ORANGE GLOBAL OLYMPIAD

# SCIENCE

School Level Examination

GRADE 10

**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 an **HB Pencil** only.

* You **MUST** record your answers on the **ANSWER SHEET**.

* There are 50 **MULTIPLE CHOICE QUESTIONS**. Use the information provided to choose the **BEST** answer among the four possible options.

On your **ANSWER SHEET** fill in the oval that matches your answer.

* Marks are **NOT** deducted for incorrect answers.

* Return the **Answer Sheet** to the invigilator at the end of the examination.

* Write your Roll No. on the Question Paper too and take it home for future reference.

* You are **NOT** allowed to use a calculator.

You may use a ruler and spare paper for rough work.

## Section - A

**(This section contains 10 multiple choice questions. Each question has four choices (A), (B), (C) and (D), out of which only ONE is correct.)**

1. Malaria : Mosquito : : ? : ?

   (A) Rat : Plague (B) Medicine : Disease

   (C) Cholera : Water (D) Poison : Death

2. Find the missing number.

| | | |
|---|---|---|
| 4 | 16 | 64 |
| 5 | 25 | 125 |
| 6 | **?** | 216 |

   (A) 36 (B) 41

   (C) 49 (D) 38

3. 2Z5, 7Y7, 12X9, 17W11, 22V13, __?__.

   (A) 47U14 (B) 45U15

   (C) 27U24 (D) 27U15

4. 20 boys are standing in a row. Rakesh is 5th from the front. Saurabh is 10th from the end. What is the position of the Rajat who is standing in between Rakesh and Saurabh from the front?

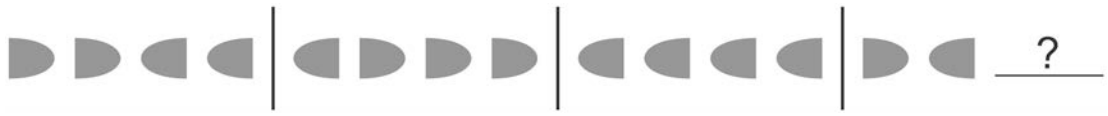
   (A) 9th (B) 10th

   (C) 6th (D) 8th

5. If '+' is '×', '–' is '+', '×' is '÷' and ÷ is '–', then 4 × 2 + 6 – 4 ÷ 2 is _____.

   (A) –1 (B) 10

   (C) 14 (D) 5

6. 


   (A)  (B) 

   (C)  (D) 

7. Dev said, 'Rita is the mother of my son's daughter.' How is Dev related to Rita?

   (A) Daughter-in-law (B) Wife

(C) Daughter (D) Granddaughter

8. If PANDEMIC is coded as APDNMEIC, what will be the code for DIRECTOR?

(A) IDERTCRO (B) RODTIREC

(C) IODRETCR (D) TOIRIECD

9. If black is green, green is blue, blue is red, and red is white. What will be the color of the sky?

(A) Red (B) White

(C) Blue (D) Black

10. Six friends Prachi, Qasim, Raj, Susan, Tara and Uma are sitting around a hexagonal table in the following manner. If Prachi and Qasim are sitting opposite to each other. Raj is to the left of Prachi. Susan and Tara are opposite to each other. Uma is to the right of Susan. Who is to the right of Q?

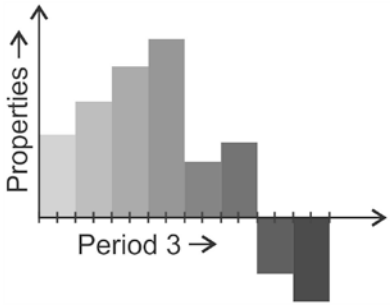
(A) Susan (B) Raj

(C) Uma (D) Tara

## Section - B

**(This section contains 25 multiple choice questions. Each question has four choices (A), (B), (C) and (D), out of which only ONE is correct.)**

11. 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) Melting point

(C) Charge on ion (D) Size of ion

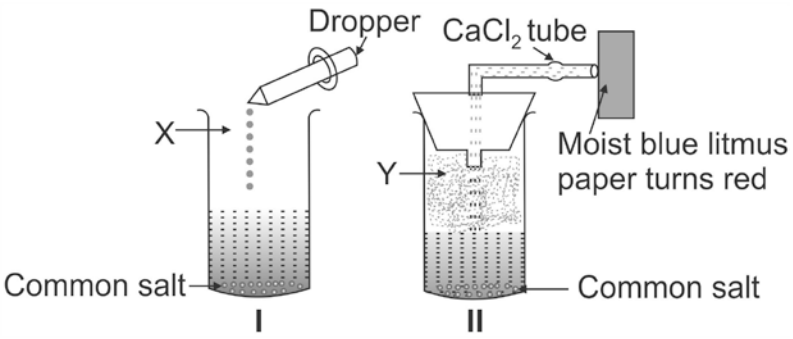
12. For the periodic table of elements, identify (i) most electronegative atom (ii) element with property of catenation (iii) gas used in balloon.

