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**NATIONAL
INTERACTIVE
SCIENCE
OLYMPIAD**

NISO

7
Class

B1
Paper
Code

IMPORTANT INFORMATION

- You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET**.
- The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question paper for classes 7 to 12 contains 50 Questions each to be answered in 60 minutes. All questions are compulsory. Further instructions are given in the instruction letter to the coordinator teacher.
- Use the response sheet to mark your responses by darkening the required circle. The response sheet has to be returned to the foundation, duly filled in. The student can retain the Question Paper.




GENERAL I. Q.

- In the question, there is a certain relation between two given numbers on one side of :: and one number is given on another side of :: while another number is to be found from the given alternatives, having the same relation with this number as the numbers of the given pair bear. Choose the best alternative.
25 : 125 :: 36 : ?
 (1) 180 (2) 206
 (3) 216 (4) None of these
- Accident is related to Carefulness in the same way as Disease is related to ?
 (1) Medicine (2) Treatment
 (3) Sanitation (4) None of these
- A square and a rectangle have equal perimeters. Each side of the square measures 45 cm, while the length of the reactangle is 10 cm more than its breadth. If the length of the rectangle is assumed as X, then which equation correctly represents the given situation?
 (1) $2 \times (x + x - 10 \text{ cm}) = 180 \text{ cm}$
 (2) $4 \times (x + x + 10 \text{ cm}) = 180 \text{ cm}$
 (3) $2 \times (x + x + 10 \text{ cm}) = 180 \text{ cm}$
 (4) None of these
- $A + B$ means A is the son of B; $A - B$ means A is the wife of B; $A \times B$ means A is the brother of B; $A \div B$ means A is the mother of B and $A = B$ means A is the sister of B.
 What does $P + R - Q$ mean?
 (1) Q is the father of P (2) Q is the son of P
 (3) Q is the uncle of P (4) None of these
- Sanjeev walks 10 metres towards the South. Turning to the left, he walks 20 metres and then moves to his right. After moving a distance of 20 metres, he turns to the right and walks 20 metres. Finally, he turns to the right and moves a distance of 10 metres. How far and in which direction is he from the starting point?
 (1) 10 metres North (2) 20 metres South
 (3) 20 metres North (4) None of these
- If each interior angle of a regular polygon measures 108° , then the polygon is
 (1) Pentagon (2) Hexagon
 (3) Heptagon (4) None of these
- How many numbers from 1 to 100 are there, each of which is not only exactly divisible by 4 but also has 4 as a digit?
 (1) 7 (2) 10
 (3) 20 (4) None of these
- Some statements are given as
 (1) Each pair of adjacent angles of a parallelogram is supplementary.
 (2) Each pair of adjacent angles of a parallelogram is complementary.

- (3) Opposite sides of a parallelogram are of equal lengths.
 (4) All sides of a parallelogram are of equal lengths.
 Which two given statements are correct?
 (1) 1 and 3 (2) 2 and 4
 (3) 1 and 2 (4) None of these

9. Which figure will come next



- (1)  (2) 
 (3)  (4) None of these

10. A pattern is given as

$$1 = 1 = 1^3$$

$$3 + 5 = 8 = 2^3$$

$$7 + 9 + 11 = 27 = 3^3$$

$$13 + 15 + 17 + 19 = 64 = 4^3$$

According to the given pattern, 5^3 can be expressed as

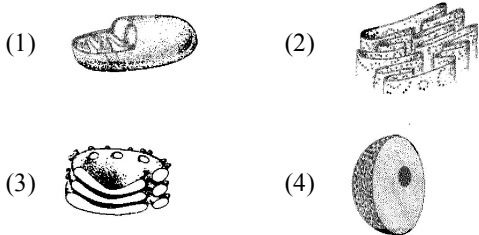
- (1) $21 + 23 + 25 + 27 + 29 = 5^3$
 (2) $20 + 22 + 24 + 28 + 31 = 5^3$
 (3) $28 + 30 + 32 + 35 = 5^3$
 (4) None of these

