ORANGE GLOBAL OLYMPIAD

School Level Examination

SLE 2023

GRADE 10

SCIENCE

Subject Code: 3 0 1

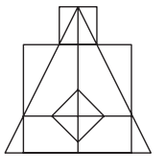
Total Questions: 50 Time: 1 hour

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED TO DO SO

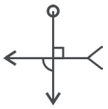
- All questions are compulsory.
- Read the instructions on the **ANSWER SHEET** and fill in your **NAME**, **CLASS** and **OTHER INFORMATION**.
- To mark your choice of answer by darkening the circles in the **ANSWER SHEET**, use a **BLUE/BLACK BALLPEN** only.
- You **MUST** record your answers on the **ANSWER SHEET** only.
- There are **50 MULTIPLE CHOICE QUESTIONS**. Use the information provided to choose the **BEST** possible answer among the four options. On your **ANSWER SHEET** fill in the circle that matches your answer.
- Marks are **NOT** deducted for incorrect answers.
- Return the **ANSWER SHEET** to the invigilator at the end of the examination.
- You are **NOT** allowed to use a calculator. You may use a ruler and spare paper for rough work.

This question paper contains a total of 50 questions divided into three sections - A, B and C.
Read the instructions carefully before attempting these questions.

Section A (Logical Reasoning)

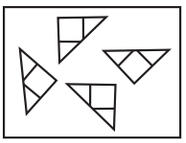


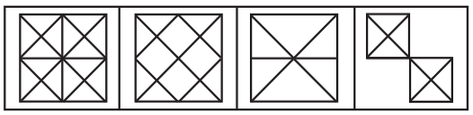
1. How many rectangles and triangles are there in the given figure?
   (A) 8, 18 (B) 12, 22
   (C) 8, 19 (D) 9, 20

2. The correct water image of  is:
   (A)  (B) 
   (C)  (D) 

3. Ramesh walks from point A to B at 3 km/h and from B to A at 6 km/h. What is his average speed?
   (A) 4.0 km/h (B) 4.5 km/h
   (C) 5.0 km/h (D) 5.5 km/h

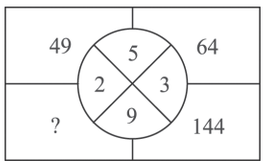
4. Find out which of the figures (1), (2), (3) and (4) can be formed from the pieces given in figure (X).


X


(1) (2) (3) (4)

   How many cubes are involved?
   (A) 1 (B) 2
   (C) 3 (D) 4

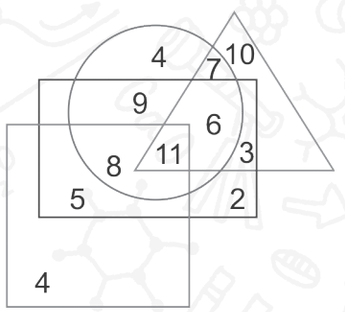
5. The numbers in the circle are according to some order. Identify the missing number.



   (A) 110 (B) 121
   (C) 125 (D) 150

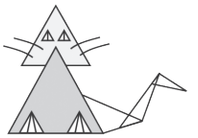
6. Identify the missing letters in the alphabetic series:
   a ____ cdaab ____ cc ____ daa ____ bbb ____ ccddd.
   (A) bdbda (B) bddca
   (C) dbbca (D) bbdac

7. In the given figure:
   - Rectangle represents males.
   - Circle represents the urbans.
   - Square represents the educated.
   - Triangle represents the civil servants.



   Then, the number of educated males who are urban civil servants is _____ .
   (A) 19 (B) 11
   (C) 8 (D) 5

8. How many triangles can you count in this cat?



(A) 24 (B) 27
(C) 28 (D) 21

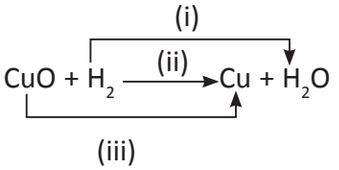
9. If *x* stands for add, y stands for subtract, *z* stands for divide and *P* stands for multiply, then what is the value of 7 *P* 3 *y* 6 *z* 2 x 5?
(A) 5 (B) 10
(C) 15 (D) 23

