CLASS 12 BATCH

SHORT TEST -01

DURATION : 45 Min | **DATE : 07/05/2023** | **Max Marks : 144**

Topics covered

Physics :	Electric Charge and Field – Electric Charge, Properties of charge, Conductor and insulators, Methods of Charging, Coulomb's Law, Superposition theorem
Chemistry :	Solutions
Biology :	**(Zoology) :** Human Reproduction (Upto Male Reproductive System)

General Instructions :

1. Immediately fill in the particulars on this page of the test booklet.
2. The test is of 45 minutes duration.
3. The test booklet consists of **36** questions. The maximum marks are **144**.
4. There is only one correct response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed, or written, bits of papers, pager, mobile phone, any electronic device, etc. inside the examination room/hall.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the candidates are allowed to take away this Test Booklet with them.

Name of the Student (In Capitals) : _____

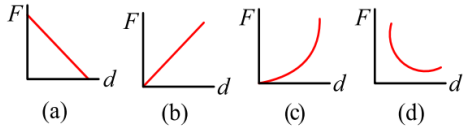
Roll Number : _____

Candidate's Signature : _____

Invigilator's Signature : _____

SECTION-I (PHYSICS)

1. The graph representing the force between two charges (F) and the distance (d) between them is



(1) a (2) b
(3) c (4) d

2. An electron and proton are placed in an electric field. The forces acting on them are F_1 and F_2 and their acceleration are a_1 and a_2 respectively then

(1) $\vec{F}_1 = \vec{F}_2$ (2) $\vec{F}_1 + \vec{F}_2 \neq \vec{0}$
(3) $|\vec{a}_1| = |\vec{a}_2|$ (4) $|\vec{a}_1| \geq |\vec{a}_2|$

3. Two positive ions, each carrying a charge q, are separated by a distance d. If F is the force of repulsion between the ions, the number of electrons missing from each ion will be (e being the charge on an electron)

(1) $\frac{4\pi\varepsilon_0 Fd^2}{e^2}$ (2) $\sqrt{\frac{4\pi\varepsilon_0 Fe^2}{d^2}}$
(3) $\sqrt{\frac{4\pi\varepsilon_0 Fd^2}{e^2}}$ (4) $\frac{4\pi\varepsilon_0 Fd^2}{q^2}$

4. 10^{20} electrons are removed from a conductor. The nature and magnitude of the charge developed on it is

(1) + 16 C (2) –16 C
(3) + 10 C (4) – 10 C

5. Some electron is removed from the negatively charged body then

(1) body may becomes neutral
(2) Mass Increases
(3) Negative charge Increases
(4) Charge remains

6. Distance between two changes body becomes double then force between the charges.

(1) double (2) same
(3) one fourth (4) half

7. +2C and +6C two charges are repelling each other with a force of 12 N. If each charge is given –2C of charge, then the value of the force will be:

(1) 4 N (Attractive) (2) 4 N (Repulsive)
(3) 8 N (Repulsive) (4) Zero

8. Charge is the property associated with matter due to which it produces and experiences

(1) Electric effects only
(2) Magnetic effects only
(3) Both electric and magnetic effects
(4) None of these

9. Two spheres A and B of exactly same mass are given positive and negative charges respectively. Their masses after charging

(1) Remain unaffected
(2) Mass of A > mass of B
(3) Mass of A < mass of B
(4) Nothing can be said

10. Choose the correct statement:

(1) The total charge particles in the universe decrease.
(2) The total positive charge of the universe is constant.
(3) The total negative charge of the universe is constant.
(4) The total charge of the universe is constant.

11. The value of charge on a body which carries 30 excess electrons is:

(1) -4.8×10^{-18}C (2) 4.8×10^{-18}C
(3) 4×10^{-18}C (4) 48×10^{-18}C

12. A charged conductor has its charge only on its outer surface. This statement is true for which of the following?

(1) For all conductors
(2) Only for spherical conductors
(3) For hollow conductors
(4) For those conductors which don't have sharp edges

SECTION-II (CHEMISTRY)

1. 2 m aqueous NaOH solution contains:
(1) 40 g of NaOH dissolved in 250 g of water.
(2) 20 g of NaOH dissolved in 250 g of water.
(3) 20 g of NaOH dissolved in 1000 g of water.
(4) 40 g of NaOH dissolved in 1000 g of water.