GENERAL SCIENCE

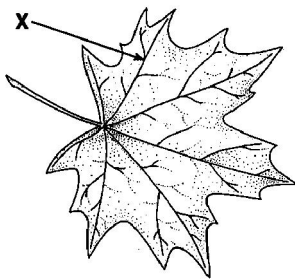
11. Which of these best shows a change from solar energy to chemical energy?
 (1) Evaporation of water
 (2) Heating of pavement
 (3) Photosynthesis in leaves
 (4) None of these
12. The process of iron combining with oxygen to form rust is considered a chemical change because rust has
 (1) properties that differ from both iron and oxygen
 (2) the same chemical composition as iron
 (3) greater chemical reactivity than oxygen
 (4) none of these
13. Some thermometers contain alcohol. Alcohol is used in thermometers because it _____.
 (1) is soluble in water
 (2) is a clear gas when it evaporates
 (3) expands and contracts easily
 (4) none of these
14. Which of these is most responsible for chemical reactions?
 (1) Electrons in the nucleus of the atoms
 (2) Electrons in the highest occupied energy level of the atoms
 (3) Electrons closest to the nucleus of the atoms
 (4) None of these
15. Which of these uses sound waves to measure the distance between objects underwater?
 (1) RADAR (2) SONAR
 (3) LASERS (4) None of these

16. According to the scientific definition of work, which of these best shows that work is being done?
 (1) A lamp hanging from a ceiling
 (2) A man pushing against a concrete wall
 (3) A car being towed down a street
 (4) None of these
17. The substance which undergoes chemical reaction is called _____.
 (1) product (2) reactant
 (3) catalyst (4) None of these
18. An acid used to preserve food articles is
 (1) acetic acid (2) lactic acid
 (3) oxalic acid (4) None of these
19. Which acid is found in stomach?
 (1) H_3PO_4 (2) H_2SO_4
 (3) HCl (4) None of these
20. Which of the following will cause a chemical change?
 (1) boiling water (2) melting of ice
 (3) ripening of fruits (4) None of these
21. _____ is a physical change where surface molecules of a liquid escape at any temperature
 (1) evaporation (2) condensation
 (3) boiling (4) None of these
22. Seasonal changes occur because
 (1) of green house gases
 (2) Earth's rotation on its axis
 (3) Earth's axis of rotation is tilted at an angle to the normal
 (4) None of these
23. To prevent tungsten filament from burning, which substance is used in the bulbs.
 (1) neon (2) helium
 (3) argon (4) None of these
24. A fabric which does not wrinkle easily is:
 (1) Cotton (2) PET
 (3) Polyester (4) None of these
25. Plastic material swallowed by animals affects their
 (1) Respiratory system (2) Circulatory system
 (3) Nervous system (4) None of these
26. Triple point of water is the temperature at which it Coexists in 3 states. The temperature is
 (1) $373^\circ K$ (2) $273^\circ K$
 (3) $-32^\circ C$ (4) None of these
27. Which gas is having highest calorific value & is commonly used in welding operation?
 (1) Methane (2) Acetylene
 (3) Hydrogen (4) None of these
28. Which of the following statement is false
 (1) Acid + Metal \rightarrow Salt + Hydrogen
 (2) Acid + base \rightarrow Salt + Hydroxide ion
 (3) Fats + NaOH \rightarrow Soap + Glycerol
 (4) None of these
29. Which of the following statement is false?
 (1) process of heat transfer in liquid is convection
 (2) process of heat transfer in liquid is conduction and convection
 (3) process of heat transfer in gases is convection
 (4) None of these

30. The smell of an Agarbatti is experienced due to which of the following phenomenon.
- (1) Dispersion (2) Diffusion
(3) Evaporation (4) None of these
31. During a race, the body temperature of a runner increases. The runner responds by perspiring, which lowers body temperature. This process is an example of
- (1) maintenance of homeostatis
(2) an antigen-antibody reaction
(3) an acquired characteristic
(4) None of these
32. Which diagram represents an organelle that generates ATP in the presence of oxygen?



33. What are the primary components of the structure labeled X in the given figure?

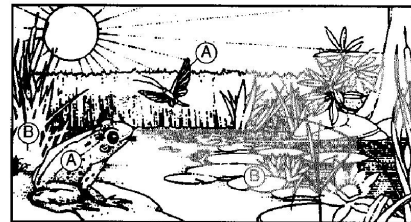


- (1) stomatas and lenticels
(2) xylem tissue and phloem tissue
(3) epidermal cells and guard cells
(4) cambium and root hairs
34. Viruses are exceptions to the cell theory, they have some characteristics of living things. Which is one of these characteristics?
- (1) They are made up of many specialized cells
(2) They contain genetic material
(3) They reproduce by mitosis
(4) None of these
35. Which row in the chart below contains the words that best complete this statement?
The I glands produce II, which are transported by the III system.

