GG RS LEARNING HUB PVT. LTD.

NSO Class 10

Total Questions: 35 Time: 60 min

Physics

1. An object is placed 20 cm in front of a concave mirror of focal length 10 cm. The mirror is then moved 5 cm away from the object. What is the shift in the position of the image?

(A) 10 cm away from the mirror

(B) 16.7 cm away from the mirror

(C) 6.7 cm towards the mirror

(D) 10 cm towards the mirror

2. Two resistors, R1=4Ω and R2=6Ω, are connected in parallel. This combination is then connected in series to a resistor R3=2.6Ω and a 10 V battery. What is the power dissipated in the 6Ω resistor?

(A) 2.4 W

(B) 1.5 W

(C) 0.96 W

(D) 3.84 W

3. A beam of white light passes through a hollow prism filled with water. What will be observed on the screen placed behind the prism?

(A) A spectrum of seven colors, with red at the top.

(B) A spectrum of seven colors, with violet at the top.

(C) A single spot of white light, as the light recombines.

(D) No light, as the hollow prism causes total internal reflection.

4. A straight wire carrying a current of 5 A is placed perpendicular to a uniform magnetic field of 0.2 T. If the force experienced by the wire is 0.5 N, what is the length of the wire within the magnetic field?

(A) 25 cm

(B) 50 cm

(C) 1 m

(D) 2 m

5. The refractive indices of glass and water with respect to air are 1.5 and 1.33 respectively. What is the refractive index of glass with respect to water (wμg)?

(A) 0.88

(B) 1.99

(C) 1.12

(D) 0.27

6. In the circuit shown, what is the reading on the ammeter (A) and the voltmeter (V) when the switch is closed?

(A) A = 1.5 A, V = 3 V

(B) A = 2 A, V = 4 V

(C) A = 1.5 A, V = 6 V

(D) A = 3 A, V = 3 V

7. A person can't see objects closer than 50 cm but wants to read a book placed at 25 cm. What is the power of the lens they require?

(A) +2 D

(B) -2 D

(C) +1 D

(D) -1 D

NSO Class 10

Total Questions: 35 Time: 60 min

8. An electric motor operating on a 220 V supply draws a current of 5 A. If its efficiency is 80%, what is the power output of the motor?

(A) 1100 W

(B) 220 W

(C) 880 W

(D) 1375 W

9. Which of the following phenomena is responsible for the reddish appearance of the sun at sunrise and sunset?

(A) Reflection of light

(B) Dispersion of light

(C) Scattering of light

(D) Total internal reflection

10. In a domestic electric circuit, the appliances are connected in parallel. This is done to ensure:

(A) That the total resistance of the circuit is minimized.

(B) That if one appliance fails, the others continue to work.

(C) That each appliance receives the full voltage of the supply.

(D) All of the above.

11. A rectangular coil of copper wire is rotated in a magnetic field. The direction of the induced current changes once in each:

(A) Quarter revolution

(B) Half revolution

(C) Full revolution

(D) Two revolutions

12. A convex lens forms a real, inverted image of size 5 cm when an object of size 10 cm is placed 30 cm from it. The focal length of the lens is:

(A) +20 cm

(B) -20 cm

(C) +15 cm

(D) -30 cm

Chemistry □

13. An element X (Atomic number 12) reacts with an element Y (Atomic number 17) to form a compound. Which of the following statements about the compound is false?

(A) The formula of the compound is XY2.

(B) It is an ionic compound.

(C) The compound will conduct electricity in its molten state.

(D) Element X is a non-metal and Y is a metal.

14. During the electrolytic refining of copper, what happens at the anode and cathode?

(A) Anode: Impure Cu dissolves; Cathode: Pure Cu deposits.

(B) Anode: Pure Cu deposits; Cathode: Impure Cu dissolves.

(C) Anode: Oxygen gas is released; Cathode: Copper deposits.

(D) Anode: Impurities dissolve; Cathode: Copper ions are formed.

15. An aqueous solution turns red litmus blue. Excess addition of which of the following solutions would reverse this change?

NSO Class 10

Total Questions: 35 Time: 60 min

(A) Baking powder solution

(B) Limewater

(C) Ammonium hydroxide solution

(D) Hydrochloric acid

16. Which of the following represents the correct order of decreasing metallic character?

(A) Na > Mg > Al > Si

(B) Si > Al > Mg > Na

(C) Al > Si > Na > Mg

(D) Na > Al > Mg > Si

17. An organic compound 'A' with the formula C_2H_6O on oxidation with alkaline $KMnO_4$ gives an acid 'B' with the same number of carbon atoms. Compound 'A' is also used to sterilize wounds. Identify A and B.

