spermatogonia
2) Primary spermatocyte
3) Immature germ cell
4) Spermatid

PHYSICS

1 – 10	4	1	4	3	3	4	1	2	1	1
11 – 20	4	3	3	3	3	3	4	4	2	3
21 – 30	3	3	4	3	2	1	3	3	2	4
31 – 40	4	2	1	2	1	1	2	2	2	4
41 – 45	2	1	4	3	3					

CHEMISTRY

46 - 50						4	2	3	1	3
51 - 60	4	3	3	2	1	4	3	1	1	1
61 - 70	1	3	4	1	3	3	3	2	3	3
71 - 80	1	3	3	1	4	3	4	3	3	4
81 - 90	1	2	3	2	3	4	3	2	2	4

BOTANY

91 - 100	3	4	2	3	2	4	3	1	2	2
101 - 110	2	1	2	2	2	4	4	3	4	4
111 - 120	1	3	1	1	3	4	3	1	4	1
121 - 130	3	3	4	4	4	1	4	4	1	1
131 - 135	4	1	1	4	3					

ZOOLOGY

136 - 140						1	4	1	4	4
141 - 150	1	1	4	4	1	4	1	3	2	4
151 - 160	4	2	2	3	3	2	3	1	2	1
161 - 170	4	1	1	2	1	2	4	1	4	3
171 - 180	2	4	4	4	4	1	2	3	2	4