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INTERNATIONAL CYBER OLYMPIAD	NATIONAL INTERACTIVE SCIENCE OLYMPIAD	NATIONAL INTERACTIVE MATHS OLYMPIAD	NATIONAL BIOTECHNOLOGY OLYMPIAD	INTERNATIONAL ENGLISH OLYMPIAD	INTERNATIONAL G.K. OLYMPIAD

NATIONAL INTERACTIVE SCIENCE OLYMPIAD

NISO

9 Class **B1 Paper Code**

IMPORTANT INFORMATION

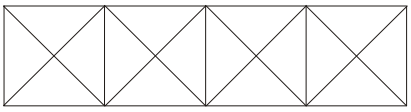
1. You are allowed additional 10 minutes to fill the required details in the **RESPONSE SHEET.**
2. The question paper is made as per syllabus guidelines & pattern given in the information Booklet. The Question Paper for Classes 1 to 6 contains 25 Questions each to be answered in 40 minutes. The Question 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.
3. 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.

1. Five students L, S, A, M and R are standing in a circle facing the center. S is standing between L and A. M is standing to the right of L.
If S and M interchange their positions, then who will be the fourth to the left of R?
(1) L (2) S
(3) A (4) none of these

2. If A is B's sister, C is B's mother, D is C's father and E is D's mother, then how is A related to D?
(1) Grandfather (2) Granddaughter
(3) Grandmother (4) None of these

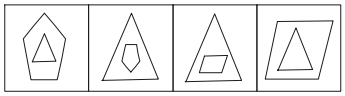
3. How many triangles and squares are there in the following figure?



(1) 28 triangles, 5 squares
(2) 24 triangles, 4 squares
(3) 28 triangles, 4 squares
(4) none of these

4. Which figure will come next.

Problem Figures



Answer Figures

(1)  (2) 

(3)  (4) none of these

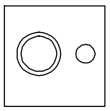
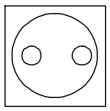
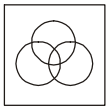
5. A dishonest dealer sells his goods at the cost price and still earns a profit of 25% by underweighing. What weight does he use for one kg?
(1) 750 gm (2) 800 gm
(3) 825 gm (4) none of these

6. If $x = y^a$, $y = z^b$ and $z = x^c$, then the value of abc is
(1) 7 (2) 2
(3) 1 (4) none of these

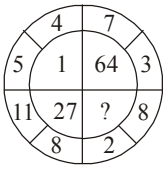
7. A baseball team has nine players. After winning a game, each player shook hands with each other just once. How many times did the players shake hands?
(1) 36 (2) 81
(3) 72 (4) none of these

8. Which of the given Venn diagrams out of A, B or C correctly

illustrates the relationship among the following classes?
Reptiles, Cobras, Turtles

(1) 
(2) 
(3) 
(4) none of these

9. Find the missing character in the question:



(1) 0 (2) 216
(3) 125 (4) none of these

10. A certain number of two digits is three times the sum of its digits and if 45 be added to it, the digits are reversed. The number is:
(1) 32 (2) 72
(3) 27 (4) none of these

GENERAL SCIENCE

11. Black coating on silver ware is an example of
(1) rusting (2) reduction
(3) corrosion (4) none of these

12. 250 ml milk + 770 cubic meter milk = ...
(1) 1020 ml (2) 1020 cubic meters
(3) 250.00077 ml (4) None of these

13. Which of the following will diffuse faster?
(1) A drop of ink in water (2) Oxygen in nitrogen
(3) Milk in water (4) None of these

14. What does the symbol (↓) represent in a chemical equation?
(1) solid state (2) gaseous state
(3) precipitate (4) none of these

15. Solubility of a gas in a liquid increases on
(1) Increasing temperature
(2) Decreasing pressure
(3) Increasing pressure
(4) None of these

16. What type of ion is given by bases in water?
(1) OH^- (2) H_3O^+
(3) H_2O^+ (4) None of these

17. Evaporation is
(1) endothermic (2) exothermic
(3) reversible (4) none of these

18. The equation between an acid and a base is
$XOH + HY \rightarrow XY + H_2O$
Which of the following is the anion part of salt?
(1) X (2) OH
(3) Y (4) none of these

19. Metals are ductile. This means:
(1) Metals can be drawn into wires
(2) Metals can be hammered into sheets
(3) Metals produce ringing sound
(4) None of these

20. Which of the following pairs will give displacement reactions?
(1) NaCl solution and copper metal
(2) $MgCl_2$ solution and aluminium metal
(3) $FeSO_4$ solution and silver metal
(4) None of these

21. When Sodium (Na), Copper (Cu) and Zinc (Zn) are placed in the order of decreasing reactivity, then their order would be
(1) Na > Zn > Cu (2) Na > Cu > Zn
(3) Cu > Na > Zn (4) None of these