(A) A: Methanol, B: Methanoic acid

(B) A: Ethanol, B: Ethanoic acid

(C) A: Propanol, B: Propanoic acid

(D) A: Ethanoic acid, B: Ethanol

18. Thermite reaction involves the reaction between:

(A) Iron(III) oxide and aluminium powder.

(B) Zinc oxide and carbon.

(C) Copper oxide and iron.

(D) Aluminium oxide and magnesium.

19. Which of the following hydrocarbons will show isomerism?

(A) Methane (CH_4)

(B) Ethane (C_2H_6)

(C) Propane (C_3H_8)

(D) Butane (C_4H_{10})

20. A gas 'X' is produced during the reaction of zinc granules with dilute sulphuric acid. Another gas 'Y' is produced when sodium carbonate reacts with the same acid. Identify 'X' and 'Y'.

(A) X: H_2, Y: CO_2

(B) X: SO_2, Y: H_2

(C) X: H_2, Y: O_2

(D) X: CO_2, Y: H_2

21. The ability of carbon to form long chains with itself is called catenation. Which other element in the periodic table exhibits this property to a noticeable extent?

(A) Nitrogen

(B) Oxygen

(C) Silicon

(D) Phosphorus

22. A solution has a pH of 9.5. This solution is:

(A) Strongly acidic

(B) Weakly acidic

(C) Strongly basic

(D) Weakly basic

23. Which of the following equations represents a redox reaction that is also a displacement reaction?

(A) $2Mg+O_2 \rightarrow 2MgO$

(B) $CaO+H_2O \rightarrow Ca(OH)_2$

(C) $Zn+CuSO_4 \rightarrow ZnSO_4+Cu$

(D) $2H_2O \xrightarrow{\text{Electrolysis}} 2H_2+O_2$

NSO Class 10

Total Questions: 35 Time: 60 min

Biology

24. In the human excretory system, where does the **selective reabsorption** of useful substances like glucose, amino acids, and salts from the filtrate primarily occur?

(A) Glomerulus

(B) Bowman's capsule

(C) Proximal convoluted tubule (PCT)

(D) Collecting duct

25. In Mendel's dihybrid cross between a plant with round yellow seeds (RRYY) and wrinkled green seeds (rryy), what is the phenotypic ratio of the F2 generation?

(A) 3 : 1

(B) 1 : 2 : 1

(C) 9 : 3 : 3 : 1

(D) 1 : 1 : 1 : 1

26. If the salivary glands in a person become non-functional, which part of the digestive process will be directly affected?

(A) Digestion of proteins into amino acids.

(B) Digestion of fats into fatty acids and glycerol.

(C) Breakdown of starch into simpler sugars.

(D) Absorption of vitamins and minerals.

27. A person meets with an accident and loses control over body posture, balance, and voluntary actions like walking in a straight line. Which part of the brain was likely damaged?

(A) Cerebrum

(B) Cerebellum

(C) Medulla

(D) Pons

28. The diagram shows a simplified food web. If the population of snakes is completely removed, which of the following is the most likely long-term consequence?

(A) The eagle population will increase due to less competition.

(B) The plant population will decrease drastically.

(C) The populations of rabbits and mice will initially increase.

(D) The food web will collapse immediately.

29. In humans, the pulmonary artery carries:

(A) Oxygenated blood from the heart to the lungs.

(B) Deoxygenated blood from the heart to the lungs.

(C) Oxygenated blood from the lungs to the heart.

(D) Deoxygenated blood from the body to the heart.

30. Which of the following plant hormones is responsible for wilting of leaves and promoting dormancy in seeds?

(A) Auxin

(B) Gibberellin

(C) Cytokinin

(D) Abscisic acid

31. A man with blood group A marries a woman with blood group B, and their child has

NSO Class 10

Total Questions: 35 Time: 60 min

blood group O. What are the genotypes of the parents?

(A) IAIA and IBIB

(B) IAi and IBi

(C) IAIA and IBi

(D) IAi and IBIB

32. The process of placentation in humans is crucial because:

(A) It provides a large surface area for the passage of nutrients and oxygen from the mother to the embryo.

(B) It facilitates the movement of the embryo into the uterus.

(C) It is the site of fertilization.

(D) It protects the embryo from all maternal infections.

33. Which of the following represents homologous organs?

(A) Wings of a bird and wings of an insect.

(B) Forelimbs of a frog and forelimbs of a human.

(C) Gills of a fish and lungs of a human.

(D) The appendix in humans and the tail of a monkey.

34. The accumulation of non-biodegradable pesticides in the food chain in increasing amounts at each higher trophic level is known as:

(A) Eutrophication

(B) Biomagnification

(C) Biodegradation

(D) Bio-accumulation

35. Asexual reproduction in Spirogyra occurs by:

(A) Budding

(B) Spore formation

(C) Fragmentation

(D) Fission