MDCAT PAST PAPER

SINDH MDCAT

ORIGINAL PAPER 2014

(DMC & SMC)

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APP NAME **Education in Karachi**

ENGLISH

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

1. DISTRESS:

   A. suffering
   B. lash out
   C. noisy
   D. upset
   E. happiness

2. SWIFT:

   A. slow
   B. fast
   C. brief
   D. at once
   E. harden

Read the passage to answer questions 3-4

What is life? A little scum of no importance on the surface of an unimportant globe circling round a second-rate star? An accidental conglomeration of atoms which have come together by an odd chance, the result of an exceedingly improbable happening? That is what some astronomers would have us think. Looking out into the depth of space, they have discovered a universe of unthinkable dimensions. A billion suns in our own galaxy, beyond it perhaps a billion galaxies, only revealed to us as tiny smudges on a photographic plate. No wonder they are impressed by the enormous disparity between the scaffolding and the result. Life seemed to be, as Jeans said, 'an utterly unimportant by-product' in 'a universe which was clearly not designed for life, and which, to all appearances, is either totally indifferent or definitely hostile to it'. It seemed 'incredible that the universe can have been designed primarily to produce life like our own; had it been so, surely we might have expected to find a better proportion between the magnitude of the mechanism and the amount of the product'

3. The title of the passage can be:

   A. Gathering of atoms
   B. The life outside the earth
   C. Universe and its unneeded vastness
   D. Life versus Universe
   E. Need to exploring more galaxies

4. According to author if universe have been designed primarily to produce life like our own then:

A. there would have been a smaller proportion for us
B. there would have been a better proportion for us
C. there would have been more luxuries in the universe
D. there would have be many galaxies containing many creatures
E. there would have been many new stars and earths

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

5. The tree must _____ planted over fifty years ago.

A. been
B. be been
C. would been
D. have been
E. have had

6. It is quite _____ for poor people to be happier than rich people.

A. possible
B. risky
C. potential
D. liable
E. different

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

7. The (A) office is so busy (B) that two extra (C) clerks have had (D) to be taken on.
No error (E)

8. Mr. (A) Ahmed is to (B) old to work now (C); he depends (D) upon his son.
No error (E)

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

9. MEDITATIVE:

A. selfish
B. thoughtful
C. heedless
D. opinion
E. ordinary

10. AMAZEMENT:

A. surprise
B. appreciation
C. criticism
D. praise
E. objection

11. A circuit in which there is a current of 5 amp is changed so that the current falls to zero in 0.1 s. If an average e.m.f of 200 volts is induced. What is the self inductance of the circuit?

A. 4 henrys
B. 8 henrys
C. 12 henrys
D. 16 henrys
E. 20 henrys

12. The phenomena in which certain metals emit electrons when exposed to high frequency light is known as:

A. Photoelectric Effect
B. Compton's Effect
C. Henry's Effect
D. Principle of Relativity
E. Coulomb's Law

13. A galvanometer has a resistance of 20 ohms and a full scale deflection when a current of 0.001 ampere flows in it. What is the value of the series resistance to convert it into a voltmeter of range 10 volts?

A. 7780 ohms
B. 9980 ohms
C. 5580 ohms
D. 4480 ohms
E. 3380 ohms

14. Sodium nucleus consists of 11 protons and 12 neutrons. The conventional symbol of this nucleus is:

A. ${}_{11}Na^{11}$
B. ${}_{12}Na^{12}$
C. ${}_{11}Na^{23}$
D. ${}_{23}Na^{23}$
E. ${}_{12}Na^{11}$

15. The atomic spectra deals with the measurement of:

A. Wave lengths
B. Intensities of electromagnetic radiations emitted by atoms
C. Intensities of electromagnetic radiations absorbed by atoms
D. All of the above
E. Both B and C

16. The detection and estimation of an element in a mixture is sometimes nearly impossible, if it is present in very minute traces or if it's chemical properties are very similar to those of other elements in the mixture. An effective technique is developed for these purposes is known as:

A. Simple Analysis
B. Spectral Analysis
C. Activation Analysis
D. Geometric Analysis
E. Mechanical Analysis

17. How much energy is dissipated as heat in 20 s by a 100 Ω resistor that carries a current of 0.5 A?

A. 50 J
B. 100 J
C. 250 J
D. 500 J
E. 1, 000 J

18. A sphere of charge +Q is fixed in a position. A smaller sphere of charge +q is placed near the larger sphere and released from rest. The small sphere will move away from the large sphere with:

A. Decreasing velocity and decreasing acceleration
B. Decreasing velocity and increasing acceleration
C. Decreasing velocity and constant acceleration
D. Increasing velocity and decreasing acceleration
E. Increasing velocity and increasing acceleration

19. A 10 nano farad (10×10^{-9} F) parallel plate capacitor holds a charge of magnitude 50 μC on each plate. If the plates are separated by a distance of 0.885 mm, what is the area of each plate?

