

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 β –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

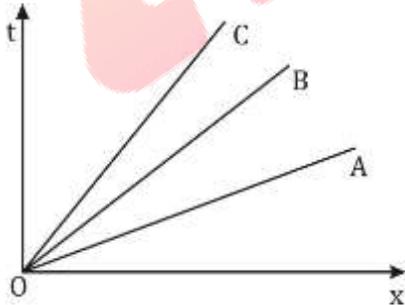
Q30. Which one of the following is used as a binder in paints?

- (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 ($t > 0$)?

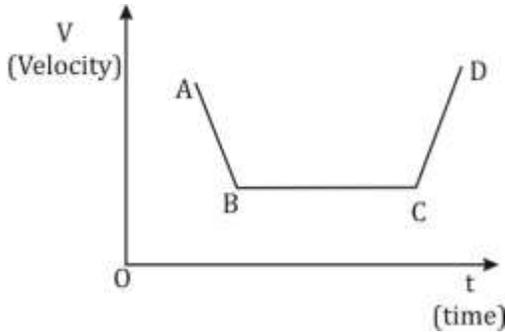


- (a) $V_A < V_B < V_C$
- (b) $V_A > V_B > V_C$
- (c) $V_A = V_B = V_C \neq 0$
- (d) $V_A = V_B = V_C = 0$

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

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

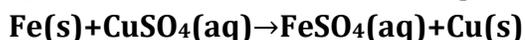
Q38. When a beam of white light passes through a glass prism, the colour of light beam that deviates the least is

- (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 (N₂) and dioxygen (O₂) 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 N₂ and O₂ 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 C₂H₂O₄·2H₂O 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