10. The letters L, M, N, O, P, Q, R, S and T in their order are substituted by nine integers 1 to 9 but not in that order. 4 is assigned to P, The difference between P and T is 5. The difference between N and T is 3. What is the integer asssigned to N?
(A) 4 (B) 5
(C) 6 (D) 7

Section B (Subject Specific)

11. Rohan was trying to burn a piece of paper by focusing the reflected rays of the sun through a mirror. Which of the following types of mirrors is being used here by him?
(A) Concave mirror (B) Convex mirror
(C) Plane mirror (D) None of these

12. Consider the given reactions and identify (i), (ii) and (iii).
(A) i- Oxidation, (ii) -Heat, (iii) -Reduction
(B) i- Reduction, (ii) -Heat, (iii) -Reduction
(C) i- Reduction, (ii) -Heat, (iii) -Oxidation
(D) i- Oxidation, (ii) -Heat, (iii) –Oxidation

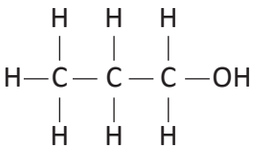


13. Which of the following pairs of metals will melt if kept on our palm?
(A) Iron and Copper (B) Aluminum and Magnesium
(C) Sodium and Lead (D) Gallium and Cesium

14. Which of the following acids is found in sting of ant?
(A) Methanoic acid (B) Oxalic acid
(C) Citric acid (D) Tartaric acid

15. The growth of pollen tubes towards ovules shows _____.
(A) hydrotropism (B) geotropism
(C) chemotropism (D) None of these

16. Identify the given structure.



(A) Propanal (B) Propanone
(C) Propanoic acid (D) Propanol

17. Which of the following statements is correct regarding excretion in plants?
    (A) Plants can get rid of excess water by transpiration.
    (B) Many plant waste products are stored in cellular vacuoles.
    (C) Waste products may also be stored in leaves that fall off.
    (D) All of these

18. In the Monohybrid cross, when Tall (TT) is crossed with Dwarf (tt), then the F_1 generation shows _____.
    (A) Tall (TT) (B) Dwarf (tt)
    (C) Tall (Tt) (D) Dwarf (tT)

19. A current of 0.2 A is drawn by a filament of an electric bulb for 15 minutes. Find the amount of electric charge that flows through the circuit.
    (A) 470 C (B) 500 C
    (C) 600 C (D) 180 C

20. Ram's father is suffering from cataract. His father has
    (A) opaque eye lens (B) excessive curvature of eye lens
    (C) weakened ciliary muscles (D) elongated eyeball.

21. Read the given statements regarding vegetative propagation and select the incorrect option.
    (A) Plants raised by vegetative propagation cannot bear flowers and fruits.
    (B) All plants produced are genetically similar enough to the parent plant to have all its characteristics.
    (C) This property of vegetative propagation is used to grow many plants for agricultural purposes.
    (D) Both (B) and (C)

22. In the following food chain, plants provide 200 J of energy to grasshoppers. How much energy will be available to snakes from frogs?

    Plants → Grasshoppers → Frogs → Snakes
    (A) 2000 J (B) 0.2 J
    (C) 20 J (D) 2 J

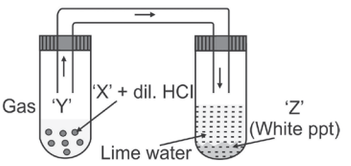
23. Which of the following will always occupy the second trophic level of food chains?
    (A) Lion (B) Plant
    (C) Deer (D) All of these

24. Which of the following is the permanent method of contraception?
    (A) Oral pills (B) Copper-T
    (C) Tubectomy (D) All of these

25. Read the following statements and select the correct option.
    (A) An electromagnet consists of a core of soft iron wrapped around with a coil of insulated copper wire.
    (B) In our houses, we receive AC electric power of 220 V with a frequency of 50 Hz.
    (C) Electric fuse is an important component of all domestic circuits.
    (D) All of these

26. The addition of water in lime is _____.
    (A) endothermic reaction (B) decomposition reaction
    (C) exothermic reaction (D) displacement reaction

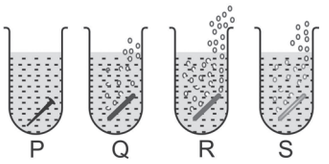
27. Identify 'X', 'Y' and 'Z' (white precipitate), respectively shown in the given diagram.