A. 1.0 m^2
B. 3.0 m^2
C. 5.5 m^2
D. 7.5 m^2
E. 9.5 m^2

20. Kelvin, the unit of thermodynamic temperature is _____ of the thermodynamic temperature of the triple point of water.

A. $\frac{1}{100}$

B. $\frac{1}{212}$

C. $\frac{1}{273.16}$

D. $\frac{1}{32}$

E. $\frac{1}{98}$

21. The scalar product of $(2i - j + 3k) \cdot (3i + 2j - k)$ is:

A. 1
B. 2
C. 10
D. 20
E. 25

22. A rock is thrown straight upward from the edge of a 30 m cliff, rising 10 m then falling all the way down to the base of the cliff. Find the rock's displacement.

A. 20 meters downward
B. 30 meters downward
C. 40 meters upward
D. 50 meters upward
E. 60 meters upward

23. A stone dropped from a certain height can reach the ground in 5 s. It is stopped after 3 seconds of its fall and then allowed to fall again. Find the time taken by the stone to reach the ground for the remaining distance.

A. 2 s
B. 4 s
C. 6 s
D. 8 s
E. 10 s

24. A moon of mass 'm' orbits a planet of mass 100 m. Let the strength of the gravitational force exerted by the planet on the moon be denoted by F_1, and let the strength of the gravitational force exerted by the moon on the planet be F_2. Which of the following is true?

A. F_1 is ten times greater than F_2
B. F_1 is ten times smaller than F_2
C. F_2 is ten times greater than F_1
D. F_2 is ten times smaller than F_1
E. F_1 is equal to F_2

25. Which one of the following statements is true concerning the motion of an ideal projectile launched at an angle of 45° to the horizontal?

A. The acceleration vector points opposite to the velocity vector on the way up and in the same direction as the velocity vector on the way down.
B. The speed at the top of the trajectory is zero.
C. The object's total speed remains constant during the entire flight.
D. The horizontal speed decreases on the way up and also decreases on the way down.
E. The vertical speed decreases on the way up and increases on the way down.

26. A football, at rest on the ground, is kicked with an initial velocity of 10 m/s at a launch angle of 30°. Calculate its total flight time, assuming that air resistance is negligible.

A. 0.5 s
B. 1 s
C. 1.7 s
D. 2 s
E. 4 s

27. If the diameter of the earth becomes two times its present value and its mass remains unchanged, then how would the weight of an object on the surface of the earth be affected?

A. Becomes double
B. Becomes one fourth
C. Becomes one third
D. Remains same
E. Becomes half

28. A body having translatory motion possesses _____ and _____. In the same way, a body having rotatory motion possesses _____ and _____.

A. Angular velocity ... linear velocity ... angular momentum ... linear momentum
B. Linear velocity ... linear momentum ... angular velocity ... angular momentum
C. Angular momentum ... angular velocity ... linear momentum ... linear velocity
D. Linear momentum ... angular velocity ... angular momentum ... linear velocity
E. Linear momentum ... angular momentum ... linear velocity ... angular velocity

29. When a body moves in the direction of gravitational force i.e. towards the earth, the work is done by the force of gravity on the body and is _____, whereas when the body moves against the direction of gravitational force, the corresponding work done is _____.

A. negative ... positive
B. positive ... negative
C. positive ... positive
D. negative ... negative
E. insufficient information

30. A man pushes a box, initially at rest towards another man by exerting a constant horizontal force $\vec{F}$ of magnitude 5N through a distance of 1m. Its final kinetic energy is:

A. 5 J
B. 10 J
C. 15 J
D. 20 J
E. 25 J

31. A sound wave with a frequency of 343 Hz travels through the air. What is its wavelength? (speed of sound through air = 343 m/s)

A. 1 m
B. 2 m
C. 3 m
D. 4 m
E. 5 m

32. When a force acts at right angles to the displacement $(\theta = 90^{\circ})$ the work is zero i.e., the force does not produce work. Identify the example/s from the following when work is zero.