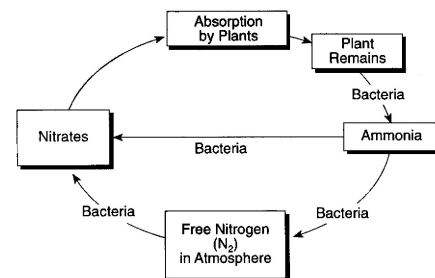
| Row | I | II | III |
|-----|-----------|----------|-------------|
| A | digestive | hormones | circulatory |
| B | endocrine | enzymes | lymphatic |
| C | endocrine | hormones | circulatory |
| D | digestive | enzymes | lymphatic |

- (1) A (2) B
(3) C (4) None of these
36. Which statement best explains why invertebrates regenerate lost tissue more readily than most vertebrates do?

- (1) Invertebrates contain specialized cells that produce the hormones necessary for this process.
(2) Invertebrate animals have more undifferentiated cells than vertebrate animals have.
(3) Invertebrate animals reproduce asexually, but vertebrate animals reproduce sexually.
(4) None of these
37. Based on the fact that a watermelon contains many seeds, what can be inferred about a normal flower of a watermelon plant?
- (1) It contains many sepals and petals
(2) It contains very large anthers
(3) It contains a large number of ovules
(4) None of these
38. The spotted touch-me-not, a flowering plant, has seed pods that burst open when touched and forcefully eject their seeds. Such an adaptation is favorable because it
- (1) aids in the dispersal of the species
(2) attracts insects that aid in pollination
(3) prevents germination within the seed pod
(4) none of these
39. An ecosystem is represented below.

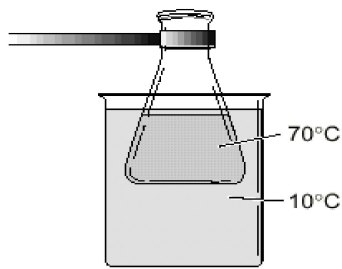


- This ecosystem will be self-sustaining if
- (1) the organisms labeled A outnumber the organisms labeled B
(2) materials cycle between the organisms labeled A and the organisms labeled B
(3) the type of organisms represented by B are eliminated
(4) none of these
40. Events that take place in a biome are shown in the diagram below.



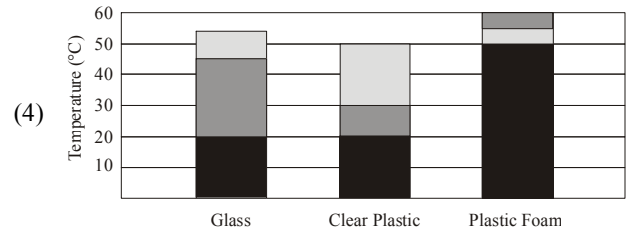
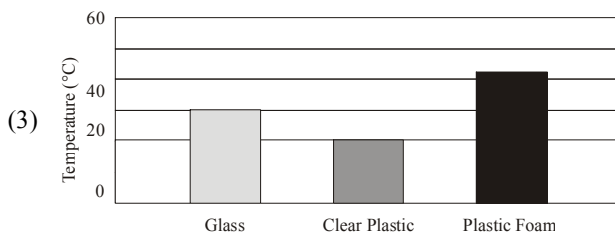
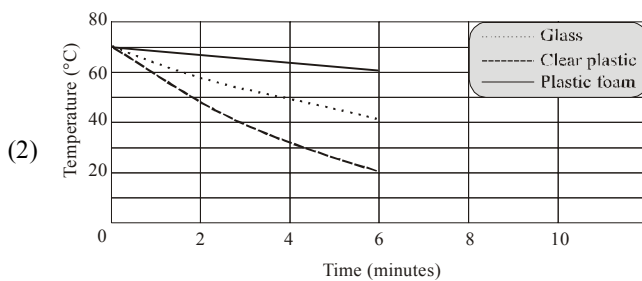
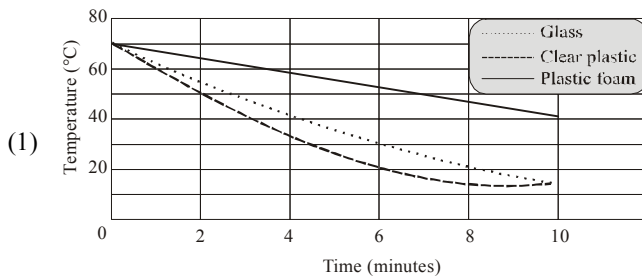
- Which information is represented in the diagram?
- (1) Respiration and photosynthesis are interrelated
(2) Transpiration and condensation are related to the water cycle
(3) Decomposers release a material that is acted on by other organisms
(4) Predators and their prey are involved in many interactions

