

SINDH MDCAT PAPER 2019

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ENGLISH

Choose the word most similar in meaning to the capitalized one.

1. DEMONSTRATE:

- A. Establish
- B. Invent
- C. Produce
- D. Show

2. FLEE:

- A. Escape
- B. Face
- C. Fear
- D. Flow

3. UNAMBIGUOUS:

- A. Exact
- B. Clear
- C. Interesting
- D. Sufficient

4. LEGEND:

- A. History
- B. Outburst
- C. Place
- D. Story

Questions 5-6

That freedom means freedom only from foreign domination, is an outworn idea. It is not merely governments that should be free but the people themselves who should be free; and no freedom has any real value for the common man or woman unless it means freedom from want, freedom from disease, freedom from ignorance. This is the main task which confronts us if we are to take our rightful place in the modern world. We cannot hold the clock back, and therefore it is we who must go forward at a double pace, bending all our resources and all our energies to this great purpose.

5. An "outworn" idea is _____

- A. Great
- B. Not new
- C. Scientific
- D. Undeveloped

6. "The great purpose" mentioned by the writer at the end of the passage refers to _____

- A. Freedom from foreign domination
- B. People themselves should be free
- C. The real value of freedom
- D. Taking our rightful place in the modern world

Choose the lettered word or phrase that is most nearly opposite in meaning to the word in capital letters.

7. BRILLIANT:

- A. Adequate
- B. Dull
- C. Troubled
- D. Unprejudiced

8. ENFEEBLED:

- A. Distanced
- B. Dominant
- C. Mistaken
- D. Powerful

9. INVADERS:

- A. Characteristics
- B. Historians
- C. Inhabitants
- D. Results

10. UNLIKELY:

- A. Familiar
- B. Possible
- C. Powerful
- D. Take for granted

Questions 11-12

Anglo-Saxon is now, of course, a dead language, but a good deal of its vocabulary has survived, in one form or another to the present day. Most of the very common words in modern English are Anglo-Saxon in origin: nouns like father, mother, food, drink, bed, hunger; most of the prepositions and conjunctions; and nearly all the strong verbs. When it was mixed with Norman French, there were three main results: the grammar was simplified, the pronunciation and spellings became much more complicated and the vocabulary was enormously extended. French is a Latin language, so the major part of our vocabulary is now Latin in origin.

11. A "dead language" is _____.

- A. A dialect of language
- B. Latin language
- C. Mixed with other languages
- D. No more spoken

12. The vocabulary was "enormously extended" means vocabulary has _____.

- A. Increased
- B. Reduced
- C. Simplified
- D. Survived

Identify the word or phrase that needs to be changed for the sentence to be correct.

13. When I go into a bank, I get frighten.

- A. When
- B. A
- C. Get
- D. Frighten

to the

14. The fact of the matter is never I'd been out to the theatre that night, had supper afterwards, and came in late.

- A. Never
- B. That
- C. Afterwards
- D. Late

15. In Maxwell's days no instruments had been made which could register the greatly enormously long waves of electricity.

- A. No
- B. Could
- C. Greatly
- D. Long

16. This long experience of European domination has naturally produced a mood of quite resistance.

- A. This
- B. Long
- C. European
- D. Quite

Complete the sentences by choosing the most appropriate option, from the given lettered choices (A to D) below each.

17. The house _____ before we moved in.

- A. paint
- B. painted
- C. has painted
- D. was painted

18. Her hair was hanging _____ her back.

- A. beyond
- B. by
- C. down
- D. from

19. We must _____ back by six o'clock.

- A. be
- B. can
- C. has
- D. have

20. Birds usually _____ eggs in their nests.

- A. laid
- B. lain
- C. lay
- D. lie

CHEMISTRY

21. Which of the following gases is used for welding purposes?

- A. ethene
- B. ethane
- C. propane
- D. ethyne

22. The chief ore of Aluminum is:

- A. Na_3AlF_6
- B. $Al_2O_3 \cdot nH_2O$
- C. Al_2O_3
- D. $Al_2O_3 \cdot H_2O$

23. Sp^3 hybrid orbitals are formed by the mixing of:

- A. One s and two p
- B. One s and three p
- C. One s and one p
- D. Two s and two p

24. Which one of the following bond has highest bond energy?

- A. C=C
- B. C≡C
- C. N≡N
- D. H-F

25. Diamond is a bad conductor because it:

- A. has a tight structure
- B. has high density
- C. has no free electron in crystal
- D. is transparent to light

26. Ethers show the phenomenon of:

- A. Position isomerism
- B. Functional group isomerism
- C. Metamerism
- D. Cis-trans isomerism

27. Metallic character of the elements:

- A. decreases down the groups
- B. increases down the groups
- C. decreases across the periods
- D. increases across the periods

28. The nature of positive rays depends on:

- A. The nature of the electrode
- B. The nature of the discharge tube
- C. The nature of the residual gas
- D. The shape of the electrode

29. The net heat change in a chemical reaction is same whether it is brought about in two or more different ways in one or several steps. It is known as:

- A. Henry's law
- B. Hess's law
- C. Joule's principle
- D. Dalton's law

30. The volume occupied by 1.4 g N_2 at STP is:

- A. 22.4 dm³
- B. 1.12 dm³
- C. 11.2 dm³
- D. 1.4 dm³

28 = 2

1.4 1.12

31. Molarity of pure water is:

- A. 01
- B. 18
- C. 36
- D. 55.5

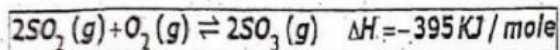
32. The value of R (the gas constant) is:

- A. 0.0821 dm³ atm k mole⁻¹
- B. 803143 Nm k⁻¹ mole
- C. 0.0821 dm³ atm k⁻¹ mole⁻¹
- D. 8.3143 dm³ atm k⁻¹ mole⁻¹

33. Tritium, an isotope of hydrogen contains:

- A. Equal number of electrons and neutrons
- B. Equal number of electrons, protons and neutrons
- C. Number of neutrons are double than the number of protons
- D. Number of neutrons are half than the number of protons

34. Which statement about the following equilibrium is correct?



- A. The value of K_p falls with rise in temperature
- B. The value of K_p falls with increase in pressure
- C. The value of K_p is equal to K_c
- D. The value of K_p remains constant with rise in temperature

35. The chemical name of $[\text{Zn}(\text{OH})_4]^{2-}$ is:

- A. Tetrahydroxy zinc (II)
- B. Tetrahydroxo zincate (IV)
- C. Tetrahydroxo zincate (II)
- D. Pentahydroxy zincate (II)

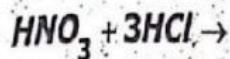
36. When 5d orbital is complete, the entering electron will go to:

- A. 6s
- B. 6p
- C. 5p
- D. 4f

37. Which of the following of pair groups belong to meta directing groups?

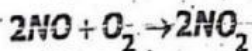
- A. $-\text{NH}_2$ and $-\text{NO}_2$
- B. $-\text{OR}$ and $-\text{OH}$
- C. $-\text{NO}_2$ and $-\text{SO}_3\text{H}$
- D. Cl and $-\text{COOH}$

38. What are the products of the below mentioned equation?



- A. $2\text{H}_2\text{O} + \text{NOCl} + \text{Cl}_2$
- B. $\text{H}_2 + \text{NOCl} + 2\text{HOCl}$
- C. $\text{H}_2\text{O} + \text{NO}_2\text{Cl} + 2\text{HCl}$
- D. $2\text{H}_2\text{O} + \text{NOCl} + 2\text{Cl}$

39. What is the order of the following reaction:



- A. 0
- B. 1
- C. 2
- D. 3

40. One Calorie is equivalent to:

- A. 0.4184 J
- B. 41.84 J
- C. 4.184 J
- D. 418.4 J

41. Paramagnetic elements contain:

- A. All paired electrons
- B. All unpaired electrons
- C. Few unpaired electrons
- D. Unequal electrons and protons

42. How many atmospheres correspond to 1050 torr?

- A. 1.050
- B. 10.38
- C. 1.380
- D. 2.760

CHAPTER NO2 51YEAR

43. The mass of an electron is:

- A. 1.008 amu
- B. 1.009 amu
- C. 0.000550 amu
- D. 0.5500 amu

CHAPTER NO3 51YEAR

44. The rate of E1 reaction depends upon:

- A. The concentration of substrate
- B. The concentration of nucleophile
- C. The concentration of nucleophile and substrate
- D. The amount of the solvent used