I. it is considered "hard work" to hold a heavy stone stationary at stretched hand
II. a person walks along a level surface while carrying a box
III. when a body moves in circular path

A. I only
B. II only
C. III only
D. II and III only
E. I, II, III

33. A neutron travels a distance of 12 m in a time interval of 3.6×10^{-4} s. Assuming its speed was constant, its kinetic energy is: (take 1.7×10^{-27} kg as the mass of neutron)

A. 3.1 eV
B. 4.7 eV
C. 5.78 eV
D. 6.91 eV
E. 7.81 eV

34. A student is performing a lab experiment on simple harmonic motion. He has two different springs (with force constants k_1 and k_2) and two different blocks (of masses m_1 and m_2). If $k_1 = 2k_2$ and $m_1 = 2m_2$, which of the following combinations would give the student the spring-block simple harmonic oscillator with the shortest period?

A. The spring with force constant k_1 and the block of mass m_1
B. The spring with force constant k_1 and the block of mass m_2
C. The spring with force constant k_2 and the block of mass m_1
D. The spring with force constant k_2 and the block of mass m_2
E. All the combinations above would give the same period.

35. A microscope has an objective of 10 mm focal length and eye piece of 25 mm focal length. What is the distance between the lenses, if the object is in sharp focus when it is 10.5 mm from the objective?

A. 115 mm
B. 232.7 mm
C. 417 mm
D. 716 mm
E. 617 mm

36. Light can be polarized by which of the following method/s?

I. scattering of light
II. double refraction
III. reflection

A. I only
B. II only
C. III only
D. I and III only
E. I, II and III

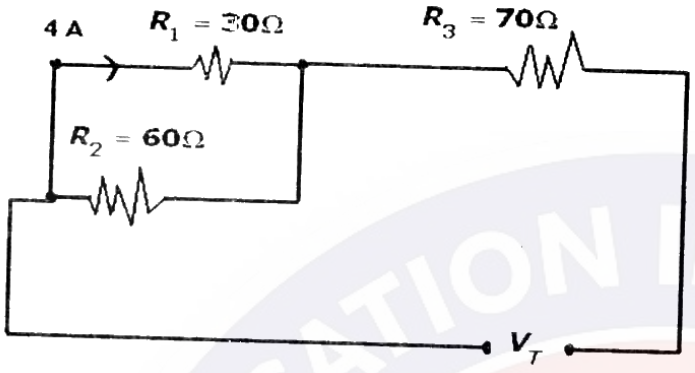
37. A steel rod has a length of 15 m at a temperature of 30°C. If the temperature is raised to 45°C. The increase in its length is: $\left(\alpha = 1.1 \times 10^{-5} K^{-1}\right)$

A. $537.1 \times 10^{-5} m$
B. $447.5 \times 10^{-5} m$
C. $327.5 \times 10^{-5} m$
D. $247.5 \times 10^{-5} m$
E. $127.5 \times 10^{-5} m$

38. The volume occupied by a gram mole of a gas at 0°C and a pressure of 1 atmosphere is:

A. 1×10^{3} liters
B. 3×10^{3} liters
C. 5×10^{3} liters
D. 7×10^{3} liters
E. 9×10^{3} liters

39. In the circuit shown below, 4 amperes is the current through R_1. The potential difference across R_1 in volts is:



A. 7.5
B. 30
C. 60
D. 120
E. 160

40. Germanium and silicon are semiconductors having crystalline structures. Both these materials have _____ valence electrons in their outer most shells.

A. 2
B. 4
C. 6
D. 8
E. 10

41. An SN^2 reaction at an asymmetric carbon of a compound always gives:

A. An metamerism of the substrate
B. A product with opposite optical rotation
C. A mixture of diastereomers
D. A single stereoisomer
E. The same product

42. In the reaction, $R-C\equiv C-R \xrightarrow{?}$ the reagent used to convert alkyne into trans alkene is:

A. Ni
B. Lindlar catalyst
C. B_2H_6 / CH_3COOH
D. Li / NH_3
E. C_6H_6

43. Ethanol, when reacted with PCl_5 gave A, $POCl_3$ and HCl. A reacts with $AgNO_2$ to form B and AgCl. A and B are respectively:

A. C_2H_5Cl and $C_2H_5OC_2H_5$
B. C_2H_6 and $C_2H_5OC_2H_5$
C. C_2H_5Cl and $C_2H_5NO_2$
D. C_2H_6 and $C_2H_5NO_2$
E. C_2H_6 and C_2H_6NO

