MDCAT PAST PAPER

SINDH MDCAT

ORIGINAL PAPER 2011

(DMC & SMC)

All **Past Papers** and **Practice Quizzes** are available on the Education in Karachi Platform. Download the app from the Play Store.

VERBAL

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

1. WRECKED:

defined
developed
registered
ruined
counted

2. UNAMBIGUOUS:

A. stagnant
B. hidden
C. clear
D. muddy
E. grubby

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

3. The injured player was taken _____ the field.

of
off
out
in
by

4. The box is _____ green out side and white inside.

carved
created
painted
chiseled
molded

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

5. Children depend (A) on their (B) parents for (C) food and (D) clothing. No error (E)

6. How will (A) they got across (B) the river if (C) the ferry is not running (D)? No error (E)

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

7. ASSERTION:

statement
denial
claim
unrest
tiring

8. OBSTINATE:-

persistent
constant
daring
courageous
flexible

Questions 9-10 are based on the following passage.

The fact that we were all as safe as kittens under a cook-stove did not, however, assuage in the least the fine despair and the grotesque desperation which seized upon the residents of the East Side when the cry spread like a grass fire that the dam had given way. Some of the most dignified, staid, cynical, and clear thinking men in town abandoned their wives, stenographers, homes, and offices and ran east. There are few alarms in the world more terrifying than 'The dam has broken!' There are few persons capable of stopping to reason when that clarion cry strikes upon their ears, even persons who live in towns no nearer than five hundred miles to a dam.

9. The phrase "spread like a grass fire" means

rapid spread
fire fighting
grass growth
dreadful sight
hidden news

10. Identify the phrase in which the people of the East Side experienced one of the deadliest fears of their lives:

"The dam has been destroyed"
"The dam is safe"
"The dam has broken"
"The dam has not broken"
"The dam is overflowing"

11. A system absorbs 2000 Joules of heat and delivers 1200 Joules of work while losing 200 Joules of heat by conduction to the atmosphere. The change in the internal energy of the system is:

A 300 J
B 600 J
C 1200 J
D 900 J
E 1000 J

12. The efficiency of the Carnot's Engine working between 150°C and 50°C is:

$T_1 = 150°C$
$T_1 = 50°C$

A 22.3 %
B 20.0 %
C 23.6 %
D 30.6 %
E 33.6 %

13. An electron is situated midway between two parallel plates 0.5 cm apart. One of the plates is maintained at a potential of 60 volts above the other. The force on the electron is ($e=-1.6 \times 10^{-19}$)

A 1.92×10^{-15} N
B 3.00×10^{-15} N
C 1.92×10^{-30} N
D 3.00×10^{-30} N
E 5.00×10^{-30} N

14. The principle of a capacitor is based on which of the following facts?

A. Potential of a conductor is greatly increased with a decrease in the charge in it
B. Potential of a conductor is greatly reduced with an increase in the charge in it
C. Potential of a conductor is greatly increased without affecting the charge in it
D. Potential of a conductor is greatly reduced without affecting the charge in it
E. Potential of a conductor is greatly increased with an increase in the charge in it

15. A force which is experienced in a magnetic field depends on:

A. magnitude of charge q
B. speed of the moving charge V
C. magnetic field of induction B
D. all of the above
E. none of the above

16. A current of 4.4 amperes is flowing in a wire. How many electrons pass a given point in the wire in one second, if the charge on an electron is 1.6×10^{-19} coulomb?

1.5×10^{19} electrons
2.75×10^{19} electrons
3.25×10^{19} electrons
2.75×10^{15} electrons
3.25×10^{17} electrons

17. An electric kettle of 1500 watts rating boils a certain quantity of water in 5 minutes, the heat which is generated for boiling this water is:

45×10^{4} Joules
48×10^{4} Joules
56×10^{4} Joules
36×10^{4} Joules
59×10^{4} Joules

18. A coil of 600 turns is threaded by a flux of 8×10^{-5} webers, if this flux is reduced to 3×10^{-5} webers in 0.015 seconds. The average induced e.m.f. is:

-2.0 volts
-3.0 volts
+2.0 volts
+2.5 volts
+3.0 volts

19. Which of the following work(s) on the principle of Wheat Stone Bridge?

Slide-Wire Bridge
Meter-Bridge
Post Office Box
All of the above
None of the above

20. The sinusoidal wave form can be varied by using which of the following parameters?

I. Frequency of the carrier wave
II. Amplitude of the carrier wave
III. Phase angle

I only
I and II only
I and III only
III only
I, II and III

21. A semi conductor photodiode is a:

Reverse biased Junction diode
Forward biased Junction diode
Half wave rectifier
Full wave rectifier
Transistor

22. The speed of light is very nearly equal to:

5×10^{8} m/sec
3×10^{16} m/sec
4×10^{8} m/sec
3×10^{8} m/sec
7×10^{8} m/sec

23. Application/s of laser is/are:

to perform precision surveying and length measurements
as a potential energy source for including nuclear fusion reactions
for telephone communications along optical fibers
precision cutting of metals and other materials
all of the above

24. Radiation can cause:

A. Leukemia
B. Radiation sickness
C. Skin cancer
D. Gene mutations
E. All of the above

25. A nucleus consists of 11 protons and 12 neutrons. The conventional symbol of this nucleus is:

$_{11}Na^{12}$

$_{11}Ca^{23}$

$_{11}Na^{23}$

$_{11}Ca^{12}$

$_{12}Na^{12}$

26. The dimensions of acceleration are:

LT^{-1}

LT^{-2}

L^{3}

L^{2}

LT^{2}

27. All of the following is/are scalar quantity/ies, except:

A. temperature
B. density
C. volume
D. force
E. speed

28. $\vec{R_1}$ and $\vec{R_2}$ are two position vectors making angles θ_1 and θ_2 with positive X-axis respectively. Their vector product is:
[$R_1 = 4$ cm, $R_2 = 3$ cm, $\theta_1 = 30°$, $\theta_2 = 90°$]

$12\sqrt{3}$

$6\sqrt{3}$

$6\sqrt{12}$

$12\sqrt{6}$

$3\sqrt{6}$

29. A car starts from rest and moves with a constant acceleration. During the 5th second of its motion, it covers a distance of 36 meters. What is the acceleration of the car?

12.5 m/s^2
8 m/s^2
15 m/s^2
16 m/s^2
[illegible]

30. Law of Conservation of Momentum states that:

I. if there is no external force applied to a system, then the total momentum of that system remains constant
II. if there is an external force applied to a system, then the total momentum of that system remains constant
III. if there is no external force applied to a system, then the total momentum of that system keeps changing

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

31. Projectile must be launched at which angle with the horizontal to attain maximum range?

A. 90°
B. 45°
C. 75°
D. 105°
E. 145°

32. A player throws a ball at an initial velocity of 36 m/second. The maximum distance the ball can reach (assume ball is caught at the same height at which it was released) is:

146 m
130 m
132 m
129 m
145 m

33. The torque will be greater if:

both magnitude of force and moment arm are smaller
both magnitude of force and moment arm are greater
only magnitude of force is greater
only moment arm is greater
none of the above

34. Example(s) of spin motion is/are:

A. The daily rotation of the earth about its own axis
B. Jumping of a paratrooper from an helicopter
C. Flow of a viscous liquid
D. Rotation of fly wheel about its axle
E. Both A and D

35. Artificial gravity can be supplied by which of the following ways so that normal force of gravity can be generated for the astronaut:

Rotating the space craft
Back and forth motion of space craft
Up and down movement of space craft
Keeping the space craft stationary
All of the above

36. A 70 kg man runs up a hill through a height of 3 meters in 2 seconds. His average power output is($g = 10\ m/sec^2$):

1050 watts
970 watts
1500 watts
1300 watts
500 watts

37. The sum of Kinetic Energy and the Potential Energy is always constant provided:

There is some force of friction involved during the motion of the body
There is no force of friction involved during the motion of the body
There is greater force of friction involved during the motion of the body
Both A and C
None of the above

38. A block with a mass of 0.1 kg is attached to a spring and placed on a horizontal frictionless table. The spring is stretched 20 cm when a force of 5 N is applied. The spring constant is:

A. $50\ Nm^{-1}$
B. $25\ Nm^{-1}$
C. $75\ Nm^{-1}$
D. $100\ Nm^{-1}$
E. $125\ Nm^{-1}$

39. If the resultant intensity of the interfering waves is zero or less than the intensity of the individual wave, then this type of interference is:

A. Destructive Interference
B. Constructive Interference
C. Stable Interference
D. Both A and B
E. None of the above

40. The smaller the distance of the object from the eye, the visual angle will be:

smaller
greater
constant
negligible
none of the above

41. Which of the following statements is true of Amorphous solids?

A. They possess symmetry
B. They are isotropic
C. They are anisotropic
D. They cleave along particular direction
E. They have definite shape

42. Which of the following statements is correct?

Faraday's experiment indicates the existence of electrons
Thomson's tube experiment shows the presence of electrons and protons in the atoms
Radioactivity confirms the presence of electrons and protons
Chadwick experiment shows the presence of neutrons
All of the above

43. By heating 25g of limestone ($CaCO_3$), the weight of carbon dioxide produced is:

14g
71g
11g
2g
10g

44. A Child's balloon has a volume 3.80 dm^3, when temperature is 35°C. If the balloon is put in refrigerator and cooled to 5°C, the approximate volume of the balloon is (assume pressure inside the balloon is equal to atmospheric pressure):

3.00 dm^3
3.43 dm^3
3.08 dm^3
3.25 dm^3
0.54 dm^3

45. "In an atom no two electrons can have the same set of four Quantum numbers" is stated by:

Heisenberg's Uncertainty Principle
Aufbau Principle
Pauli's Exclusion Principle
Hund's Rule
(n+l) Rule

46. Which of the following molecules have zero Dipole moments?

CCl_4
CO_2
Cl_2
C_6H_6
All of the above

47. Bond energy:

I. Is energy required to break a bond between two atoms in a diatomic molecule
II. Is taken as the energy released in forming a bond from free atoms
III. Is the measure of the strength of bond

I only
I and II only
I and III only
III only
I, II and III

48. If the matter in a given system at a given condition is divided into two equal parts, then the value of the extensive properties will become:

Double of the original value
Half of the original value
Remain same as the original value
One- fourth of the original value
One-eighth of the original value

49. The measurement of heat absorbed or given out in a chemical reaction is referred to as:

Enthalpy
Endothermic reaction
Exothermic reaction
Thermochemistry
Heat of formation

50. Only two elements are present in:

Period – 1
Period – 2
Period - 3
Period – 4
Period – 5

51.In a reaction

$$A + B \rightleftharpoons 2C$$

When equilibrium was attained, the concentration was

$[A] = [B] = 4$ moles/dm^3

$[C] = 6$ moles/dm^3

The equilibrium constant K_c of this reaction is:

A. 1.25
B. 2.25
C. 3.25
D. 2.75
E. 3.75

52.If the ratio of initial concentration of the reagents is greater than the K_c then

The reaction will shift towards the reverse direction
More quantity of products is obtained
The ratio increases to the value of K_c
Equilibrium has been attained
There is no shifting of reaction

53.Aqueous solution of Na_2CO_3 is:

Acidic
Alkaline
Both Acidic and Alkaline
Neutral
None of the above

54.Oxidation number of Nitrogen in HNO_3 is:

+4
+2
+6
+5
+7

55.The unit of rate of reaction is:

Mole (dm^3) sec
Mole (dm^3)$^{-1}$ Sec^{-1}
Mole (dm^3)$^{-2}$ Sec^{-1}
Mole (dm^3)$^{-2}$ Sec^{-2}
Mole (dm^3)$^{-1}$ Sec^{-2}

56. The electrophilic reactions of Benzene are:

- Halogenation
- Nitration
- Sulphonation
- Alkylation and acylation
- All of the above

57. OR is the nucleophile of:

- Alcohols
- Esters
- Cyanides
- Ethers
- aldehydes

58. Primary Alcohol is produced by reaction of Grignard's reagent with _____ followed by hydrolysis in acidic medium.

- Carbon dioxide
- Formaldehyde
- Acetaldehyde
- Ketone
- Methyl chloride

59. Which of the following is TRUE regarding Methyl Alcohol?

- It is a colorless, volatile, thin liquid with specific gravity 0.796 at 15°C.
- It is used for low temperature thermometer and as fuel substitute.
- It is extensively used in the formation of different beverages.
- It is used as a base for perfumes.
- It is used as an antiseptic and disinfectant.