45. The number of bonds in nitrogen molecules are:

- A. **One σ and one π**
- B. **One σ and two π**
- C. **Three σ only**
- D. **Two σ and one π**

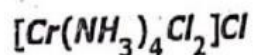
46. An ionic compound A^+B^- is most likely to be formed when:

- A. The ionization energy of A is high and electron affinity of B is low
- B. The ionization energy of A is low and electron affinity of B is high
- C. Both ionization energy of A and electron affinity of B are equal
- D. Both ionization energy of A and electron affinity of B are high

47. The electrophile in aromatic sulphonation is:

- A. H_2SO_4
- B. HSO_4^-
- C. SO_3H^+
- D. SO_3

48. Choose the correct IUPAC name for the following complex.

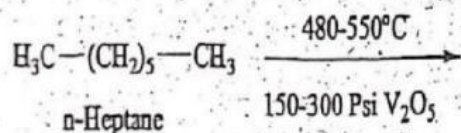


- A. trichlorotetra amine chromium (III)
- B. Dichlorotetra amine chromium (III) chloride
- C. Dichlorotetra ammonia chromium (III) chloride
- D. Dichlorotetra amine chromate (III) chloride

49. SN^2 reactions can be best carried out with:

- A. Primary alkyl halides
- B. Secondary alkyl halides
- C. Tertiary alkyl halides
- D. Both primary and tertiary alkyl halides

50. Name the main product formed in result of the following reaction.



- A. Benzene
- B. Toluene
- C. Xylene
- D. Cycloheane

51. The pH of $10^{-3} \text{ mol dm}^{-3}$ of an aqueous solution of H_2SO_4 is:

- A. 3.0
- B. 2.7
- C. 2.0
- D. 1.5

52. The oxidation state of Cl in HClO_4 is:

- A. -1
- B. +5
- C. +7
- D. -7

53. In a zero order reaction, the rate is independent of:

- A. temperature of reaction
- B. concentration of reaction
- C. concentration of products
- D. catalyst used

54. Which one of the following is NOT a nucleophile?

- A. H_2S
- B. BF_3
- C. NH_3
- D. CN^-

55. Which of the following molecules have zero dipole moments?

- A. NH_3
- B. $CHCl_3$
- C. H_2O
- D. BF_3

56. The ligand field effect splits five degenerated d-orbitals into two sets with different energies, the pair of high energy degenerate orbitals is:

- A. d_{xy}, d_{yz}
- B. d_{yz}, d_{zx}
- C. $d_{x^2-y^2}, d_{z^2}$
- D. $d_{x^2-y^2}, d_{y^2}$

57. The change in heat energy of a chemical reaction at constant temperature and pressure is called:

- A. Enthalpy change
- B. Heat of sublimation
- C. Internal energy change
- D. Heat of formation

58. A catalyst increases the rate of reaction by:

- A. decreasing the activation energy
- B. decreasing the concentration of reactants
- C. decreasing the temperature
- D. increasing the temperature

59. The unit cell parameters of mono clinic system are:

- A. $a = b \neq c \quad \alpha = \beta = \gamma = 90^\circ$
- B. $a \neq b \neq c \quad \alpha = \gamma = 90^\circ \quad \beta \neq 90^\circ$
- C. $a \neq b = c \quad \alpha = \beta = 90^\circ \quad \gamma \neq 90^\circ$
- D. $a = b = c \quad \alpha = \beta = \gamma = 90^\circ$

60. Which of the following will have maximum value of heat of hydration?

- A. Na^+
- B. Cs^+
- C. Mg^{+2}
- D. Ca^{+2}

61. The colour of transition metal complexes is due to:

- A. d-d transition of electrons
- B. Paramagnetic nature of transition elements
- C. Loss of s-electrons
- D. Refraction phenomenon

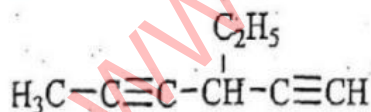
62. Determine the significant figures in 0.0085.

- A. 4
- B. 3
- C. 2
- D. 1

63. Orbitals having same energy are called:

- A. Hybrid orbitals
- B. Degenerate orbitals
- C. Valence orbitals
- D. Sub-orbitals

64. Write the chemical name of the given structure.



- A. 4-ethyl-2,5-hexadiyne
- B. 3-ethyl-1,4-hexadiene
- C. 3-ethyl-1,4-hexadiyne
- D. 3-ethyl-2,5-hexadiyne

65. Copper (Cu, Z=29) is a:

- A. d^1 system with respect to electronic configuration
- B. d^3 system with respect to electronic configuration
- C. d^7 system with respect to electronic configuration
- D. d^{10} system with respect to electronic configuration

66. The carbon number of gasoline is:

- A. $C_5 - C_6$
- B. $C_6 - C_7$
- C. $C_5 - C_{10}$
- D. $C_{12} - C_{15}$

67. The oxidation number of Br in Br_2 is:

- A. -1
- B. -2
- C. 0
- D. +1

68. The number of moles of CO_2 which contain 8.0 g of oxygen is:

- A. 0.25
- B. 0.50
- C. 0.75
- D. 1.0

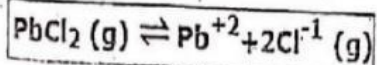
69. Hydrogen bonds are represented by: ✓

- A. dative bonds
- B. full bond
- C. partial charges
- D. dotted bonds

70. Effusion of gases take place through a hole with:

- A. Hole dimensions
- B. Infinite dimensions
- C. Slit like dimensions
- D. Molecular dimensions

71. The units of K_{sp} for the following reaction are:



- A. $mol\ dm^{-6}$
- B. $mol^2\ dm^{-3}$
- C. $mol^3\ dm^{-9}$
- D. $mol\ dm^{-9}$

72. In t-butyl alcohol, the tertiary carbon is bonded to:

- A. No H-atoms
- B. One H-atoms
- C. Three H-atoms
- D. Four C-atoms

73. The oxidation potential standard hydrogen electrode is arbitrarily taken as:

- A. -0.76 volts
- B. 0.00 volts
- C. +1.5 volts
- D. 1.0 volts

74. Down's cell is used to prepare:

- A. Sodium carbonate
- B. Sodium bicarbonate
- C. Sodium hydroxide
- D. Sodium metal

CHAPTER NO3 INTER

75. Which of the hydrogen compounds has the highest percentage of ionic character?

- A. HCl
- B. HBr
- C. HI
- D. HF

76. Quantum number values for 2p orbitals are:

- A. $n=2$ $l=1$
- B. $n=2$ $l=2$
- C. $n=2$ $l=0$
- D. $n=1$ $l=0$

77. Solubility product of $AgCl$ is $2.0 \times 10^{-10} \text{ mol}^2 \text{ dm}^{-6}$

Maximum concentration of Ag^{-1} ions in the solution is:

- A. $2.0 \times 10^{-12} \text{ mol dm}^{-3}$
- B. $1.4 \times 10^{-12} \text{ mol dm}^{-3}$
- C. $1.0 \times 10^{-12} \text{ mol dm}^{-3}$
- D. $2.5 \times 10^{-10} \text{ mol dm}^{-3}$

78. A limiting reactant is the one, which:

- A. Is taken in lesser quantity in grams as compared to the other reactant
- B. Is taken in lesser quantity in volume as compared to the other reactant
- C. gives the minimum amount of the product which is required
- D. gives equal amount of the reactants and products

79. The chemical formula of Tincal is:

- A. $\text{Na}_2\text{B}_2\text{O}_7 \cdot 10\text{H}_2\text{O}$
- B. $\text{Na}_2\text{B}_4\text{O}_7 \cdot \text{H}_2\text{O}$
- C. $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- D. $\text{Na}_2\text{B}_2\text{O}_5 \cdot 10\text{H}_2\text{O}$

80. Hydrogen resembles with the elements of groups:

- A. I-A, V-A and VIII-A
- B. I-A, IV-A and VI-A
- C. I-A, II-A and VII-A
- D. I-A, IV-A and VII-A

CHAPTER NO 2 INTER

BIOLOGY

81. In sexual reproduction, sex cells contain _____ number of chromosomes when compared to other cells of body.

- A. Same
- B. Half
- C. Double
- D. All of the above

82. Kinetochore is a complex of _____ associated with the centromere of a chromosome to which the microtubules of the spindle attach.