(A) 'X' is Na_2CO_3, 'Y' is CO, 'Z' is $CaCO_3$
(B) 'X' is NaCl, 'Y' is Cl_2, 'Z' is Na_2CO_3
(C) 'X' is K_2CO_3, 'Y' is CO_2, 'Z' is $CaCO_3$
(D) 'X' is $CaCO_3$, 'Y' is CO_2, 'Z' is $Ca(OH)_2$

28. The radius of curvature of a concave mirror is 42 cm. What will be its focal length?
(A) 18 cm (B) 42 cm
(C) 20 cm (D) 21 cm

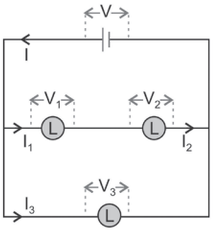
29. Observe the given diagrams P, Q, R and S carefully.



The metals Iron, Copper, Magnesium and Zinc are each dipped in dilute Hydrochloric acid. Which metals are kept in test tubes P, Q, R and S respectively as H_2 gas is evolved in Q, R and S which are represented by bubbles.
(A) Fe, Zn, Cu, Mg (B) Cu, Fe, Mg, Zn
(C) Zn, Cu, Mg, Fe (D) Mg, Zn, Cu, Fe

30. Which of the following is correct for soap molecule?
(A) Hydrophilic head and hydrophobic tail. (B) Hydrophobic head and a hydrophilic tail.
(C) Hydrophobic head as well as hydrophobic tail. (D) Hydrophilic head as well as hydrophillic tail.

31. The given circuit diagram represents identical lamps connected to a cell. Which pair of equations is correct in the circuit?

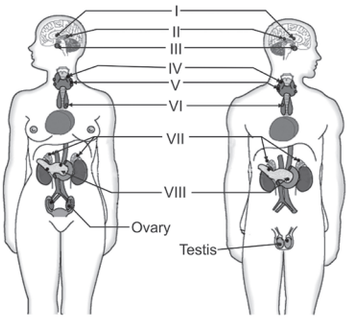


(A) $V = V_1 + V_2 + V_3$, $I = I_1 + I_2 + I_3$ (B) $V = V_1 + V_2$, $= V_3$, $I = I_1 + I_2$
(C) $V = V_1 + V_2 = V_3$, $I = I_1 + I_3$ (D) $V = V_1 + V_2 + V_3$, $I = I_1 + I_2$

32. "I am an abnormal type of sexual reproduction, which involve only one parent, gametes are not produced, meiosis and syngamy does not happen". Who am I?
(A) Bisexual reproduction (B) Asexual reproduction
(C) Trans-sexual reproduction (D) Autosexual reproduction

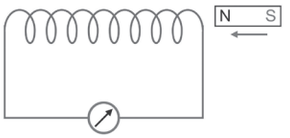
33. Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of cross is _____.
(A) Double fertilization (B) Cross fertilization
(C) Self pollination (D) Single fertilization

34. Observe the diagram given below and identify the endocrine glands in human being from I to VIII, respectively.



(A) Pineal, Hypothalamus, Pituitary, Thyroid, Parathyroid, Thymus, Pancreas, Adrenal
(B) Hypothalamus, Pineal, Pituitary, Thyroid, Parathyroid, Thymus, Adrenal, Pancreas
(C) Pineal, Hypothalamus, Thyroid, Pituitary, Parathyroid, Thymus, Pancreas, Adrenal
(D) Hypothalamus, Pineal, Thyroid, Parathyroid, Thymus, Pancreas, Adrenal, Pituitary

35. A magnet is moved horizontally towards the coil of insulated wire, which induced an e.m.f. in the coil. In which direction will the coil move?



(A) Away from the magnet
(B) Towards the magnet
(C) Downwards
(D) Upwards

Instruction: Q. 36 to 40 are two-key based questions having four options A, B, C and D out of which TWO are correct.