44. The false statement regarding saline hydrides is:

A. They are formed from hydrogen and most electropositive element
B. They are used as reducing agents
C. They give H_2 from H_2O
D. They are ionic in nature
E. They are covalent in nature

45. Which of the following compounds is formed when sodium burns in excess of air?

A. Na_2O
B. Na_2O_3
C. Na_2O_2
D. NaO_2

46. H_2SO_4 has great affinity for water because:

A. It decomposes the acid
B. It hydrolyses the acid
C. Acid decomposes water
D. Acid forms hydrates with water

47. Which of the following is not an interstitial compound?

A. Cu-Zn
B. Cu-Zn-Sn
C. $TiH_{1.73}$
D. V_2O_5

48. Monosaccharides contain _____ carbon atoms.

A. 2-3
B. 3-10
C. 5-20
D. 20-25
E. Only 5

49. Zinc reacts with dil. H_2SO_4 to give H_2. It also reacts with conc. H_2SO_4 to form SO_2. In these reactions

A. Zn reduces H^+ to H_2
B. Zn oxidizes H^+ to H_2
C. Zn reduces SO_4^{2-} to SO_2
D. Zn oxidizes SO_4^{2-} to SO_2
E. Both A and C

50.The reaction: $Cl_2 + H_2O \rightarrow HCl + HOCl$ is an example of:

A. Oxidation reaction
B. Reduction reaction
C. Auto-oxidation and reduction reaction
D. Substitution reaction
E. Addition reaction

51.Variable oxidation states of transition element compounds is due to:

A. 4s orbital
B. Small energy difference between 3s and 4s orbital
C. Large energy difference between 3s and 4s orbital
D. Electrons of only 3d orbital take part in bond formation
E. Electrons of only 4s orbital take part in bond formation

52.Glass is a/an:

A. Pure solid
B. Super cooled liquid
C. Mixture of sodium and calcium
D. Crystalline form of Na_2CO_3
E. Alloy

53.Which of the following is/are correct about Ascorbic acid?

A. Soluble in water
B. Easily destroyed by oxidation
C. Its deficiency causes anemia
D. It helps in healing the wounds
E. All of the above

54.Catalyst used in reaction $CHCl_3 + \frac{1}{2}O_2 \rightarrow COCl_2 + HCl$ is _____ and its nature is _____.

A. 5% methyl alchol ... Negative
B. 2% Ethyl alchol ... Negative
C. V_2O_5 ... Positive
D. AL_2O_3 ... Negative

55. If products of a reaction act as catalyst, such process is called:

A. Positive catalyst
B. Negative catalyst
C. Auto catalyst
D. Both A and B

56. In the following reaction:

$$3Br_2 + 6CO_3^{-2} + 3H_2O \rightarrow 5Br^{-1} + BrO_3^{-1} + 6HCO_3^{-1}$$

A. bromine is reduced and water is oxidized
B. bromine is both reduced and oxidized
C. bromine is oxidized and carbonate is reduced
D. bromine is neither reduced nor oxidized

57. The lower part of the "solvay tower" has been cooled during the manufacture of soda ash because:

A. this facilitates the production of soda ash
B. it decreases the solubility of Na_2CO_3
C. this controls the flow of brine
D. it decreases the solubility of $NaHCO_3$

58. Which of the following elements has highest boiling point?

A. Li
B. Mg
C. Sr
D. Be
E. Ba

59. When the following reaction is balanced, what is the net ionic charge on the right side of the equation?

$$\ldots H^+ \ldots MnO_4^- + \ldots Fe^{2+} \rightarrow \ldots Mn^{2+} + \ldots Fe^{3+} + \ldots H_2O$$

A. +5
B. +7
C. +10
D. +17
E. The net ionic charge on either side must be zero.

60. In which of the following gaseous equilibrium, more yield of the product is formed by decreasing pressure?

A. $N_2 + O_2 \rightleftharpoons 2NO$
B. $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
C. $2NO_2 \rightleftharpoons N_2O_4$
D. $2NH_3 \rightleftharpoons N_2 + 3H_2$

61. Which of the following statements is NOT true for the first law of thermodynamics?

A. total energy of the system and surrounding is conserved
B. energy can neither be created nor destroyed
C. it is the same as law of conservation of energy
D. total energy of the system is increasing