- A. DNA
- B. Carbohydrates
- C. Proteins
- D. Nucleosomes



83. Pituitary gland releases _____ hormone and _____ hormone, while ovaries produce _____ and progesterone.

- A. Follicle stimulating and luteinizing, estrogen
- B. Estrogen and follicle stimulating, luteinizing
- C. Luteinizing and estrogen, follicle stimulating
- D. Follicle stimulating and estrogen, luteinizing

84. In higher animals' bodies, tissue fluid is isotonic as contrary to plants because in plant's cell:

- A. Cell membrane creates resistance in water uptake
- B. Plastids creates resistance in water uptake
- C. Chlorophyll creates resistance in water uptake
- D. Cell wall creates resistance in water uptake

85. Which one is NOT an involuntary function?

- A. Breathing
- B. Pumping of blood
- C. Skeletal muscle movement
- D. Blinking of eyes

86. In gametogenesis, which resultant product is non-functional?

- A. Spermatogonia
- B. Oogonia
- C. Polar body
- D. Ovum

87. The passageways of the respiratory system are lined by mucous secreting cells called _____.

- A. Tracheal cells
- B. Goblet cells
- C. Surfactant cells
- D. Pleural cells

88. Virus can only survive and reproduce inside a _____.

- A. Animal cell
- B. Bacterial cell
- C. Living cell
- D. Non-living cell

89. In addition to smaller hind limb muscle mass, the mutant "mini muscle" gene exhibit lower heart rates during physical activity, larger kidneys and livers in mice. This is a very good example of _____.

- A. Epistasis
- B. Multiple alleles
- C. Co dominance
- D. Pleiotropy

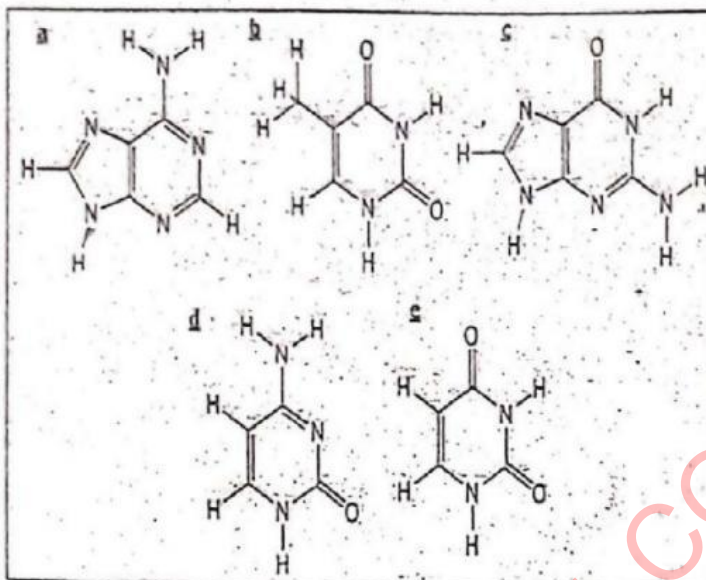
90. _____ is the stage of mitosis characterized by the physical separation of _____ chromatids.

- A. Interphase, Offspring
- B. Telophase, F1 chromatids
- C. Metaphase, Homologous
- D. Anaphase, Sister

91. A man who has type AB blood could not father a child with type _____ blood, because he would pass on either the _____ or the B allele to all of his offspring.

- A. A, O
- B. O, A
- C. B, O
- D. B, A

92. Identify purine and pyrimidines from the following figures:



- A. a and b purines, c, d, and e pyrimidines
- B. d and b purines, c, a, and e pyrimidines
- C. a and e purines, c, d, and b pyrimidines
- D. a and c purines, b, d, and e pyrimidines

93. A cross between a black cat and a tan cat produces a tabby pattern (black and tan fur together). What percent of kittens would have tan fur if a tabby cat is crossed with a black cat?

- A. 100%
- B. 50%
- C. 25%
- D. 0%

94. Which factor decides what type of variation should be flourished and passed on in to the next generations?

- A. Species
- B. Population
- C. Survival
- D. Environment

95. Haemophilia is a sex linked _____ trait.

- A. Dominant
- B. Codominant
- C. Pleitropic
- D. Recessive

96. Which of the following is a type of cell division that plays an important role in evolution?

- A. Meiosis
- B. Mitosis
- C. Apoptosis
- D. Amitosis

97. The "d" and "D" alleles are used for lighter and darker skin color in humans respectively. By keeping in view the inheritance pattern of skin color in human beings, choose which combination is showing medium skin color from the following picture:

		a	b	c	d	e
a	Gene 1	$d^1 d^1$	$d^1 D^1$	$D^1 D^1$	$D^1 d^1$	$D^1 D^1$
b	Gene 2	$d^2 d^2$	$d^2 D^2$	$D^2 d^1$	$D^2 d^2$	$D^2 D^2$
c	Gene 3	$d^3 d^3$	$d^3 d^3$	$d^3 d^3$	$D^3 D^3$	$D^3 D^3$

- A. Column a
- B. Column c
- C. Row b
- D. Row c

98. There existed two varieties of Female Fresh Water Mollusks in which some were streamlined and some had high bulge. Over the generations, Male Fresh Water Mollusks learned that high bulge favors more production of offspring. So they started preferring to mate with females having high bulge as compared to streamlined. Will this effect Hardy Weinberg equilibrium in the population?

- A. No, it will not affect Hardy Weinberg equilibrium
- B. Yes, it will effect Hardy Weinberg equilibrium
- C. It will help to balance equilibrium
- D. Hardy Weinberg equilibrium doesn't apply here

99. A _____ is mostly a non-protein chemical compound that is required for the protein's biological activity.

- A. Active site
- B. Substrate
- C. Cofactor
- D. Enzyme

100. All of the following belong to same kingdom EXCEPT:

- A. Plasmodium
- B. Fern
- C. Chlamydomonas
- D. Euglena

101. Why some vegetables lose water when salt is applied to them?

- A. Due to less negative water potential of external environment than the cell
- B. Due to more negative water potential of external environment than the cell
- C. Due to less positive water potential of external environment than the cell
- D. Due to more positive water potential of external environment than the cell

102. What type of protein is present in eukaryotic DNA but NOT in prokaryotic DNA?

- A. Receptor protein
- B. Glycoprotein
- C. Chromatid protein
- D. Histone protein

103. Whenever a muscle contracts, a sarcomere can be shorten up to _____ % of its total length.

- A. 15
- B. 25
- C. 35
- D. 45

104. The second stage of the Prophase of Meiosis, following Leptotene, during which homologous chromosomes begin to pair is called:

- A. Anaphase
- B. Zygotene
- C. Diplotene
- D. Pachytene

105. Formation of _____ will be greater with the faster break down of glucose and glycogen to compensate energy requirements in an aerobic respiration.

- A. Enzymes
- B. Hormones
- C. Lactic acid
- D. Fat

106. A strand, almost _____ nucleotides long is wrapped around a core of _____ histone proteins to form a structure called a Nucleosome.

- A. 200-4
- B. 200-8
- C. 200-16
- D. 2000-4

107. A group of biologically active molecules formed from amino acids which interact with the surface of the lipid bilayer of cell membranes are called _____.

- A. Integral Proteins
- B. Peripheral proteins
- C. Cell wall
- D. Plasmodesmata

108. Transport of three protons through the ATPase complex are required for the production of one _____.

- A. Sugar molecule
- B. NADP molecule
- C. ATP molecule
- D. NADPH molecule

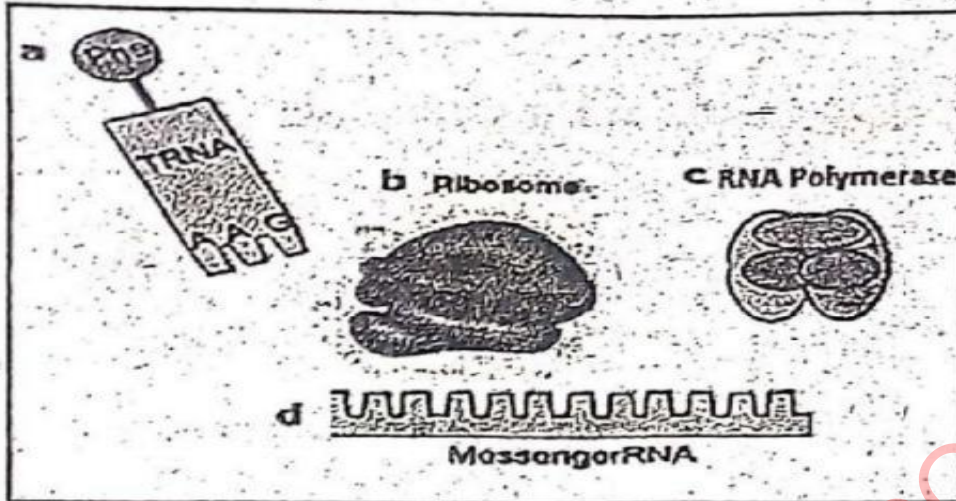
109. Which one of the following options is NOT an example of genetic engineering?

