

**Q1. As per the code of the nomenclature, which one of the following is the correct way of writing a biological name?**

- (a) Amoeba Proteus
- (b) Amoeba proteus
- (c) amoeba proteus
- (d) Amoeba Proteus

**Q2. Which one of the following statements regarding Electrocardiogram is correct?**

- (a) Electrocardiogram is graphical representation of electrical activity of cornea
- (b) Electrocardiogram is graphical representation of activity of kidney
- (c) Electrocardiogram is graphical representation of activity of brain
- (d) Electrocardiogram is graphical representation of electrical activity of heart

**Q3. Which one of the following statements regarding Penicillin is correct?**

- (a) Penicillin resistant bacteria can store this antibiotic in vacuole
- (b) Penicillin resistant bacteria can degrade this antibiotic by an enzyme called  $\beta$  –lactamase
- (c) Penicillin resistant bacteria can degrade this antibiotic by an enzyme called lactic acid dehydrogenase
- (d) Penicillin is not absorbed by bacteria; so, most bacteria are resistant

**Q4. Which one of the following organelles of mammalian cell is rich in hydrolytic enzymes?**

- (a) Mitochondria
- (b) Ribosomes
- (c) Lysosome
- (d) Nucleus

**Q5. Which one of the following statements regarding Cholera is correct?**

- (a) Cholera is a disease that causes loss of memory
- (b) Cholera is a disease of muscles due to consumption of alcohol
- (c) Cholera is a disease due to consumption of contaminated food or water
- (d) Cholera is a genetic disease

**Q6. Two metallic wires A and B are made using copper. The radius of wire A is  $r$  while its length is  $l$ . A dc voltage  $V$  is applied across the wire A, causing power dissipation,  $P$ . The radius of wire B is  $2r$  and its length is  $2l$  and the same dc voltage  $V$  is applied across it causing power dissipation  $P_1$ . Which one of the following is the correct relationship between  $P$  and  $P_1$ ?**

- (a)  $P = 2P_1$
- (b)  $P = P_1/2$
- (c)  $P = 4P_1$
- (d)  $P = P_1$

**Q7. Consider the following statements about a solenoid:**

1. The magnetic field strength in a solenoid depends upon the number of turns per unit length in the solenoid
2. The magnetic field strength in a solenoid depends upon the current following in the wire of the solenoid
3. The magnetic field strength in a solenoid depends upon the diameter of the solenoid

**Which of the statements given above are correct?**

- (a) 1, 2 and 3
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1 and 2 only

**Q8. Light year is a unit of measurement of**

- (a) very large distances
- (b) time interval in years
- (c) amount of light received on earth in a year
- (d) mass of atoms

**Q9. The focal length of the objective lens of a telescope is 50 cm. If the magnification of the telescope is 25, then the focal length of the eye-piece is**

- (a) 12.5 cm
- (b) 5 cm
- (c) 2 cm
- (d) 10 cm

**Q10. Which one of the following forces is non-central and non-conservative?**

- (a) Frictional force
- (b) Electric force
- (c) Gravitational force
- (d) Mechanical force

**Q11. On exposure to moist air, copper gains a green coat on its surface due to formation of which one of the following compounds?**

- (a) Copper carbonate
- (b) Copper oxide
- (c) Copper sulphate
- (d) Copper nitrate

**Q12. Which one of the following will NOT produce carbon dioxide on reacting with an aqueous solution of hydrochloric acid?**

- (a) Limestone
- (b) Quick Lime
- (c) Chalk
- (d) Marble

**Q13. Which one of the following substances is NOT a mixture?**

- (a) Ice
- (b) Ice-cream
- (c) Air
- (d) Honey

**Q14. Which one of the following is an example of Salt-Crystal growth?**

- (a) Chemical weathering
- (b) Physical weathering
- (c) Biological weathering
- (d) Bio-chemical weathering

**Q15. Tooth enamel is made up of which one of the following calcium compounds?**

- (a) Calcium carbonate
- (b) Calcium sulphate
- (c) Calcium hydroxide
- (d) Calcium phosphate

**Q16. Suppose there are two planets, 1 and 2, having the same density but their radii are  $R_1$  and  $R_2$  respectively, where  $R_1 > R_2$ . The accelerations due to gravity on the surface of these planets is related as**

- (a)  $g_1 > g_2$
- (b)  $g_1 < g_2$
- (c)  $g_1 = g_2$
- (d) Can't say anything