62. Nitrogen and phosphorus have 3 of their valence electrons unpaired because of:

A. Auf bau principle
B. Heisenberg's principle
C. Hund's rule
D. Planck's statement
E. None of the above

63. The chemical analysis of a compound having molecular mass 188 gives, C= 12.8%, H= 2.1% and Br= 85.1%, its molecular formula is:

A. CH_2Br
B. $C_2H_4Br_2$
C. C_2H_4Br
D. $CH_2(Br)_2$
E. $C_2H_2(Br)_3$

64. The stability of ionic crystal depends principally on:

A. High electron affinity of anion forming species
B. Lattice energy of crystal
C. Low ionization energy of cation forming species
D. Low heat of sublimation of cation forming solid

65. Which is not characteristic of pi bond?

A. Pi bond is formed when sigma bond already exists
B. Pi bond results from lateral overlap of atomic orbitals
C. Pi bonds are formed from hybrid orbitals
D. Pi bonds may be formed by the overlap of p orbitals
E. All of the above

66. Which of the following statements is/are true with regard to the reaction

$$2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$$

In which the forward reaction is exothermic?

A. The forward reaction is favoured at higher pressure and higher temperature
B. The forward reaction is favoured at lower pressure and higher temperature
C. At constant temperature, more SO_2 is formed at equilibrium if the total pressure is increased
D. At constant total pressure, more O_2 is formed at equilibrium if the temperature is increased
E. Both B & D

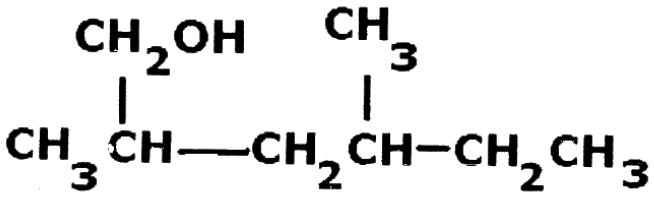
67. The chemical reactions in which reactants require high amount of activation energy are generally:

A. Slow
B. First fast then slow
C. First slow then fast
D. Spontaneous

68. In those reactions where determination of enthalpy value is difficult by experiments, in such cases enthalpy value can be calculated by:

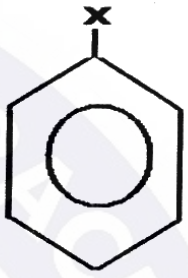
A. Hess's law
B. Henry's law
C. Kirchoff's law
D. Clapeyron equation
E. Boyle's law

69.IUPAC name of the given compound is:



A. 1,4-Dimethyl hexanol
B. 2,4-Diethyl hexanol
C. 4,5-Dimethyl hexanol
D. 4-methyl,5 ethyl hexanol
E. 2,4-Dimethyl hexanol

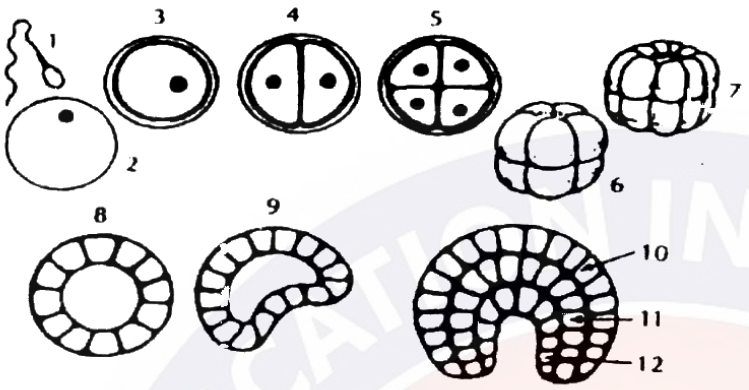
70.X deactivates the ring and directs ortho and para in ; X is



A. OH
B. Br
C. NH_3^+
D. NO_2
E. NH_2

BIOLOGY

Questions 71-72



71.The first cell to contain the diploid number of chromosomes is:

A. 2
B. 3
C. 4
D. 6
E. 9

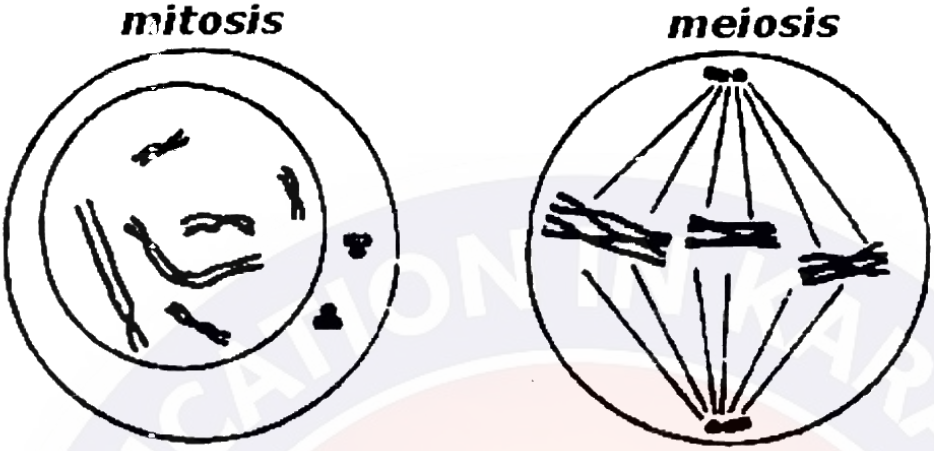
72.A female gamete containing the monoploid (haploid) number of chromosomes is:

A. 2
B. 3
C. 4
D. 5
E. 8

73.An anti codon is the sequence of the nitrogenous bases on the:

A. complementary strand of DNA which codes for one amino acid
B. complementary strand of mRNA which codes for one amino acid
C. tRNA molecule where the amino acid is attached
D. tRNA molecule which recognizes the appropriate sequence of bases on the mRNA
E. mRNA molecule which instructs the ribosomes to initiate protein synthesis

74. The diagrams below show chromosomes in a cell undergoing mitosis and in a cell undergoing meiosis. Which of the following names the stages of division correctly?



	Mitosis	Meiosis
A.	prophase	prophase I
B.	prophase	metaphase I
C.	metaphase	anaphase I
D.	metaphase	metaphase II

75. Flower colour is controlled by a single pair of alleles. The allele for red flowers is dominant to the allele for white flowers.

A plant homozygous for red flowers is crossed with a plant homozygous for white flowers. All the resulting plants have red flowers (F1 generation).
When the F1 generation are crossed with each other, 18 plants are obtained. 12 plants have red
Flowers and 6 have white flowers (F2 generation).

What ratio is expected in the F2 generation and what ratio has been obtained?

	Expected ratio red to white	obtained ratio red to white
A.	1: 1	2: 1
B.	1: 1	3: 1
C.	3: 1	2: 1
D.	3: 1	3: 1

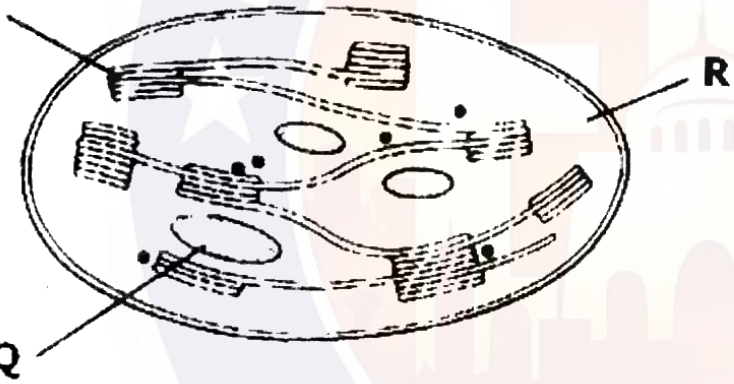
.The following observations refer to evolution:

I. Inherited variations which are 'favoured' in particular environment are passed on.
II. There is a struggle for existence.
III. In time, 'favoured' inherited variations may accumulate causing gradual changes in the organism.
IV. Although populations tend to overproduce, they remain more or less constant in numbers from generation to generation.

what sequence should the statements be placed to support rwin's theory of evolution?

A. I, II, III, IV
B. II, I, III, IV
C. III, I, IV, II
D. IV, I, II, III
E. IV, II, I, III

The diagram shows the ultra structure of a chloroplast as seen in section. What are the functions of P, Q and R?



	P	Q	R
A.	carbohydrate storage	carbohydrate synthesis	light absorption
B.	carbohydrate synthesis	carbohydrate storage	light absorption
C.	carbohydrate synthesis	light absorption	carbohydrate storage
D.	light absorption	carbohydrate storage	carbohydrate synthesis
E.	light absorption	carbohydrate synthesis	carbohydrate storage

78. Consider the following statements about biological communities.

I. Their members share a common gene pool.
II. The community remains stable even though some physical aspect of the environment may undergo change.
III. It consists of all the populations living in a particular area.
IV. A community interacts with non-living environment and both function together to form ecosystem.