| Group 14 | Group 15 | Group 16 | Group 17 | Group 18 |
|---|---|---|---|---|
| R | | | P | T |
| | S | | | |
| | | Q | | |

(A) (i)-R, (ii)-Q, (iii)-S (B) (i)-P, (ii)-R, (iii)-T

(C) (i)-P, (ii)-T, (iii)-Q (D) (i)-Q, (ii)-S, (iii)-R

13. Study the given diagram I and II carefully and identify 'X' and 'Y', respectively.




(A) Conc. $H_2SO_4$, HCl (B) Conc. NaOH, $Cl_2$

(C) Conc. HCl, CO (D) Conc. $H_2SO_4$, SO

14. The following reaction is an example of

$HCl + NaOH \rightarrow NaCl + H_2O$

(A) Mitsunobu Reaction (B) Neutralization Reaction

(C) Precipitation Reaction (D) Combustion Reaction

15. Choose the correct statement.

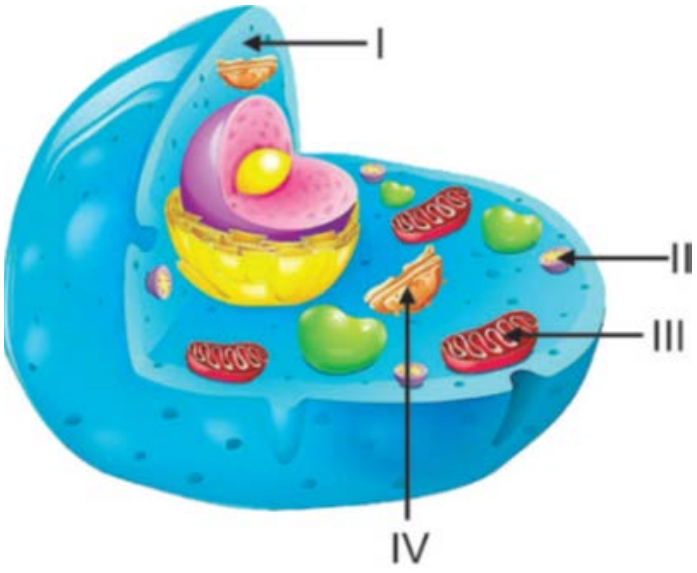
(A) Wind energy is a renewable source of energy.

(B) Geothermal energy is not derived from the oceans.

(C) Tidal energy can be obtained from the oceans.

(D) All of these

16. Identify I, II, III and IV in the given diagram.



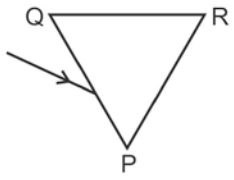

(A) Lysosome, cell membrane, mitochondria, golgi complex

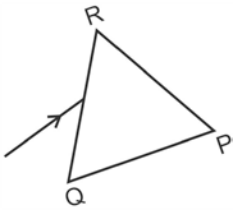
(B) Cell membrane, lysosome, mitochondria, golgi complex

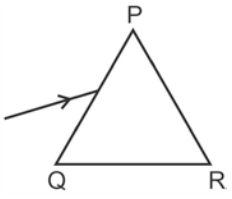
(C) Cell membrane, lysosome, golgi complex, mitochondria

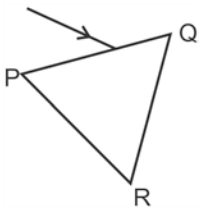
(D) Cell membrane, mitochondria, lysosome, golgi complex

17. A prism PQR with QR as base is placed in different orientations. A narrow beam of white light is incident on the prism as shown in the given diagram. In which of the following cases, after dispersion, the third colour from the top will be the colour of the sky?