22. A stick is dipped in a vessel containing water. It appears bent due to the property of
(1) Reflection (2) Newton's law of motion
(3) Refraction (4) None of these

23. The temperature on the surface of the Sun is about
(1) 8×10^{15} °C (2) 500 °C
(3) 6000 °C (4) None of these

24. The efficiency of a heat engine is 40%. If 10,000 joules of heat energy are supplied to it, then the useful work done by the engine would be
(1) 40,000 Joules (2) 10,000 Joules
(3) 25,000 Joules (4) None of these

25. The percentage of carbon in one molecule of carbon dioxide is approximately
(1) 2.73% (2) 27.3%
(3) 80.0% (4) None of these

26. The image formed on the retina of a human eye is
(1) Real and upright
(2) Real and inverted
(3) Imaginary and upright
(4) None of these

27. A person has a hearing range from 20 Hz to 20 kHz. What are the typical wavelengths of sound waves in air corresponding to these two frequencies? Take the speed of sound in air as 344 ms^{-1}.
(1) 2.3×9^5J (2) 3.3×10^5J
(3) 4.3×10^5J (4) None of these

28. The glass used for making laboratory apparatus is:
(1) Pyrex glass (2) Hard glass
(3) Soft glass (4) None of these

29. Flemings left hand rule is used to find out:
(1) Direction of magnetic field due to flow of current
(2) Direction of induced current due to effect of magnetic field
(3) Direction of motion of a current carrying conductor in magnetic field
(4) None of these

30. Which cell organelle is most directly involved with the bonding of amino acids?
(1) mitochondrion (2) ribosome
(3) cell wall (4) none of these

31. In a chemical analysis of a sample of animal tissue, which element would most likely be found in the *smallest* quantity?
(1) hydrogen (2) carbon
(3) iodine (4) none of these

32. Some deep-sea bacteria live near submerged volcanoes and make their own food using energy derived from minerals coming from the volcanoes. These bacteria would be classified as
(1) heterotrophic (2) autotrophic
(3) photosynthetic (4) none of these

33. The correct pathway for urine to flow out of the human body is
(1) bladder → ureter → kidney → urethra
(2) kidney → urethra → bladder → ureter
(3) urethra → bladder → kidney → ureter
(4) none of these

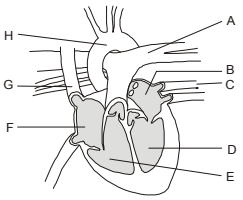
34. In a human, what is the ratio of the normal chromosome number in a nucleus produced by mitosis to the normal chromosome number in a nucleus produced by meiosis?
(1) 1:1 (2) 2:1
(3) 3:1 (4) None of these

35. Many scientists believe that the earliest cells on Earth were relatively simple, lacking nuclear membranes and other organized cellular structures. Over time, more complex cells developed from these simple cells. These statements describe the concept of
(1) inheritance of acquired characteristics
(2) evolution
(3) dominance
(4) none of these

36. Differences between the members of a population will most likely be passed to future generations if they are
(1) due to genetic changes and result in unfavorable variations
(2) due to genetic changes and result in favorable variations
(3) not due to genetic changes and result in unfavorable variations
(4) none of these

37. Which action by humans has had the most positive ecological impact on the environment?
(1) use of pesticides to regulate insect populations
(2) afforestation
(3) reforestation and covercropping to prevent soil erosion
(4) none of these

38. Which sequence represents part of the normal pathway of blood?



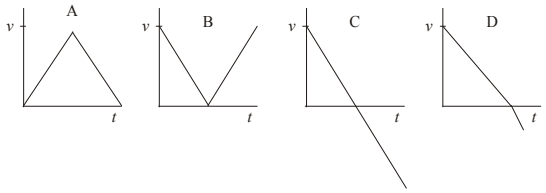
(1) $D \rightarrow B \rightarrow F \rightarrow E \rightarrow A$
(2) $G \rightarrow E \rightarrow F \rightarrow H \rightarrow D$
(3) $B \rightarrow D \rightarrow H \rightarrow G \rightarrow F$
(4) none of these

39. Which organ is correctly paired with its function?
(1) uterus — serves as site of implantation of the embryo
(2) penis — serves as site of semen formation
(3) testis — produces follicle stimulating hormone
(4) none of these

40. In 1990's, a new tomato variety that ripens slowly was developed by a laboratory technique that did not involve methods of natural reproduction. This new variety contains a section of a DNA molecule not found in the tomato from which it was originally developed. Which technique was most likely used to develop this new variety of tomato?
(1) amniocentesis (2) cross-pollination
(3) genetic engineering (4) none of these

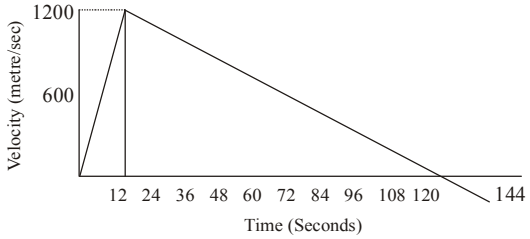
EtG INTERACTIVE SECTION

41. A ball is projected vertically upwards with a high velocity v. It comes back to the ground in time t. Which graph (v–t) shows the motion correctly?