Which two of the above statements are true?

A. 1 and 2
B. 1 and 3
C. 2 and 4
D. 2 and 3
E. 3 and 4

79. Four events in the transmission of nerve impulses across synapses are:

I. depolarisation of the presynaptic membrane
II. propagation of postsynaptic action potential
III. reabsorption of the transmitter substance
IV. release of transmitter substance into the synaptic cleft

In which sequence do these events occur?

	FIRST		→	LAST
A.	I	III	II	IV
B.	I	IV	II	III
C.	IV	I	III	II
D.	IV	III	I	II
E.	II	I	IV	III

80. Joints found at the vertebrae are:

A. gliding joints
B. sliding joints
C. partially moveable joints
D. fixed joints
E. pivot joints

81. How many meninges cover the human brain?

A. 5
B. 4
C. 3
D. 2
E. 1

82. The site and principle mechanism for the passage of glucose into the bloodstream in the human kidney is the:

A. collecting duct ... by active secretion
B. distal convoluted tubule ... by passive diffusion
C. glomerulus ... by selective reabsorption
D. glomerulus ... by ultrafiltration
E. proximal convoluted tubule ... by active reabsorption

83. Booklungs subserve the function of respiration in:

A. Scorpion
B. Earthworm
C. Frog
D. Cockroaches
E. Fish

84. The scientific name of potato is *Solanum tuberosum* and that of brinjal is *Solanum melongena*. This indicates that both potato and brinjal are members of the

A. Same species but different genera
B. Same genus but different classes
C. Same species but different classes
D. Same genus but different species
E. Same class but different genera

85. The following are all features of eukaryotic cells:

I. chloroplast
II. peroxisome
III. lysosome
IV. mitochondrion
V. nucleus

Which of these have a double membrane?

A. I, II and IV
B. I, III and V
C. I, IV and V
D. II, III and V
E. II, III and IV

86.The diagram shows how water is lost from a leaf:

By which process is the water lost?

A. osmosis
B. photosynthesis
C. translocation
D. transpiration
E. transcription

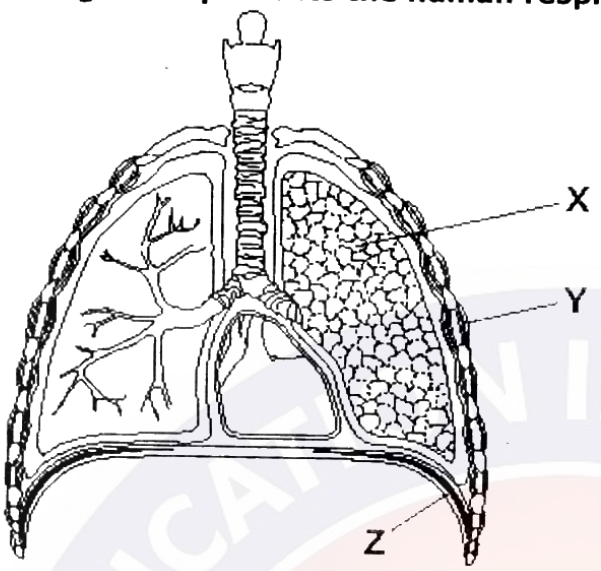
87.Which of the following is true in angiosperm life cycle?

A. Gametophyte are photosynthetic and partially independent than sporophyte
B. Sporophytes are totally dependent on gametophytes
C. Gametophytes are totally dependent on sporophytes
D. Both gametophytes and sporophytes are totally dependent on each other
E. Both gametophytes and sporophytes are totally independent of each other

88.The adaptive feature(s) which help(s) the fish to live in water include(s):

A. A tail and an air bladder
B. Unpaired and paired fins
C. Streamed lined body
D. Gills and strong sense of smell
E. All of the above

89. The diagram represents the human respiratory system.



Which structure(s) contain(s) muscles that contract when breathing in?

A. X only
B. X and Y only
C. X and Z only
D. Y and Z only
E. X, Y and Z

90. What is the correct order of arthropod groups, from those with most legs to those with fewest legs?

A. arachnids ... crustaceans ... insects ... myriapods
B. crustaceans ... myriapods ... insects ... arachnids
C. insects ... arachnids ... myriapods ... crustaceans
D. myriapods ... arachnids ... crustaceans ... insects
E. myriapods ... crustaceans ... arachnids ... insects

91. When a red stain is added to a culture containing both living and dead cells, only the dead cells take up the stain.
Which structure(s) prevent(s) the stain entering the living cells?