(A) 


(B) 


(C) 


(D) 


18. Natural selection acts on an organism's _____ and occurs when the environment causes _____.

(A) Phenotype, differential success in reproduction

(B) Dominant alleles, differential mortality

(C) Combined genotype, a reduced gene pool

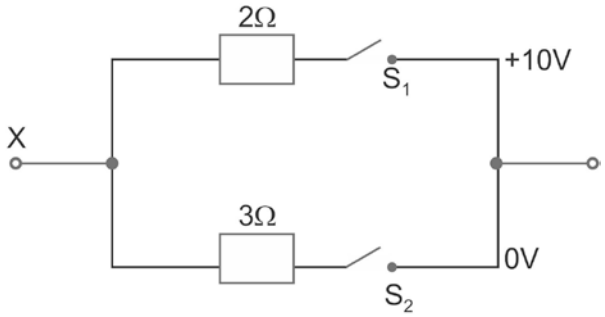
(D) Recessive of homozygous alleles, assorative mating

19. A person cannot see distinct objects up to 2 m. This defect can be corrected by using lens of power of _____.

(A) + 0.5 D (B) – 0.5 D

(C) + 0.4 D (D) – 0.4 D

20. What is the resistance of the given circuit, if all the switches are closed?




(A) 1.2 W (B) 1 W

(C) 6 W (D) 1.5 W

21. In a village of Karanataka, people started cultivating crops all around a lake. They discovered that water body was completely covered with green floating plants and fishes started dying in large number. This happened due to _____.

I. euterophication II. decomposition

III. photosynthesis IV. biomagnificaiton

(A) I and II (B) II and III

(C) III and IV (D) I and IV

22. Saprotrophs is an another name for _____.

(A) Decomposers (B) Producers

(C) Consumers (D) Heterotrophs

23. The main power supply of a house is through 5A fuse. How many fans of 88 W can be used in this house at 140V?

(A) 11 (B) 10

(C) 8 (D) 12

24. Which of the following does not make the transport system of plants?

(A) Leaves (B) Roots

(C) Flower (D) Vascular Bundle

25. Which of the following statement is/are correct?

I. Calorific value and enthalpy of combustion of fuel are same.

II. Animal charcoal is an important fossil fuel.

III. Coal is obtained by burning wood.

(A) I and II (B) II and III

(C) III and IV (D) None of these

26. At a LG chemical process factory, an accident occurred due to which sulfuric acid spilt. To neutralize it, which of the following must be used in excess so that no harmful by-product is formed?

(A) Sodium Bicarbonate (B) Ammonia

(C) Nitric acid (D) Acetic acid

27. Which of the following measures will decrease $CO_2$ in atmosphere and prevent global warming?

I. Cottrell precipitators to remove fine particles like dust and smoke, and poisonous gases which comes out from chimneys of industries.

II. Planting more trees.

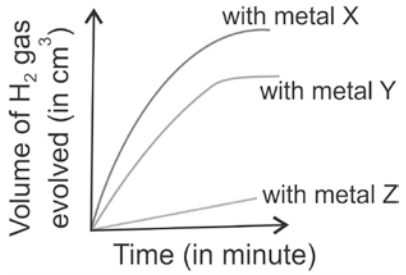
III. Use of CNG instead of petrol, diesel, Kerosene.

IV. Preparing manure from biodegradable waste instead of burning.

(A) I and II (B) I, II and III

(C) I, III and IV (D) All of these

28. The given graph shows the rate of reaction of three different metals X, Y, Z with dilute Sulphuric acid. X, Y and Z respectively are _____.




(A) Na, Mg, Cu (B) Na, Ca, Zn

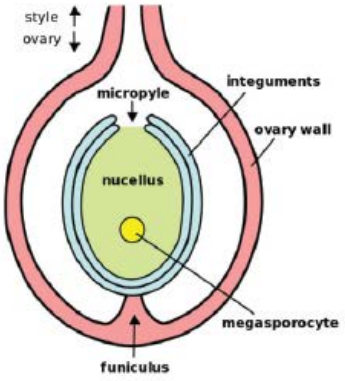
(C) K, Na, Ca (D) Mg, Zn, Pb

29. A doctor advised a person to take an injection of insulin because _____.

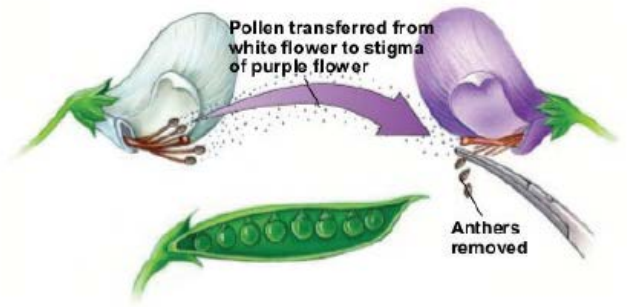
(A) His heart beat was fast (B) He was suffering from diabetes

(C) His blood pressure was low (D) His heart beat was slow

30. Observe the given diagrams I and II, and identify the process these diagrams represent.




I




II

(A) I-Cross pollination, II-Fertilization (B) I-Fertilization, II-Self-pollination

(C) I-Pollination, II-Fertilization (D) I-Fertilization, II-Cross-pollination

31. Insulin is secreted by _____.

(A) Adrenal (B) Pancreas

(C) Hypothalamus (D) Thyroid

32. Conductivity and pH of some acids (0.1M) are given in the table. Identify correct conclusion.

| Acid | Conductivity | pH |
|---|---|---|
| (J) | 25 | 1.0 |
| (U) | 40 | 0.90 |
| (S) | 2 | 2.9 |
| (T) | 0.5 | 3.2 |

(A) (J) & (U) are weak acids while (S) & (T) are strong acids.