- A. Insulin producing bacteria
- B. Oil eating bacteria
- C. Photosynthetic bacteria
- D. Metal extracting bacteria

110. In a forest there are a lot of plants, trees, shrubs and herbs. What will the Palm trees face if they grow in the same forest?

- A. Intra specific competition
- B. Inter specific competition
- C. Environmental competition
- D. All of the above

111. Pick the odd one out in the following picture.



- A. A
- B. B
- C. C
- D. D

112. While working in a laboratory, before studying sample under microscope, it was immersed in a dye solution to obtain _____.

- A. Magnification
- B. Image
- C. Match
- D. Contrast

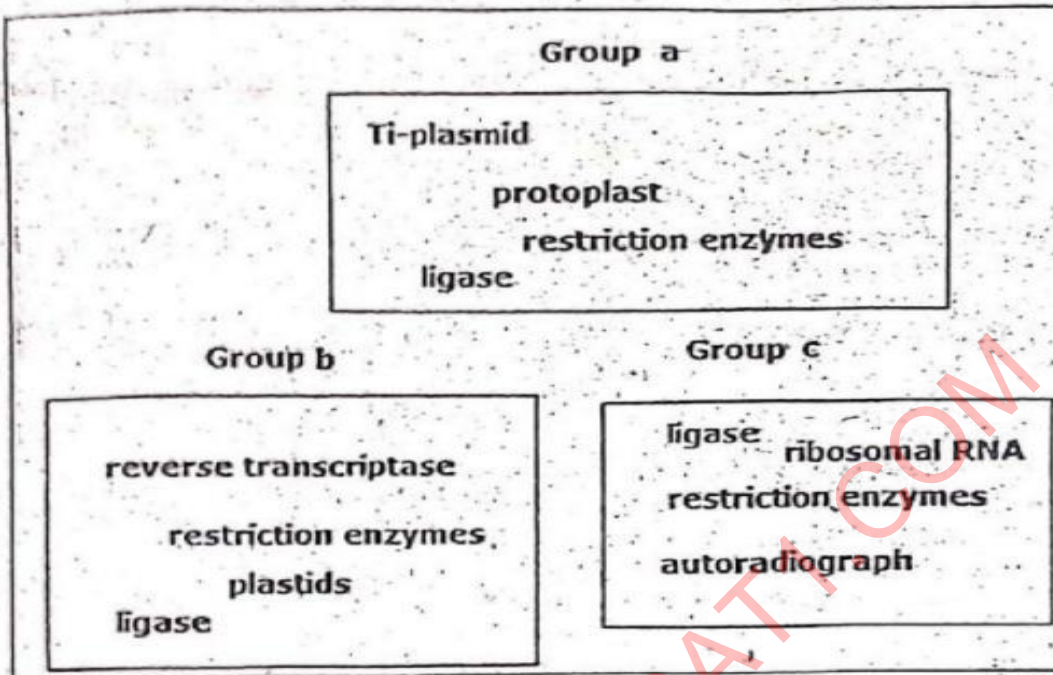
113. Pathway of energy used by muscles converted from food is:

- A. Food-ATP-creatine phosphate- protein
- B. Food- glycogen- ATP-creatine phosphate
- C. Food- glycogen-creatine phosphate- ATP
- D. Food- protein-creatine phosphate- ATP

114. A _____ is an organism that makes ATP by aerobic respiration if oxygen is present, but is capable of switching to fermentation, if oxygen is absent.

- A. Cellular anaerobe
- B. Respiratory anaerobe
- C. Obligate anaerobe
- D. Facultative anaerobe

115. Choose the best group from the following to produce transgenic plants in the laboratory:



- A. Group a
- B. Group b
- C. Group b and c
- D. Group c

116. Which one of the following is NOT a mode of transmission of AIDS?

- A. Through unsterilized needles
- B. Through contact with open wounds
- C. Through blood transfusion
- D. Through holding hands

117. The following results of a cross between two individuals shown in the picture is:

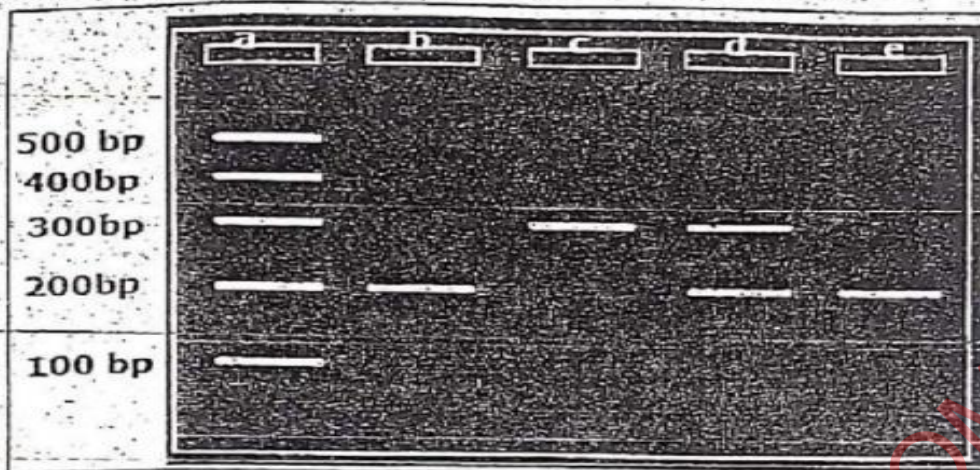
	b	b
B	Bb	Bb
b	bb	bb

- A. One that is homozygous dominant and other has a dominant phenotype, but has a mother with recessive phenotype.
- B. One that is homozygous recessive and other has a dominant phenotype, but has a mother with recessive phenotype.
- C. One that is homozygous recessive and other has a dominant phenotype, but has a brother with recessive phenotype.
- D. One that is homozygous recessive and other has a recessive phenotype, but has a father with dominant phenotype.

118. An enzyme called _____ is responsible for copying a DNA sequence into an RNA sequence.

- A. Restriction enzyme
- B. Reverse transcriptase
- C. RNA polymerase
- D. DNA polymerase

119. Following picture is of _____ technique, as DNA molecules are separated on the basis of their size and speed in it.



- A. Cloning
- B. Recombinant DNA technique
- C. Cell culture
- D. Gel Electrophoresis

120. When plant cell receives a signal for death, it commits suicide by rupturing:

- A. Nucleus
- B. Cell membrane
- C. Tonoplast
- D. Chloroplast

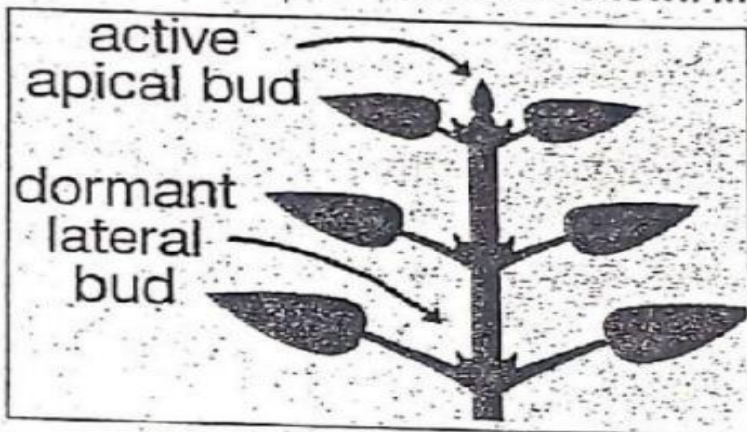
121. Cell permeability and transport processes of Cell Membrane depend upon its _____ component.