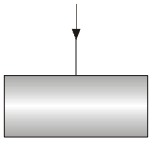
(1) A (2) B
(3) C (4) none of these

42. A rocket is fired upwards such that its engine takes 12 sec. in exploding fully. Its velocity-time graph is shown in the figure given below. What is the height reached by the rocket?

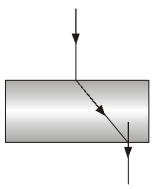
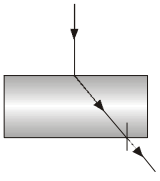


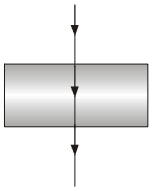
(1) 1200 metres (2) 1200 × 60 metres
(3) 1200 × 12 metres (4) none of these

43. A light ray is incident normally on a glass slab, as shown in the given figure.

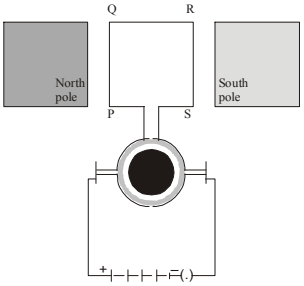


Which ray diagram correctly represents the path of the given light ray?

(1) 
(2) 

(3)  (4) none of these

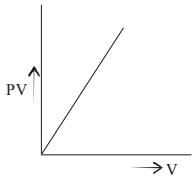
44. The systematic diagram of an electric motor is shown. During the first half of rotation of the armature coil PQRS, the side PQ moves **i**. This is due to the fact that the coil experiences **ii** force at the RS side.

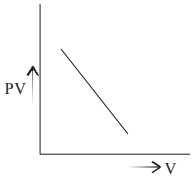


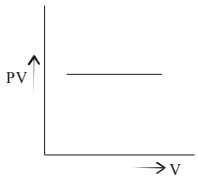
Which option completes the given statements?

	i	**ii**
(1)	upward	upward
(2)	upward	downward
(3)	downward	downward
(4)	none of these	

45. The variation of the product PV with volume V of a fixed mass of an ideal gas at constant temperature is graphically represented by the curve:

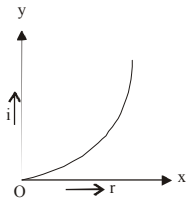
(1) 

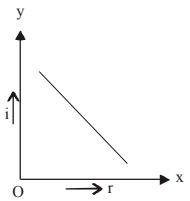
(2) 

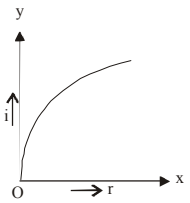
(3) 

(4) none of these

46. Which of the following denotes the graphic relationship between angle of incidence (i) and angle of reflection (r)?

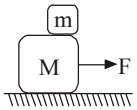
(1) 

(2) 

(3) 

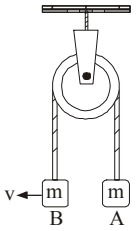
(4) none of these

47. The mass m is placed on a body of mass M. There is no friction. The force F is applied on M and it moves with acceleration a. Then the force on the top body is



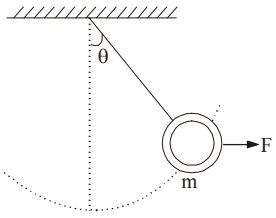
(1) F (2) ma
(3) $F - ma$ (4) none of these

48. In the given figure



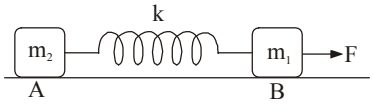
(1) both masses always remain in same level
(2) after some time, A is lower than B
(3) after some time, B is lower than A
(4) none of these

49. An object of mass m is tied to a string of length L and a variable horizontal force is applied on it which starts at zero and gradually increases until the string makes an angle θ with the vertical. Work done by the force F is



(1) $mgL(1 - \sin\theta)$ (2) mgL
(3) $mgL(1 - \cos\theta)$ (4) none of these

50. Two bodies A and B of masses m_1 and m_2 respectively are connected by a massless spring of force constant k. A constant force F starts acting on the body A at $t = 0$. Then



(1) at every instant, the acceleration of centre of mass is $\frac{F}{m_1 + m_2}$

(2) at $t = 0$, acceleration of B is zero but that of A is maximum

(3) the acceleration of A decreases continuously and finally becomes equal

(4) all the above

END OF THE EXAM