**Q17. Which one of the following cell organelles does NOT possess nucleic acid?**

- (a) Nucleolus
- (b) Chloroplast
- (c) Ribosome
- (d) Plasma Membrane

**Q18. Which one of the following cell organelles does NOT possess its own genetic material encoding proteins?**

- (a) Ribosome
- (b) Nucleus
- (c) Mitochondria
- (d) Chloroplast

**Q19. Which one of the following is NOT a component of conducting tissue in plants?**

- (a) Fibers
- (b) Tracheid's
- (c) Pericycle
- (d) Sieve tubes

**Q20. Which one of the following organisms has vascular tissues?**

- (a) Cladophora
- (b) Penicillium
- (c) Marisela
- (d) Anabaena

**Q21. Which one of the following organisms represents the primary consumer category in an ecosystem?**

- (a) Caterpillar
- (b) Crabapple tree
- (c) Frog
- (d) Sparrow hawk

**Q22. Which one of the following energies is stored in the links between the atoms?**

- (a) Nuclear energy
- (b) Chemical energy
- (c) Potential energy
- (d) Thermal energy

**Q23. The light energy escaping from the Sun can be spread by**

- (a) a shower of rain drops
- (b) a plane mirrors
- (c) a convex lens
- (d) a combination of a convex lens and concave lens

**Q24. The correct sequence of energy transfer that occurs when an apple falls to the ground is**

- (a) Gravitational potential energy → heat energy to air → kinetic energy → heat energy to ground and apple → sound energy
- (b) Gravitational potential energy → sound energy → kinetic energy → heat energy to air → heat energy to ground and apple
- (c) Gravitational potential energy → kinetic energy → heat energy to air → heat energy to ground and apple → sound energy
- (d) Gravitational potential energy → kinetic energy → sound energy → heat energy to air → heat energy to ground and apple

**Q25. Which one of the following minerals is used as a fuel in nuclear power stations?**

- (a) Bauxite
- (b) Quartz
- (c) Feldspar
- (d) Pitchblende

**Q26. Which one of the following is NOT a synthetic detergent?**

- (a)  $\text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{O SO}_3^- \text{Na}^+$
- (b)  $[\text{CH}_3(\text{CH}_2)_{15}\text{N}(\text{CH}_3)_3]^+ \text{Br}^-$
- (c)  $\text{CH}_3(\text{CH}_2)_{16}\text{COO}^- \text{Na}^+$
- (d)  $\text{CH}_3(\text{CH}_2)_{16}\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2\text{OH}$

**Q27. Which one of the following is an example of a clean fuel?**

- (a) Coke
- (b) Propane
- (c) Petrol
- (d) Wax

**Q28. Which one of the following metals does NOT react with cold water?**

- (a) Calcium (Ca)
- (b) Potassium (K)
- (c) Magnesium (Mg)
- (d) Sodium (Na)

**Q29. In which of the following pairs are the ions isoelectronic?**

- (a)  $Mg^{2+}$ , Ar
- (b)  $Na^+$ ,  $O^{2-}$
- (c)  $Al^{3+}$ ,  $Cl^-$
- (d)  $K^+$ , Ne

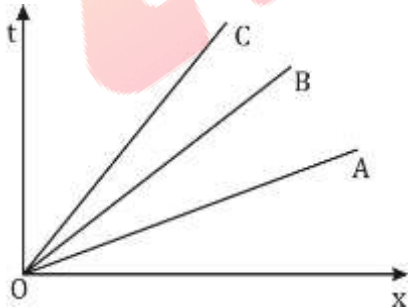
**Q30. Which one of the following is used as a binder in paints?**

- (a) Titanium dioxide
- (b) Novolac
- (c) Phthalocyanine
- (d) Silicones

**Q31. The Sun is seen little before it rises and for a short while after it sets. This is because of**

- (a) total internal reflection
- (b) atmospheric refraction
- (c) apparent shift in the direction of Sun
- (d) dispersion

**Q32. The figure shown above gives the time (t) versus position (x) graphs of three objects A, B and C. Which one of the following is the correct relation between their speeds  $V_A$ ,  $V_B$  and  $V_C$ , respectively at any instant ( $t > 0$ )?**

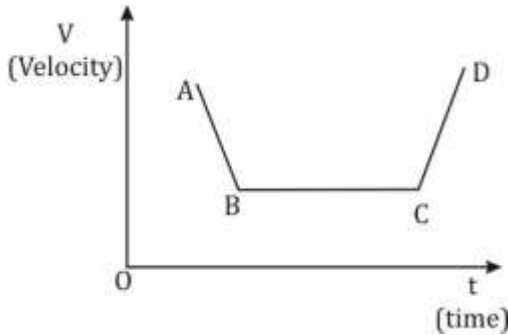


- (a)  $V_A < V_B < V_C$
- (b)  $V_A > V_B > V_C$
- (c)  $V_A = V_B = V_C \neq 0$
- (d)  $V_A = V_B = V_C = 0$