2. Vapour pressures of two liquids A & B are 100 mm Hg and 60 mm Hg respectively, vapour pressure of the solution obtained by mixing equal moles of A and B will be:
(1) 100 mm Hg
(2) 80 mm Hg
(3) 60 mm Hg
(4) 160 mm Hg

3. Which set of thermodynamic parameters are correct for ideal solution?
(1) $\Delta V_{sol} > 0$ $\Delta G_{sol} > 0$ and $\Delta H_{sol} > 0$
(2) $\Delta V_{sol} < 0$, $\Delta G_{sol} > 0$ and $\Delta H_{sol} < 0$
(3) $\Delta V_{sol} = 0$, $\Delta G_{sol} < 0$ and $\Delta H_{sol} = 0$
(4) $\Delta V_{sol} > 0$, $\Delta G_{sol} > 0$ and $\Delta H_{sol} < 0$

4. Which one of the following solutions exhibits highest boiling point?
(1) 0.015M $C_6H_{12}O_6$
(2) 0.01M Na_2SO_4
(3) 0.01M NaCl
(4) 0.015M NH_2CONH_2

5. 12 g of urea is present in 1 litre of solution and 68.4 g of sucrose is separately dissolved in 1 litre of another sample of solution. The lowering of vapour pressure of first solution is
(1) Equal to second
(2) Greater than second
(3) Less than second
(4) Double that of second

6. An ideal solution is that which:
(1) Shows positive deviation from Raoult's law.
(2) Shows negative deviation from Raoult's law.
(3) Has no connection with Raoult's law.
(4) Obeys Raoult's law.

7. Relative lowering of vapour pressure of a dilute solution is 0.2. What is the mole fraction of non-volatile solute:
(1) 0.8 (2) 0.5
(3) 0.3 (4) 0.2

8. Molarity is expressed as:
(1) Gram/litre
(2) Moles/litre
(3) Litre/mole
(4) Moles/1000 gms

9. What is the molarity of 4.9% H_3PO_4 solution by mass (density of H_3PO_4 = 1.22 g/ml)?
(1) 0.61 M
(2) 4.9 M
(3) 1.22 M
(4) 1 M

10. The molality of 1 M $NaNO_3$ solution is (d = 1.25 g/ml):
(1) 0.8 m
(2) 0.858 m
(3) 1.6 m
(4) 1 m

11. The vapour pressure of pure liquid A is 70 torr at 27°C. It forms an ideal solution with another liquid B. The mole fraction of B is 0.2 and total vapour pressure of the solution is 84 torr at 27°C. The vapour pressure of pure liquid B at 27°C is:
(1) 140 torr
(2) 50 torr
(3) 14 torr
(4) 70 torr

12. Which statement is correct for the boiling point of solvent containing a dissolved solid substance?
(1) Boiling point of the liquid is depressed.
(2) Boiling point of the liquid is elevated.
(3) There is no effect on the boiling point.
(4) The change depends upon the polarity of the liquid.

SECTION-IV (ZOOLOGY)

1. Secretions from which one of the following are rich in fructose, calcium and some enzymes?
(1) Male accessory glands
(2) Liver
(3) Pancreas
(4) Salivary glands

2. Seminal plasma in human males is rich in
(1) Fructose and calcium
(2) Glucose and calcium
(3) DNA and testosterone
(4) Ribose and potassium

3. The difference between spermiogenesis and spermiation is
(1) In spermiogenesis spermatids are formed, while in spermiation spermatozoa are formed
(2) In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed
(3) In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed
(4) In spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from sertoli cells into the cavity of seminiferous tubules

4.

Choose the correct option regarding this figure of sperm?
(1) A-Genetic material, acrosome which secretes hormones and enzymes for penetration of egg membranes.
(2) B-Has mitochondria and centriole to aid in movement
(3) C-Has centriole and flagella to aid in movement
(4) B-Only has mitochondria to help in propulsion

5. Which of the following cells during gametogenesis is normally diploid?
(1) Spermatogonia
(2) Secondary polar body
(3) Primary polar body
(4) Spermatid

6. How many sperms are formed from a secondary spermatocyte?
(1) 4
(2) 8
(3) 2
(4) 1

7. Select the correct sequence for transport of sperm cells in male reproductive system.
(1) Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus
(2) Testis → Epididymis → Vasa efferentia → Rete testis → Inguinal canal → Urethra
(3) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus
(4) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra

8. The Leydig's cells are found in the human body are the secretory source of
(1) Progesterone (2) Intestinal mucus
(3) Glucagon (4) Androgens

9. If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from
(1) Testes to epididymis
(2) Epididymis to vas deferens
(3) Ovary to uterus
(4) Vagina to uterus

10. Sertoli cells are found in
(1) Ovaries and secrete progesterone
(2) Adrenal cortex and secrete adrenaline
(3) Seminiferous tubules and provide nutrition to germ cells
(4) Pancreas and secrete cholecystokinin

11. The shared terminal duct of the reproductive and urinary system in the human male is
(1) Urethra
(2) Ureter
(3) Vas deferens
(4) Vasa efferentia

12. Each testis has about _____ compartments called _____.
(1) 250, seminiferous tubules
(2) 500, testicular lobules
(3) 250, testicular lobules
(4) 400, seminiferous tubules