A. cell membrane
B. cell wall
C. cytoplasm
D. vacuole
E. all of the above

92. Which of the following statements concerning nucleolus is correct?

A. It disappears at the time of cell division
B. There is only one nucleolus in every cell
C. It plays important role in the synthesis of ribonucleic acid and ribosomes in prokaryotic cells
D. It helps in destroying worn out organelles
E. It captures energy for the cell

93. In birds the male is the homogametic sex. A male bird showing the recessive trait was mated with a female showing the dominant trait of a characteristic governed by a pair of alleles which are sex linked. What is the probability that the male offspring will show the dominant trait?

A. 0
B. 0.25
C. 0.50
D. 0.75
E. 1.00

94. In an experiment, the production of hormone secretin was blocked. As a result, levels of all of the following enzymes were affected EXCEPT:

A. trypsin
B. pepsin
C. chymotrypsin
D. amylase
E. lipase

95. At what point are two populations descending from the same ancestral stock considered separate species?

A. When they can no longer produce viable, fertile offspring
B. When they look significantly different from each other
C. When they can interbreed successfully and produce offspring
D. When their habitats are separated by a significantly large distance so that they cannot meet
E. Both B & C

96. Living things that would be the first to experience adverse effects if large amounts of carbon dioxide were taken out of the biosphere are:

A. Decomposers (e.g. bacteria and fungi)
B. Producers (e.g. green plants)
C. Primary consumers (e.g. mice)
D. Secondary consumers (e.g. snakes)
E. Tertiary consumers (e.g. hawks)

97. Which of the following structure(s) is/are found in a generalized bacterial cell?

A. flagellum
B. pili
C. capsule
D. cell wall
E. all of the above

98. The gland known as the "gland of emergency" is the:

A. Pituitary
B. Adrenal
C. Thyroid
D. Parathyroid
E. Pancreas

99. The autonomic nervous system controls all of the following activities except:

A. Digestion of food
B. Heart beat
C. Contraction of pupil of eye
D. Thought
E. Breathing rate

100. At the northern hemisphere, a tundra type of growth:

A. is impossible
B. occurs only in winter
C. lasts only for two to three months
D. is in the form of a wide land
E. is in the form of small patches of land

DOW University of Health Sciences & Jinnah Sindh Medical University, Karachi

ANSWER KEY (Blue)

Test Date: Sunday, 19th October 2014

Question No	Correct Choice	Question No	Correct Choice
Q 1	E	Q 51	Question cancelled. One mark awarded to each candidate
Q 2	A	Q 52	B
Q 3	D	Q 53	E
Q 4	B	Q 54	B
Q 5	D	Q 55	C
Q 6	A	Q 56	B
Q 7	E	Q 57	D
Q 8	B	Q 58	D
Q 9	B	Q 59	D
Q 10	A	Q 60	B
Q 11	A	Q 61	D
Q 12	A	Q 62	C
Q 13	B	Q 63	B
Q 14	C	Q 64	B
Q 15	D	Q 65	C
Q 16	C	Q 66	E
Q 17	D	Q 67	A
Q 18	D	Q 68	A
Q 19	A	Q 69	E
Q 20	C	Q 70	B
Q 21	A	Q 71	B
Q 22	B	Q 72	A
Q 23	B	Q 73	D
Q 24	E	Q 74	B
Q 25	E	Q 75	C
Q 26	B	Q 76	C
Q 27	B	Q 77	D
Q 28	B	Q 78	C
Q 29	B	Q 79	B
Q 30	A	Q 80	A
Q 31	A	Q 81	C
Q 32	E	Q 82	E
Q 33	C	Q 83	A
Q 34	B	Q 84	D
Q 35	B	Q 85	C
Q 36	E	Q 86	D
Q 37	D	Q 87	C
Q 38	Question cancelled. One mark awarded to each candidate	Q 88	E
Q 39	D	Q 89	D
Q 40	B	Q 90	E
Q 41	B	Q 91	A
Q 42	A	Q 92	A
Q 43	C	Q 93	E
Q 44	E	Q 94	B
Q 45	C	Q 95	A
Q 46	D	Q 96	B
Q 47	D	Q 97	C
Q 48	B	Q 98	B
Q 49	E	Q 99	D
Q 50	C	Q 100	D