41.



| Time (minutes) | Temperature (°C) | | |
|----------------|------------------|---------------|--------------|
| | Glass | Clear Plastic | Plastic Foam |
| 0 | 70 | 70 | 70 |
| 2 | 55 | 50 | 68 |
| 4 | 43 | 30 | 60 |
| 6 | 30 | 20 | 51 |

The picture above shows a flask of hot water in a container of cooler water. This test was carried out to find out which type of container would hold heat the longest. Which of these graphs best shows all of the data from this experiment?



42.

| Number of seeds germinated after 5 days | |
|---|---------------------------|
| 0 | <p>Dry</p> |
| 7 | <p>Moist</p> |
| 0 | <p>Covered with water</p> |

What is the variable being studied in this experiment?

- (1) Seed number (2) Amount of moisture
(3) Plant size (4) Amount of light

43. Which metric measure would be best to use when measuring the amount of water given to a plant?

- (1) Meters (2) Milliliters
(3) Centimeters (4) None of these

44.

| Mouse Number | Food | Week 1 Mass Gain | Week 2 Mass Gain | Total Mass Gained |
|--------------|---------|------------------|------------------|-------------------|
| 1 | Rice | 6g | 8g | 14g |
| 2 | Grain | 5g | 4g | 9g |
| 3 | Corn | 8g | 4g | 12g |
| 4 | Mixture | 12g | 8g | 20g |

Using the above table, what can you say about the relationship between each food and the mass of the mouse?

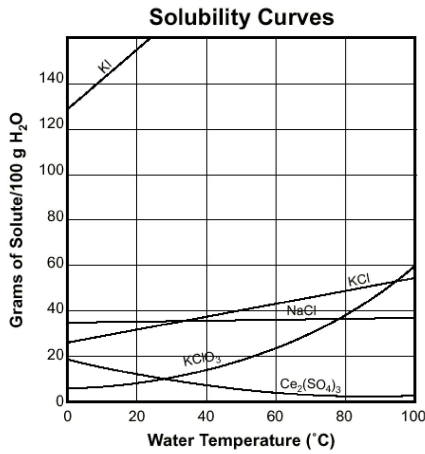
- (1) The mixture-fed mouse gained the most mass
(2) The rice-fed mouse gained the least mass
(3) The grain-fed mouse gained more mass in week 2
(4) The corn-fed mouse gained less mass in week 1.

45. Like the camel, many animals that live in soft sandy areas have large wide feet compared to their body size. The large feet are an advantage in these environments because they –

- (1) Distribute body weight over a large area
(2) Reduce the vibrations caused by walking
(3) Allow rapid digging in the sand
(4) None of these

46. On what factor does the time and frequency of irrigation not depend?
- (1) Type of crop
 - (2) Type of fertilizer
 - (3) Type of season
 - (4) None of these

47.



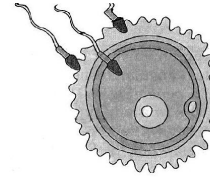
According to the graph, which of these is least soluble in water at 20°C?

- (1) KI
- (2) KClO₃
- (3) NaCl
- (4) Ce₂(SO₄)₃

48. The voice of a woman has a higher and than that of a man.

- (1) Loudness and amplitude
- (2) Loudness and pitch
- (3) Frequency and pitch
- (4) None of these

49. The process shown in the given figure is



- (1) Cleavage
- (2) Fertilization
- (3) Assimilation
- (4) Budding

50. Which is used as fire extinguisher?

- (1) water type
- (2) CO₂ type
- (3) Dry chemical type
- (4) All of these



END OF THE EXAM

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