36. Which of the following are warm blooded animal?
(A) Bat
(B) Elephant
(C) Snake
(D) Lizard

37. A cross between a tall pea plant (TT) and short pea plant (tt) resulted in progeny of all tall plants because _____.
(A) tallness is the dominant trait
(B) shortness is the dominant trait
(C) shortness is the recessive trait
(D) tallness is recessive trait

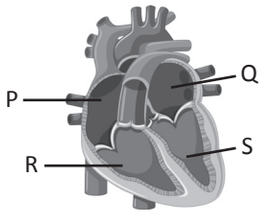
38. Which of the following is not a primary colour?
(A) Blue
(B) Red
(C) Green
(D) Black

39. Which of the following properties of an electron can change when it moves freely in a magnetic field?
(A) Mass and Speed
(B) Velocity
(C) Mass and Momentum
(D) Momentum

40. Select the correct statement.
(A) All animals are consumers.
(B) Carnivores are known as secondary consumers.
(C) An organism which lives in or on the body of another organism and derives nutrition from them is called predator.
(D) All of these

Section C (Competency Enhancement)

41. Observe the given figure and select the correct option.



(A) P is right atrium and it receives oxygenated blood from body.
(B) Q is left atrium and it receives oxygenated blood from lungs via pulmonary veins.
(C) R is right ventricle and it usually receives oxygenated blood from right atrium.
(D) S is left ventricle that supplies deoxygenated blood to body.

42. While giving first speech in her school assembly, Shruti's mouth dries up and her heart rate increases. Which of the following hormones plays a role in bringing about these changes?
(A) Insulin
(B) Thyroxine
(C) Adrenaline
(D) Growth hormone

43. The sun looks almost reddish at sunrise and white at noon because _____.
(A) Red colour is least scattered and is received by our eye at sunrise and white light is least scattered at noon so appears white
(B) Red colour is most scattered, white light is least scattered
(C) Red colour has highest wavelength, white light has least wavelength
(D) Red colour has highest velocity, white light has least velocity

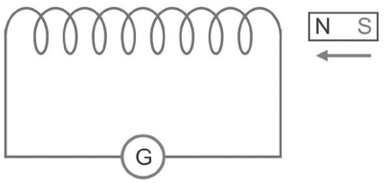
44. If pesticide is sprayed in a crop field, which organism will have maximum concentration of pesticide in its body?
(A) Snake (B) Eagle
(C) Mice (D) Peacock

45. Match the following.

Column I	Column II
(T) Cutting	(i) Raspberry, Strawberry, Lemon, Blackberry
(I) Layering	(ii) Mango, Peach, Apricot, Guava
(P) Grafting	(iii) Pineapple, Grapes, Sugarcane, *Chrysanthemum*

(A) T-i, I-ii, P-iii (B) T-iii, I-ii, P-i
(C) T-iii, I-i, P-ii (D) T-ii, I-iii, P-i

46. When a magnet is put into the coil of wire as shown in the given diagram, we can observe reading of induced current in Galvanometer. Which changes can increase the amount of induced current?

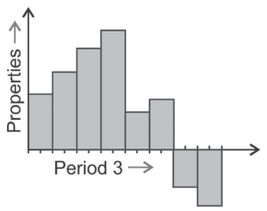


I. Moving the magnet faster
II. Using stronger magnet
III. Increasing the number of coils
IV. Decreasing number of coils
(A) I, II and III (B) I, II and IV
(C) II, III and IV (D) I and IV

47. Read the following statements and select the correct option:
Statement 1: Electrical appliances which have metallic body, must be connected with the earth wire.
Statement 2: Earthing prevents the user from severe electric shock in case of any leakage of current.
(A) Both statements are correct and statement-2 is the correct explanation of statement 1.
(B) Both statements are correct, but statement-2 is not the correct explanation of statement-1.
(C) Statement-1 is correct and statement-2 is incorrect.
(D) Both statements are incorrect.

48. Which of the statements are correct?
I. All green plants and blue green algae are autotrophs.
II. Green plants get their food from organic compounds.
III. Consumers are chemotrophs.
IV. Plants convert solar energy into chemical energy.
(A) I, II and III (B) II, III and IV
(C) I, III and IV (D) I, II and IV

49. The given bar graph represents the trend in properties for elements across 3rd period of the periodic table. Which of the following properties could be represented by the bar graph?



(A) Valency (B) Size of ion
(C) Melting point (D) Charge on ion

50. Which of the following is/are the main components of AC generator?
I. Armature coil II. Slip rings III. Carbon brushes
(A) I and II only (B) I and III only
(C) II only (D) I, II and III

GRADE
10

SCIENCE