- A. Phospholipid
- B. Carbohydrates
- C. Polysaccharide
- D. Cellulose

122. Which disorder among the following CANNOT be detected by amniocentesis?

- A. Haemophilia
- B. Heart defects
- C. Tay-Sachs disease
- D. Cystic fibrosis

123. What is the phenomenon shown in the following picture?



- A. Abscission
- B. Senescence
- C. Apical dominance
- D. Ripening

124. In a laboratory while working on a new species of fish, it is found that the fish has two varieties, red and brown. It was determined by another group of scientists in another laboratory that brown is a dominant color in this species. If we have brown fish with us in the laboratory, how can we determine whether they are homozygous or heterozygous for the trait?

- A. Breed this fish with a red fish and check F1 generation
- B. Breed this fish with a red fish and check F2 generation
- C. Breed this fish with a brown fish and check F1 generation
- D. Breed this fish with a brown fish and check F2 generation

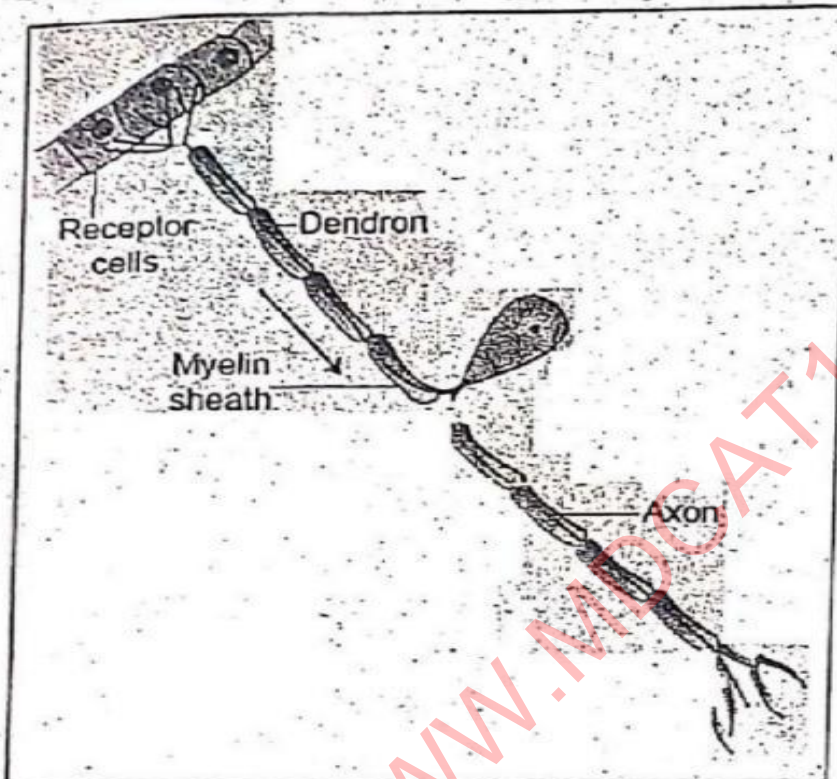
125. Which one is NOT true for co-ordination in animals?

- A. Transmission by the nervous system is short-lived, whereas transmission by the hormonal system is long-lasting.
- B. The nervous system uses electrical impulses to send signals through neurons, whereas the hormonal coordination uses chemical messengers transported into blood
- C. Responses are often permanent in the hormonal system, but temporary and reversible in the nervous system
- D. In nervous system, secretory chemicals are released in blood while in hormonal system; secretory chemicals are released in extracellular fluids.

126. Plant pigments responsible for red, yellow and orange colors in many fruits and vegetables are:

- A. Chlorophyll a
- B. Chlorophyll b
- C. Carotenoids
- D. Cellulose

127. What does the following picture show?



- A. Motor Neuron
- B. Sensory neuron
- C. Inter neuron
- D. Nerve

128. As a result of competition among friends, Ahmed eats a lot of pakoras, resulting in rise of salts in blood, to compensate, _____ mechanism will be triggered in the body.

- A. Positive feed back
- B. Negative feed back
- C. Internal feed back
- D. External feed back

129. Due to the presence of _____, the reabsorption of water is increased in the collecting ducts.

- A. Mg
- B. ADH
- C. Kidney stones
- D. High pH

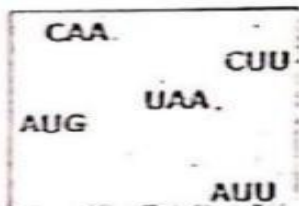
130. When a color blind male marries a normal female, what will be the chances of colorblindness in his grandsons, if his daughter marries to a normal male?

- A. 10%
- B. 25%
- C. 50%
- D. 100%

131. Humans are _____ and mostly use _____ means for thermoregulation.

- A. Ectotherm, behavioral
- B. Endotherm, physiological
- C. Ectotherm, physiological
- D. Endotherm, behavioral

132. Read the code mentioned in the following picture and arrange the sequence of all five codons in which Leucine is at 3rd position while isoleucine at 4th position. Keep in mind that CUU is the code for Leucine, AUU for Isoleucine and CAA for glutamine.



- A. UAA- AUG-CAA-CUU-AUU
- B. AUG-CAA-CUU-AUU-UAA
- C. AUU-AUG-CAA-CUU- UAA
- D. AUG- UAA -CUU-AUU-CAA

133. Because it is capable of dissolving more substances than any other liquid, _____ is called the "universal solvent".

- A. Ethane
- B. Alcohol
- C. Chloroform
- D. Water

134. Which animals support Darwin's view of inheritance of desirable variations?

- A. Giraffe
- B. Galapagos finches
- C. Snake
- D. All of the above

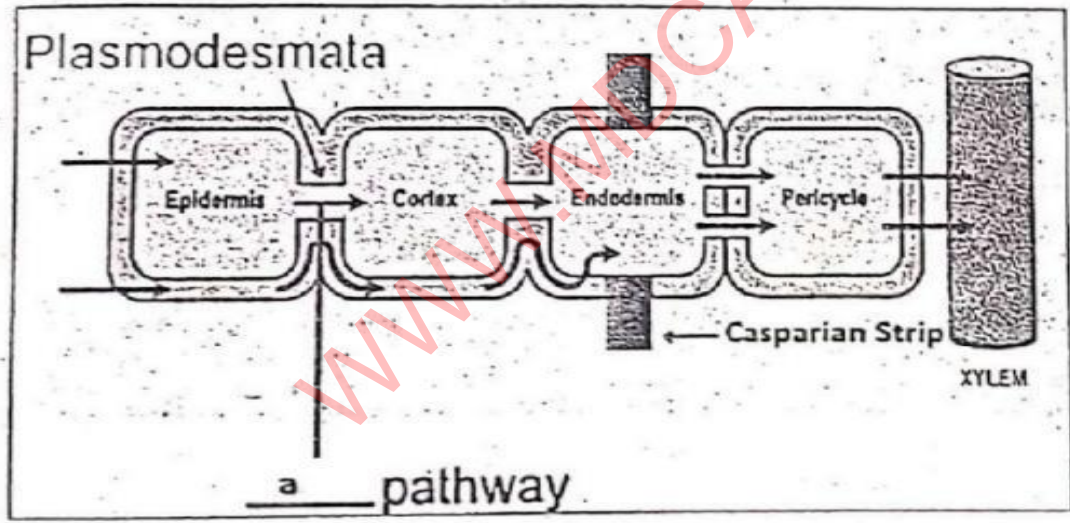
135. Interphase is a phase of the cell cycle defined only by the absence of _____.