(B) (J) & (U) are strong acids while (S) & (T) are weak acids.

(C) All are weak acids.

(D) All are strong acids.

33. 100 J of heat is produced each second in a 4 W resistance. The potential difference and current across the resistor is _____.

(A) 200V, 5A (B) 20V, 5A

(C) 20V, 1A (D) 200V, 1A

34. Which of the following carries blood to all the parts of the body?

(A) Lungs (B) Blood Vessels

(C) Nephrons (D) Heart

35. A compound contains 75% Carbon and remaining Hydrogen. It is used as a clean fuel, burns with blue flame. It does not decolourise Bromine water. The compound is _____.

(A) $C_2H_2$ (B) $C_2H_6$

(C) $CH_4$ (D) None of these

## Section - C

**(This section contains 10 multiple choice questions. Each question has four choices (A), (B), (C) and (D), out of which TWO are correct.)**

36. Biodiversity is the variability of life on earth. Which of the following statements stands true with this?

(A) Biodiversity refers to only the flora of a given area.

(B) Biodiversity refers to the different species of flora and fauna present in an area.

(C) Biodiversity refers to the total number of individuals of a particular species living in an area.

(D) All of the above

37. Which of the following statements stands true for sexual reproduction?

(A) Two types of gametes are required

(B) Clones are formed

(C) Formation of zygote takes place

(D) None of the above

38. Aqua regia can dissolve

(A) Ir (B) Ti

(C) Pt (D) Au

39. What are the characteristic features of acetic acid ($CH_3COOH$)?

(A) It does not have any peculiar odour.

(B) It smells like vinegar.

(C) It can be reduced to formaldehyde ($CH_3CHO$).

(D) It can be oxidized to ethyl alcohol.

40. The hetero atoms present in $CH_3CH_2OCH_2CH_2Cl$ are _____.

(A) Carbon (B) Oxygen

(C) Chlorine (D) Hydrogen

41. Pick the correct option.

(A) Solar energy is converted into chemical energy by animals.

(B) Insufficient food supply limits the number of trophic levels in food chain.

(C) Blue-green algae are autotrophs.

(D) Methane is a greenhouse gas.

42. Which of the following statements are not true for sexual reproduction in flowering plants?

(A) Offspring formed are clones.

(B) It requires one type of gametes.

(C) It always results in the formation of zygote.

(D) Fertilization is must.

43. Human beings belong to the same species. Which of the following is not responsible for this?

(A) Humans have common ancestor.

(B) Humans have same number of chromosomes.

(C) All humans have same colour.

(D) All humans have same size.

44. What are the main constituents of biogas?

(A) Methane (B) Hydrogen Sulphide

(C) Oxygen (D) Nitrogen

45. Which of the following can make a parallel beam of light when light from a point source is incident on it?

(A) Concave mirror as well as concave lens

(B) Convex lens

(C) Two plane mirrors place at 90° to each other

(D) Concave Mirror

46. _____ and _____ alloys have aluminium as their constituent.

(A) Alnico (B) Magnalium

(C) Solder (D) Bronze

47. Which of the following are two ways to increase induce current in a coil by electromagnetic induction?

(A) By increasing the magnetic field in the coil.

(B) By decreasing the current in the neighbouring circuit.

(C) By decreasing magnetic field in the coil.

(D) By increasing the current in the neighbouring circuit.

48. Solid Potassium oxide reacts vigorously with water forming Potassium hydroxide. Which of the following are true about it?

(A) It is an exothermic reaction.

(B) It is an endothermic reaction.

(C) The pH of resulting solution is more than 7.

(D) The pH of resulting solution is less than 7.

49. Choose the correct statements.

I. Direction of induced current can be determined by Fleming right hand thumb rule.

II. Alternating current can reverse its direction.

III. Heat produced in the resistor is directly proportional to the current of the given resistance.

(A) I (B) II

(C) III (D) All are correct

50. Pick the correct statements.

(A) Ionic compounds are negative in nature.

(B) Covalent compounds are formed by sharing of electrons.

(C) Ionic compounds can conduct electricity.

(D) All of the above

**Acknowledgement**



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