**Q33. 1 dyne (a unit of force in CGS system) equals to**

- (a)  $10^3 \text{ g cm/s}^2$
- (b)  $10^{-3} \text{ g cm/s}^2$
- (c)  $10^5 \text{ kg m/s}^2$
- (d)  $10^{-5} \text{ kg m/s}^2$

**Q34. In the given velocity (V) versus time (t) graph, accelerated and decelerated motions are respectively represented by line segments**



- (a) CD and BC
- (b) BC and AB
- (c) CD and AB
- (d) AB and CD

**Q35. Which one of the following statements regarding a thermos flask is NOT correct?**

- (a) The walls of flask are separated by vacuum and made of glass which is a poor conductor of heat
- (b) The glass walls themselves have shiny surfaces
- (c) The surface of inner wall radiates good amount of heat and the surface of outer wall absorbs some of the heat that is radiated from the inner wall
- (d) The cork supports are poor conductors of heat

**Q36. 'Black hole' is a**

- (a) huge black star which has zero acceleration due to gravity on its surface
- (b) star which has moderate acceleration due to gravity on its surface
- (c) star which has collapsed into itself and has large acceleration due to gravity on its surface
- (d) star which has collapsed into itself and has zero acceleration due to gravity on its surface

**Q37. The formula for conversion between Fahrenheit and Celsius is**

$$^{\circ}\text{F} = \text{X} + (1.8 \times ^{\circ}\text{C})$$

**What is factor X ?**

- (a) 32
- (b) 22
- (c) 98
- (d) 42

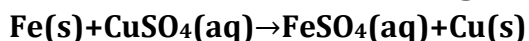
**Q38. When a beam of white light passes through a glass prism, the colour of light beam that deviates the least is**

- (a) Blue
- (b) Red
- (c) Green
- (d) Violet

**Q39. A fuse wire must be**

- (a) conducting and of low melting point
- (b) conducting and of high melting point
- (c) insulator and of high melting point
- (d) insulator and of low melting point

**Q40. Which one of the following statements is NOT correct for the given reaction?**



- (a) Iron is the reducing agent
- (b) The solution turns green in colour after the reaction
- (c) Copper is a more reactive metal than iron
- (d) The reaction is an example of a redox reaction

**Q41. Which one of the following is an organic acid?**

- (a) Hydrochloric acid
- (b) Nitric acid
- (c) Acetic acid
- (d) Sulphuric acid

**Q42. Dinitrogen (N<sub>2</sub>) and dioxygen (O<sub>2</sub>) are the main constituents of air but they do not react with each other to form oxides of nitrogen because**

- (a) the reaction requires initiation by a catalyst
- (b) oxides of nitrogen are unstable
- (c) the reaction is endothermic and requires very high temperature
- (d) the stoichiometry of N<sub>2</sub> and O<sub>2</sub> in air is not ideal for the reaction to take place

**Q43. Who among the following has explained the phenomenon of photoelectric effect?**

- (a) Max Planck
- (b) Albert Einstein
- (c) Neil's Bohr
- (d) Ernest Rutherford

**Q44. The equivalent weight of oxalic acid in C<sub>2</sub>H<sub>2</sub>O<sub>4</sub>·2H<sub>2</sub>O is**

- (a) 45
- (b) 63
- (c) 90
- (d) 126

**Q45. Which one of the following can charge an insulator?**

- (a) Current electricity
- (b) Static electricity
- (c) Magnetic field
- (d) Gravitational field

**Q46. At 20°C, the speed of sound in water is approximately**

- (a) 330 m/s
- (b) 800 m/s
- (c) 1500 m/s
- (d) 5000 m/s

**Q47. Which one of the following could be the melting point of iron?**

- (a) 25°C
- (b) 37°C
- (c) 500°C
- (d) 1500°C

**Q48. Let us consider a copper wire having radius  $r$  and length  $l$ . Let its resistance be  $R$ . If the radius of another copper wire is  $2r$  and the length is  $l/2$  then the resistance of this wire will be**

- (a)  $R$
- (b)  $2R$
- (c)  $R/4$
- (d)  $R/8$

**Q49. Basic scientific principle behind a nuclear reactor is**

- (a) Nuclear fusion
- (b) Controlled nuclear fusion
- (c) Uncontrolled nuclear fission
- (d) Controlled nuclear fission