- A. Enzymes
- B. DNA
- C. Replication
- D. Cell division

136. Juxta-medullary nephrons are present only in:

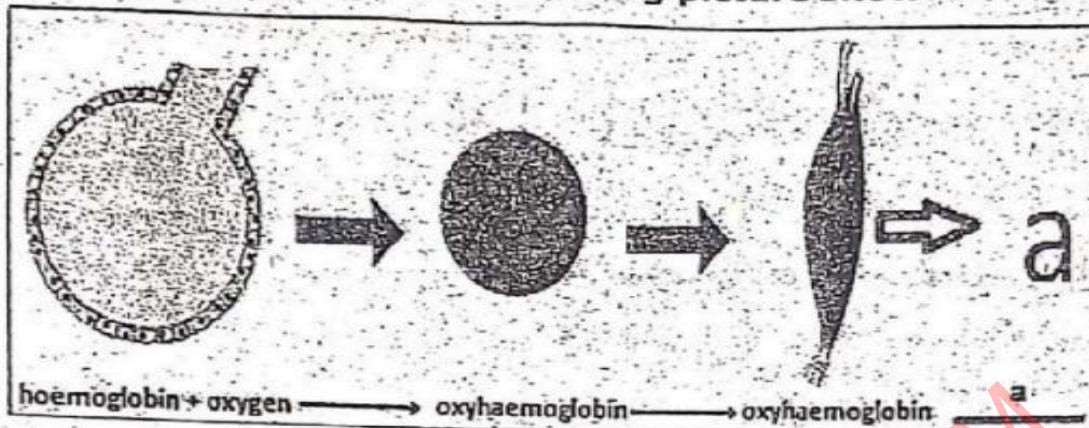
- A. Fishes and amphibians
- B. Amphibians and birds
- C. Birds and mammals
- D. Mammals and fishes

137. What does 'a' in the following picture show?



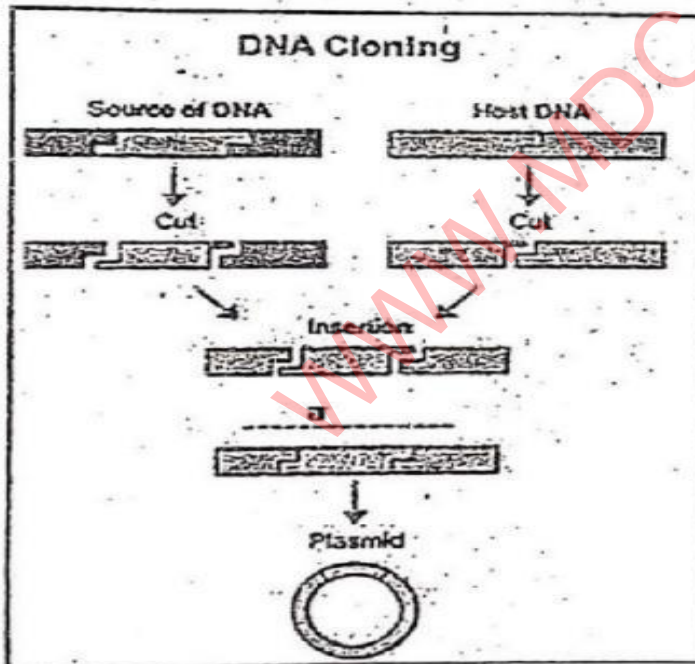
- A. Cellular pathway
- B. Symplast pathway
- C. Apoplast pathway
- D. Water pathway

138. What does 'a' in the following picture show?



- A. Dissociation of oxyhaemoglobin
- B. Reassociation of oxyhaemoglobin
- C. Recombination of oxyhaemoglobin
- D. Breakdown of haemoglobin

139. What is Molecule "a" in the following picture?

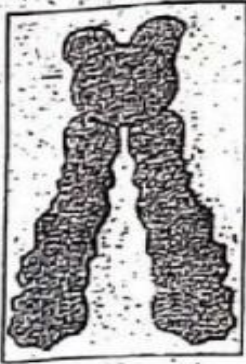


- A. Host cell
- B. Donor cell
- C. Restriction enzyme
- D. Recombinant DNA

140. A group of immune cells that mediates the cellular immune response by processing and presenting antigens for recognition by certain other cells of immune system is called _____.

- A. Natural killer cells
- B. Interferons
- C. Antigen-presenting cells
- D. Vaccines

141. Name the type of the following chromosome.



- A. Metacentric
- B. Sub metacentric
- C. Telocentric
- D. Acrocentric

142. The complete aerobic oxidation of glucose results in the synthesis of as many as _____ molecules of ATP.

- A. 16
- B. 26
- C. 36
- D. 46

143. Primary function of fats in aquatic mammals is _____ and in terrestrial mammals is _____.

- A. to reserve water, to reserve salts
- B. to reserve salts, to reserve water
- C. to reserve food, conserving heat
- D. conserving heat, to reserve food

144. Crossing over is an exchange of genes between _____ resulting in a mixture of parental characteristics in offspring.

- A. Sister Chromatids
- B. Non homologous Chromosomes
- C. Sex chromosomes
- D. Homologous chromosomes

145. All of the following are reflex actions EXCEPT:

- A. Change in the size of the pupil in response to light
- B. Swallowing of bolus
- C. Sudden jerky withdrawal of hand when pricked
- D. Knees jerk in response to a blow

146. What is q in Hardy Weinberg equilibrium?

- A. Frequency of the dominant allele
- B. Frequency of the recessive allele
- C. Frequency of both alleles
- D. Number of both alleles

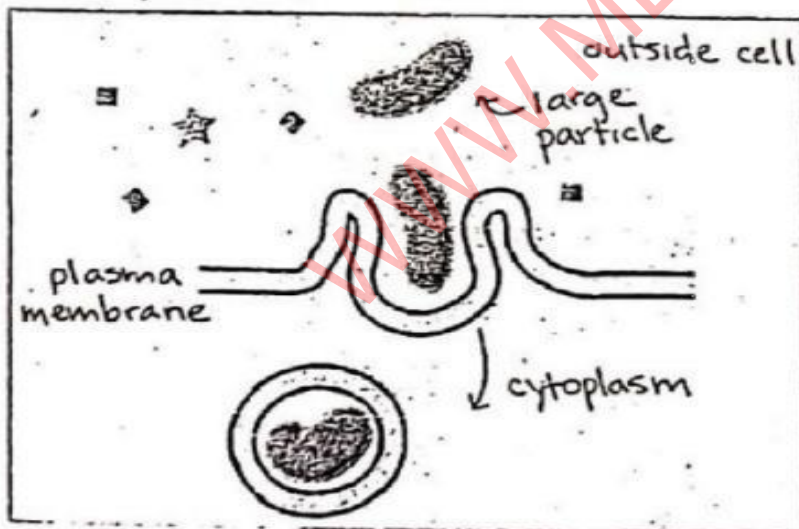
147. Genome of viruses is composed of _____.

- A. DNA
- B. RNA
- C. Protein
- D. Both A and B

148. Carbon dioxide fixation can be enhanced by enhancing the efficiency of:

- A. Auxins
- B. Ribulose biphosphate
- C. Lactoferin
- D. Agrobacterium

149. Label the following phenomenon.



- A. Exocytosis
- B. Osmosis
- C. Diffusion
- D. Phagocytosis

150. There is a small population of beetles on a grass in which some are green and some are brown in color. A group of students is passing from that place and walks on them. By chance, green color beetles are pressed under their feet resulting in:

- A. The balance of the genetic equilibrium of that population
- B. No affect to the genetic equilibrium of that population
- C. Change in the genetic equilibrium of that population
- D. Genetic equilibrium doesn't apply in that population

151. Which of the following is NOT true for a gene?

- A. A gene is a sequence of nucleotides in DNA
- B. A gene is the basic unit of heredity
- C. A gene codes for a molecule that has a function
- D. A gene expresses to form chromosomes

152. Function of respiratory passage, Cilia is to keep the airways clear of:

- A. Carbon dioxide
- B. Oxygen
- C. Dust
- D. Carbon mono oxide

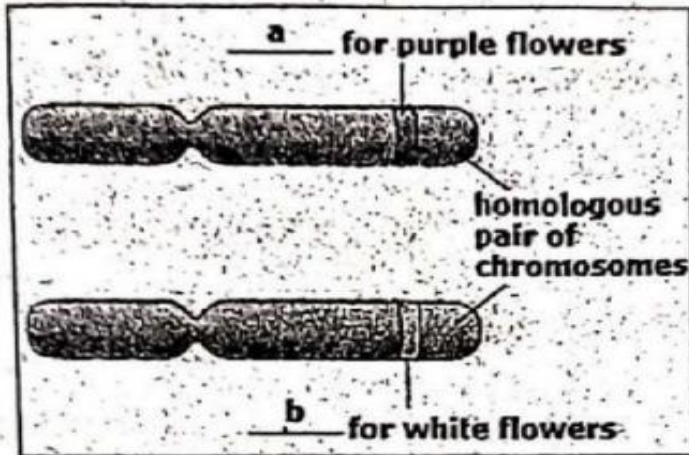
153. _____ is the storage form of carbohydrates in animals and humans which is equivalent to the _____ in plants.