60. An ester is prepared by the reaction of:

- Two alcohols
- Carboxylic acid and alcohol
- Ketone and alcohol
- Aldehyde and alcohol
- All of the above

61. Which of the following acids is used for Etching of glass?

- Hydrochloric acid
- Nitric acid
- Hydrofluoric acid
- Sulphuric acid
- Acetic acid

62. A certain chemical reaction follows the following rate law:

Rate $= K[A][B]^2$

The order of reaction is:

1
2
3
4
5

63. Hydrides which are prepared by passing hydrogen gas over hot alkali metals or alkaline earth metals are called:

Covalent hydrides
Ionic hydrides
Complex hydrides
Metallic hydrides
Polymeric hydrides

64. The chemical name of the baking powder is:

Sodium carbonate
Sodium bicarbonate
Sodium hydrogen carbonate
Sodium hydroxide
Sodium chloride

65. When Gypsum is heated to about 100°C, it loses some water of crystallization and becomes:

Epsom salt
Kieserite
Plaster of Paris
Bleaching powder
Caustic soda

66. Complete the following equation:

$Al + H_2SO_4 \xrightarrow{\text{Dilute}} \_\_\_\_\_$

$Al_2(SO_4)_3 + H_2O$
$Al_2(SO_4)_3 + H_2$
$Al_2(SO_4)_3 + H_2O + SO_2$
$Al_2(SO_4)_3 + H_2 + SO_2$
None of the above

67. The chemical property(ies) of Sulphuric Acid is/are:

- Acidic properties
- Oxidizing properties
- Dehydrating properties
- Sulphonating properties
- All of the above

68. Benzene can be prepared _____.

- From Petroleum
- From Coal
- From Acetylene
- From Phenol
- All of the above

69. The electronic configuration of Iron is:

- $1S^2, 2S^2, 2P^6, 3S^2, 3P^6, 3d^5, 4S^2$
- $1S^2, 2S^2, 2P^6, 3S^2, 3P^6, 3d^5, 4S^1$
- $1S^2, 2S^2, 2P^6, 3S^2, 2P^6, 3d^6, 4S^2$
- $1S^2, 2S^2, 2P^6, 3S^2, 3P^6, 3d^3, 4S^2$
- $1S^2, 2S^2, 2P^6, 3S^2, 3P^6, 3d^2, 4S^2$

70. IUPAC Nomenclature of

$CH_3 - CH = CH - CH_2 - CH = CH_2$ is:

- 2 – Pentene
- 1, 4 – hexadiene
- 3 – Methyl butane
- 1, 3, 5 – heptatriene
- 1, 3,6 hexatriene

BIOLOGY

71. Which of the following fungus is utilized in baking Industry?

a. Mushrooms
b. Yeast
c. Bread mold
d. Pencillium
e. Neomycin

72. Which of the following is included in Bryophytes?

a. Mosses
b. Club mosses
c. Ferns
d. Seed plants
e. Horse tails

73. Species of Phylum platyhelminthes are:

a. Round worms
b. Flat worms
c. Hook worms
d. Thread worms
e. Pin worms

74. A characteristic feature of Echinoderm is:

a. Canal system
b. Water vascular system
c. Tracheal system
d. Blood vascular system
e. None of the above

75. The light dependent reaction of photosynthesis occurs in:

a. Stroma of chloroplast
b. Guard cells of stomata
c. Thylakoid membrane of chloroplast
d. Cytoplasm of leaf cell
e. None of the above

76. The end product of Glycolysis is:

a. Glucose-6-phosphate
b. Fructose-6-phosphate
c. Pyruvate
d. 3-Phosphoglycerate
e. Phosphoglyceraldehyde