- A. Glycogen, cellulose
- B. Starch, cellulose
- C. Glycogen, starch
- D. Starch, glycogen

154. As an essential element in living organisms, _____ ion is playing important role in insulin secretion, release of neurotransmitters, muscles contraction and heartbeat regulation.

- A. Sodium
- B. Potassium
- C. Calcium
- D. Chloride

155. What are a and b in the following picture?



- A. Allele and allele
- B. Allele and gene
- C. Gene and gene
- D. Mutation and gene

156. Arrange the following according to the level of protein structures:

- a lysozyme
- b haemoglobin
- c insulin
- d hairs

- A. c, d, a, b
- B. a, b, c, d
- C. d, c, b, a
- D. a, d, c, b

157. In egg, Ca^{+2} plays important role especially at the time of fertilization. Therefore, _____ are present in many thousand numbers inside the cell membrane.

- A. Ribosomes
- B. Chloroplast
- C. Mitochondria
- D. Endoplasmic Reticulum

158. Genetic equilibrium is a:

- A. Change of allele and gene frequency in a population
- B. Stability of allele and gene quantity in a population
- C. Change of allele and gene number in a population
- D. Stability of allele and gene frequency in a population

159. Choose the term from the following which is NOT a part of gene therapy?

- A. Bone marrow transplant
- B. Retrovirus
- C. DNA Fingerprinting
- D. Somatic cells

160. Synapse formed at the sites where the terminal branches of the axon of a motor neuron contact a target muscle cell is called:

- A. Sensory end plate
- B. Synapse end plate
- C. Motor end plate
- D. Post synaptic membrane

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PHYSICS

161. In Compton Scattering experiment the X-ray wavelength change $\Delta\lambda$ is _____. Here h is Plank constant, m_0 is rest mass of electron and θ is angle after scattering.

A. $\Delta\lambda = \frac{h}{m_0 c} (1 + \cos \theta)$

B. $\Delta\lambda = \frac{h}{m_0 c} (1 - \cos^2 \theta)$

C. $\Delta\lambda = \frac{h}{m_0 c} (1 - \cos \theta)$

D. $\Delta\lambda = \frac{h}{m_0 c^2} (1 - \cos \theta)$

162. An object is falling down with a speed of 20 m/s. After 3 seconds its velocity will be _____ m/s ($g = 10 \text{ m/s}^2$).

A. 05

B. 50

C. 55

D. 95

163. In Young's double slit experiment, if d is separation between two slits λ is wavelength of light and θ is angle of line from center of slits to the point of observation on the screen; then for maxima (bright fringe); the formula is _____.

A. $2d \sin \theta = m \lambda ; m = 0, 1, 2, \dots$

B. $d \sin \theta = m \lambda ; m = 0, 1, 2, \dots$

C. $d \sin \theta = (m + 1/2) \lambda ; m = 0, 1, 2, \dots$

D. $2m \sin \theta = d \lambda ; m = 0, 1, 2, \dots$

164. The polarization of light by tourmaline crystals is due to _____ effect.

A. selective diffraction

B. selective reflection

C. selective interference

D. selective absorption

CHAPTER NO 9

CHAPTER NO 9

165. A paratrooper is falling down with uniform velocity and also rotating with a constant angular velocity of 0.2 rad/sec. The body satisfies _____.
- A. First condition of equilibrium but not second
 - B. Second condition of equilibrium but not first
 - C. First and second condition of equilibrium
 - D. Neither First nor the second condition of equilibrium
166. If U_{92}^{235} decays by emitting two α one β and two γ -rays the new daughter element y is = _____.
- A. y_{88}^{227}
 - B. y_{89}^{227}
 - C. y_{90}^{227}
 - D. y_{89}^{231}
167. A changing current in a coil sets up a changing magnetic field around it which in turn induces an e.m.f. in it. This effect is known as _____.
- A. Simple induction
 - B. Mutual induction
 - C. Self-induction
 - D. EMF induction
168. The principle of an AC generator is _____.
- A. Lenz's law
 - B. Faraday's law
 - C. Self-induction
 - D. Ampere's law
169. A material that does NOT become radioactive after absorbing neutrons is called _____.
- A. Shielding
 - B. Reactor fuel
 - C. Control material
 - D. Coolant

170. The Bragg's Law for measurement of wave length λ of x-rays, using crystal lattice planes having distance d between each other, for constructive interference for integral multiple of λ is

- A. $m\lambda = 2d / \sin\theta$
- B. $2\lambda = md \sin\theta$
- C. $m\lambda = 2d \sin\theta$
- D. $d\lambda = 2m \sin\theta$

171. The velocity of particle is related to time according to equation $v = ct^3$. The dimensions of constant c are _____.

- A. $L^{-1}T^{-1}$
- B. LT^{-3}
- C. LT^{-4}
- D. $L^{-2}T^{-2}$

CHAPTER NO 1

172. What should the distance of an object from a convex lens of focal length $f=10$ cm in order to produce an erect image twice as large as the object?

- A. 20 cm from the lens
- B. 15 cm from the lens
- C. 10 cm from the lens
- D. 05 cm from the lens

173. The scalar or Dot product of Vectors $(3i - 2j + 4k)$ and $(2i + 2j - 3k)$ is _____.

- A. -9
- B. -10
- C. -11
- D. 10

CHAPTER NO 2

174. The sum of Kinetic Energy and the Potential Energy is always constant provided _____ motion.

- A. there is greater force of friction involved during
- B. body is in simple harmonic
- C. there is less force of friction involved during
- D. no force of friction involved during

175. Three times decrease in the distance between the plates of a parallel plate capacitor will _____.

- A. decrease the capacitance three times
- B. decrease the capacitance nine times
- C. increase the capacitance three times
- D. increase the capacitance six times

176. A car of mass 1200 Kg initially at rest has been accelerated to speed of 8 m/s in 16 meters. Average acceleration of car is _____ m/s² and Force is _____ N.

- A. 1.5 and 1500
- B. 2.5 and 2400
- C. 3.5 and 3500
- D. 2 and 2400

177. In SI system of units, the fundamental units of length, mass, and time are _____, _____ and _____ respectively.

- A. Meter, Kilogram and Kilo-second
- B. Kilometer, Kilogram and Hour
- C. Meter, Kilogram and Second
- D. Centimeter, Centigram and Second

CHAPTER NO 1

178. In Nuclear Physics the mass defect is referred to _____.

- A. difference in masses of free neutron and proton
- B. difference in masses of free neutrons and bonded nucleus
- C. difference in masses of free nuclear constituent and bonded nucleus
- D. difference between atomic mass and atomic number

179. The formula for Paschen series for Hydrogen spectrum is _____.

A. $\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} - \frac{1}{n^2} \right); n = 3, 4, 5, \dots$

B. $\frac{1}{\lambda} = R_H \left(\frac{1}{1^2} - \frac{1}{n^2} \right); n = 2, 3, 4, 5, \dots$

C. $\frac{1}{\lambda} = R_H \left(\frac{1}{4^2} - \frac{1}{n^2} \right); n = 5, 6, 7, \dots$

D. $\frac{1}{\lambda} = R_H \left(\frac{1}{3^2} - \frac{1}{n^2} \right); n = 4, 5, 6, \dots$

180. The necessary condition for the Boyle's law to hold is that the process must be _____.

- A. Isobaric
- B. Adiabatic
- C. Isochoric
- D. Isothermal

181. In inelastic collision the kinetic energy before and after the collision _____ but the momentum of the system before and after the collision is _____.

- A. Conserved ... conserved
- B. Changes ... conserved
- C. Changes ... changes
- D. Conserved ... changes

182. Which statement describes the electric potential difference between two points in electric field of charge Q ?

- A. The difference of electric field between the points per unit charge.
- B. The ratio of the power dissipated between the points to the mass of charge.
- C. The work done in moving a test charge between points divided by magnitude of test charge.
- D. The force required to move a unit positive charge between the points per unit charge.

183. When an object is thrown upward, it rises to height h . How high is the object in terms of h , when it has lost $1/3$ of its original kinetic energy?

- A. $h/2$
- B. $h/3$
- C. $h/4$
- D. $h/6$

184. The internal energy of the system decreases in an adiabatic process. Which of the following must be true regarding this process?

- A. Heat flows out of the system
- B. Work is done by the system
- C. Work is done on the system
- D. The potential energy of the system is changing

185. If μ_o is permeability of the medium and ϵ_o is permittivity of the

medium then value of $\sqrt{\frac{1}{\mu_o \epsilon_o}}$ is equal to _____.

- A. Planks constant
- B. Speed of sound waves
- C. Speed of ultrasound waves
- D. Speed of light

186. In a step up transformer _____.

- A. $V_s > V_p$ while $I_s > I_p$
- B. $V_s < V_p$ while $I_s > I_p$
- C. $V_s = V_p$ while $I_s > I_p$
- D. $V_s > V_p$ while $I_s < I_p$

187. If compressible medium has bulk modulus denoted by B and density denoted by ρ , then the Newton formula for speed of sound in medium is _____.

- A. $v = \sqrt{B / \rho}$
- B. $v = \sqrt{B\rho}$
- C. $v = B / \rho$
- D. $v = \sqrt{\rho / B}$

188. In order to produce pair production the minimum energy of photon required is _____.

- A. 1.02 KeV
- B. 1.02 MeV
- C. 10.2 KeV
- D. 1.00 MeV

189. The Bohr's postulate for stationary orbits of Hydrogen atom is _____. Here m is mass of electron, v velocity, r orbital radius and h is Plank's constant.

A. $mr = \frac{nhv}{2\pi}$

B. $mvr = \frac{nh}{2\pi}$

C. $mvr = \frac{nh}{2\pi r}$

D. $mv = \frac{nhv}{2\pi}$

190. A car starts from rest and moves with constant acceleration. During 4th second of its motion it covers a distance of 21 meters. The acceleration of the car is _____ ms^{-2} .

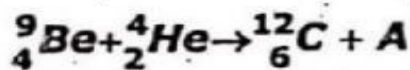
A. 04

B. 06

C. 08

D. 16

191. Which particle (marked A) is obtained in following nuclear reaction?



A. $\text{A} \equiv {}^1_1\text{H}$

B. $\text{A} \equiv {}^1_0\text{n}$

C. $\text{A} \equiv {}^2_1\text{H}$

D. $\text{A} \equiv {}^2_2\text{He}$

192. An electron is moving with velocity v has momentum $3 \times 10^{-26} \text{ Kg.m / s}$. The de Broglie wavelength associated with it is _____.

Value of $h = 6.63 \times 10^{-34} \text{ Js}$.

- A. 24.1nm
- B. $22.1 \mu\text{m}$
- C. 22.1nm
- D. 22.1mm

193. The Laplace's correction to Newton's formula is based on the fact that the compressions and rarefactions occur as _____.

- A. Adiabatic process
- B. Isothermal process
- C. Isochoric process
- D. Isobaric process

194. A car 500 Kg is travelling at a constant speed of 9 m/s rounds a curve of 100 m. What is the centripetal force?

- A. 205 N
- B. 305 N
- C. 405 N
- D. 505 N

195. When a train while whistling passes near you, a considerable change in the pitch of sound is heard. When the train is moving away, the pitch of the sound _____ whereas the pitch of the sound _____ when the train is approaching.

- A. increases ... decreases
- B. increases ... remains same
- C. decreases ... increases
- D. decreases ... remains same

196. The vector product of two vectors A and B is _____ vectors A and B.

- A. equal to product of magnitudes of
- B. in the plane parallel to
- C. perpendicular to plane containing
- D. less in magnitude than product of magnitudes of

197. If a conductor carrying current I is placed in uniform magnetic field B , it experiences a magnetic force F . The direction of this force F _____.

- A. Is parallel to current I only
- B. Is perpendicular to current I only
- C. Is perpendicular to magnetic field B only
- D. Is perpendicular to both current I and magnetic field B

198. A battery of 12 volts is connected to three resistors of 4 Ohm, 5 Ohm and 3 Ohm joined together in parallel. The current through the 3 Ohm resistance is _____.

- A. 1.0 A
- B. 2.5 A
- C. 3.0 A
- D. 4.0 A

199. If time interval between occurrence of two events is measured in a frame with no relative motion in which two events occur. Then the time t measured by observer in a frame moving with relative velocity v is _____.

A.
$$t = \frac{t_o}{\sqrt{1 - \frac{v}{c}}}$$

B.
$$t = \frac{t_o}{\sqrt{1 - \frac{v^2}{c^2}}}$$

C.
$$t = \frac{t_o}{\sqrt{1 + \frac{v^2}{c^2}}}$$

D.
$$t = \frac{t_o}{\sqrt{\frac{v^2}{c^2} - 1}}$$

200. A traveling wave, in which the particles of the distributed medium move parallel to the direction of propagation of the wave is called:

- A. Transverse Wave
- B. Circular Waves
- C. Longitudinal Wave
- D. Stationary Waves

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Question No	Correct Choice	Question No	Correct Choice
Q 1	D	Q 101	B
Q 2	A	Q 102	D
Q 3	B	Q 103	C
Q 4	D	Q 104	B
Q 5	B	Q 105	C
Q 6	D	Q 106	B
Q 7	B	Q 107	B
Q 8	D	Q 108	C
Q 9	C	Q 109	C
Q 10	B	Q 110	D
Q 11	D	Q 111	C
Q 12	A	Q 112	D
Q 13	D	Q 113	C
Q 14	A	Q 114	D
Q 15	C	Q 115	A
Q 16	D	Q 116	D
Q 17	D	Q 117	B
Q 18	C	Q 118	C
Q 19	A	Q 119	D
Q 20	C	Q 120	C
Q 21	D	Q 121	A
Q 22	B	Q 122	B
Q 23	B	Q 123	C
Q 24	C	Q 124	A
Q 25	C	Q 125	D
Q 26	C	Q 126	C
Q 27	B	Q 127	B
Q 28	C	Q 128	B
Q 29	B	Q 129	B
Q 30	B	Q 130	C
Q 31	D	Q 131	B
Q 32	C	Q 132	B



Q 33	C	Q 133	D
Q 34	A	Q 134	D
Q 35	C	Q 135	D
Q 36	B	Q 136	C
Q 37	C	Q 137	B
Q 38	D	Q 138	A
Q 39	D	Q 139	D
Q 40	C	Q 140	C
Q 41	C	Q 141	D
Q 42	C	Q 142	C
Q 43	C	Q 143	D
Q 44	A	Q 144	D
Q 45	B	Q 145	B
Q 46	B	Q 146	B
Q 47	C	Q 147	D
Q 48	B	Q 148	B
Q 49	A	Q 149	D
Q 50	B	Q 150	C
Q 51	B	Q 151	D
Q 52	C	Q 152	C
Q 53	B	Q 153	C
Q 54	B	Q 154	C
Q 55	D	Q 155	A
Q 56	C	Q 156	A
Q 57	A	Q 157	D
Q 58	A	Q 158	D
Q 59	B	Q 159	C
Q 60	C	Q 160	C
Q 61	A	Q 161	C
Q 62	C	Q 162	B
Q 63	B	Q 163	B
Q 64	C	Q 164	D
Q 65	D	Q 165	C
Q 66	C	Q 166	B



Q 67	C	Q 167	C
Q 68	A	Q 168	B
Q 69	D	Q 169	C
Q 70	D	Q 170	C
Q 71	C	Q 171	C
Q 72	A	Q 172	D
Q 73	B	Q 173	B
Q 74	D	Q 174	B
Q 75	D	Q 175	C
Q 76	A	Q 176	D
Q 77		Q 177	C
Q 78	C	Q 178	C
Q 79	C	Q 179	D
Q 80	D	Q 180	D
Q 81	B	Q 181	B
Q 82	C	Q 182	C
Q 83	A	Q 183	B
Q 84	D	Q 184	B
Q 85	C	Q 185	D
Q 86	C	Q 186	D
Q 87	B	Q 187	A
Q 88	C	Q 188	B
Q 89	D	Q 189	B
Q 90	D	Q 190	B
Q 91	B	Q 191	B
Q 92	D	Q 192	C
Q 93	D	Q 193	A
Q 94	D	Q 194	C
Q 95	D	Q 195	C
Q 96	A	Q 196	C
Q 97	B	Q 197	D
Q 98	B	Q 198	D
Q 99	C	Q 199	B
Q 100	B	Q 200	C