77. A psychological condition usually seen in girls and young women, with loss of appetite is:

- Obesity
- Malnutrition
- Anorexia Nervosa
- Dyspepsia
- Peptic ulcer

78. Haemoglobin carries more oxygen than plasma by:

- 50 times
- 20 times
- 70 times
- 100 times
- 200 times

79. The massive accumulation of blood within a tissue is called as:

- Haemorrhage
- Haematoma
- Hepatoma
- Haemacel
- Haematemesis

80. Malpighian tubules are involved in excretion in:

- Cockroach
- Earthworm
- Human
- Planaria
- Hydra

81. Growth movement caused in response to gravitational stimulus is called:

- Nutation
- Geotropism
- Nastic movement
- Tropic movement
- Turgor movement

82. Bones of the skull are joined by:

- fixed joints
- sliding joints
- pivot joints
- hinge joints
- gliding joints

83.Deficient production of hormones by adrenal glands results in:

A. Cushing's syndrome
B. Addison's disease
C. Diabetes Mellitus
D. Goiter
E. Epilepsy

34.All of the following are sexually transmitted diseases except:

A. Syphilis
B. Gonorrhoea
C. Alzheimer's Disease
D. Genital Herpes
E. AIDS

85.Cytoplasmic Localization is a consequence of:

A. Fertilization
B. Cleavage
C. Morula
D. Blastula
E. Gastrula

86.Highly condensed portions of the chromatin are called:

A. Euchromatin
B. Hetero chromatin
C. Nucleosome
D. Super coils
E. None of the above

87.The disease in which patients passed urine that rapidly turned black on exposure to air is called:

A. Phenyl Ketonuria
B. Alkaptonuria
C. Sickle cell anaemia
D. Heamophilia
E. Anuria

88.Diplotene is the sub-stage of meiotic:

A. Anaphase I
B. Telophase I
C. Prophase I
D. Metaphase I
E. All of the above

89.The producers of pond ecosystem include:

A. Bacteria
B. Zooplankton
C. Fungi
D. Phytoplankton
E. All of the above

90. In pea plants, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r) and the allele for yellow seeds (Y) is dominant to the allele for green seeds (y). A doubly heterozygous, round, yellow-seeded plant is crossed with a green, wrinkled-seeded plant.

What percentage of the F_1 generation are recombinants?

0%
25%
50%
75%
100%

91. Erythroblastosis foetalis occurs when:

Mother is R^h positive and baby is R^h negative
Mother is R^h negative and baby is R^h positive
Both mother and baby are R^h negative
Both mother and baby are R^h positive
All of the above statements are true

92. Amniocentesis is performed between the:

16th and 18th week of gestation
1st and 2nd week of gestation
30th and 32nd week of gestation
37th and 38th week of gestation
After the delivery of the baby

93. Lamarcks theory is based on all of the following points EXCEPT:

I. Effects of environment
II. Use and disuse of organs
III. Natural selection
IV. Inheritance of acquired characters

I only
II only
III only
IV only
I, II and IV

94. Chicken pox is caused by:

A. Hepatitis A virus
B. Varicella zoster virus
C. Influenza virus
D. Human immunodeficiency virus
E. Rabies virus

95.A bacteriophage consists solely of:

A) DNA and protein
B) RNA and protein
C) RNA only
D) Protein only
E) DNA only

96.Which of the following factors affect enzyme activity?

A) Temperature
B) pH
C) Concentration of substrate
D) Radiation
E) All of the above

97.Lysosomes function in:

A) Protein synthesis
B) Processing and packaging
C) Intracellular digestion
D) Lipid synthesis
E) Carbohydrate synthesis

98.The viruses are:

A) Cellular
B) Prokaryotes
C) Non-cellular
D) Eukaryotes
E) Visible with naked eye

99.Bacterial pilli help in:

A) Locomotion
B) Conjugation
C) Phagocytosis
D) Pinocytosis
E) Exocytosis

100. Trypanosoma belongs to class:

A) Sarcodina
B) Flagellata
C) Ciliata
D) Suctoria
E) Sporozoa

ANSWER KEY 2011 GREEN

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