NSMC 2026 · QUESTION PAPER

National Science and Math Championship

Where Curiosity meets Competition

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GRADE 10

GRADE	TOTAL QUESTIONS	MAXIMUM MARKS	MARKING SCHEME
10	40 MCQs	160	+4 / −1

GENERAL INSTRUCTIONS

1. This question paper contains 40 multiple-choice questions.
2. Each correct answer carries 4 marks.
3. One mark will be deducted for every incorrect answer.
4. Choose the most appropriate answer from the four options.

PAPER PATTERN

SEC.	SUBJECT	Q. NO.	QS	MARKS
A	Mental Ability	1–8	8	32
B	Physics	9–16	8	32
C	Chemistry	17–24	8	32
D	Biology	25–32	8	32
E	Mathematics	33–40	8	32
	Total	**1–40**	**40**	**160**

SECTION A — Mental Ability

Questions 1–8 · 8 × 4 = 32 marks

1. In a code language, ‘tik pa lo’ means ‘Sita is clever’, ‘lo mi ra’ means ‘Ravi is smart’ and ‘pa ka mi’ means ‘clever and smart’. What is the code for ‘Sita is smart’?

A) tik lo mi **B)** tik pa mi **C)** ra lo mi **D)** tik lo ka

2. Which word looks the same in both its mirror image and its water image?

A) MOM **B)** DID **C)** BOB **D)** OHO

3. Ruthless : Mercy :: Pauper : ?

A) Money **B)** Kindness **C)** Food **D)** Health

4. If + means −, − means ×, × means ÷ and ÷ means +, which of these equations is correct?

A) 20 + 4 ÷ 2 − 3 = 22 **B)** 15 ÷ 3 − 4 + 6 = 23 **C)** 12 × 4 ÷ 5 − 2 = 15 **D)** 8 − 3 + 4 × 2 = 20

5. Find the odd one out.

A) 121 **B)** 169 **C)** 225 **D)** 289

6. In a family, six members P, Q, R, S, T and U are related as follows:
P and Q are married.
R is the daughter of P.
S is the brother of R.
T is the son of S.
U is the mother of Q.
How is U related to T?

A) Grandmother **B)** Great-grandmother
C) Maternal grandmother **D)** Aunt

7. Five years ago, the average age of A, B and C was 20 years. Today, the ratio of their ages is 4:5:6. What will be the age of the oldest person after 5 years?

A) 30 years **B)** 32 years **C)** 35 years **D)** 38 years

8. Six friends A, B, C, D, E and F are standing at different locations.

B is 10 m east of A.

C is 8 m north of B.

D is 15 m west of C.

E is 12 m south of D.

F is 5 m east of E.

In which direction is F with respect to A?

A) North-East **B)** South-West **C)** South-East **D)** South

SECTION B Physics

Questions 9–16 · 8 × 4 = 32 marks

9. A runner starts at point P, runs 6 m east, then 8 m north, then 6 m west, taking 10 s in all. Consider the following statements:

I. The total distance covered is 20 m.

II. The displacement is 8 m directed due north.

III. The average velocity is 2 m/s.

Which of the statements is/are correct?

A) II and III only **B)** I only **C)** I, II and III **D)** I and II only

10. **Assertion (A):** A person whose far point is 50 cm should use a lens of power −2 D to see distant objects clearly.

Reason (R): The lens used must be convex so that it converges the light rays from distant objects onto the retina.

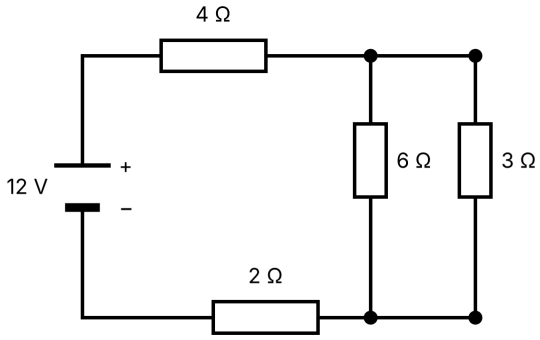
A) Both A and R are true and R is the correct explanation of A.

B) Both A and R are true but R is not the correct explanation of A.

C) A is true but R is false.

D) A is false but R is true.

11. In the circuit shown, the 12 V battery is connected to a 4 Ω and a 2 Ω resistor in series with a parallel combination of 6 Ω and 3 Ω. How much heat is produced in the 6 Ω resistor in 1 minute?

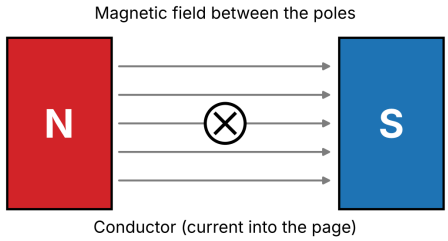


A) 90 J **B)** 180 J **C)** 210 J **D)** 360 J

12. A 2 cm tall object is placed 30 cm in front of a concave mirror of focal length 15 cm. The object is then moved 10 cm towards the mirror. What is the height of the image after the movement, and how does the image position change?

A) 4 cm; shifts 20 cm away from the mirror
B) 6 cm; shifts 30 cm away from the mirror
C) 6 cm; shifts 30 cm towards the mirror
D) 3 cm; shifts 30 cm away from the mirror

13. A straight conductor carrying current into the plane of the page lies between the poles of a magnet as shown. In which direction does the conductor tend to move? If the direction of current is reversed and the poles of the magnet are also interchanged, what will the direction of force be?



A) Upward; it reverses to downward
B) Downward; it remains downward
C) Downward; it reverses to upward
D) Upward; it remains upward

14. A 0.5 kg ball is dropped from a height of 20 m and rebounds to a height of 5 m after striking the floor. Taking g = 10 m/s^2, find the energy lost in the impact and the speed of the ball just after the bounce.

A) 75 J; 10 m/s
B) 75 J; 20 m/s
C) 100 J; 10 m/s
D) 25 J; 10 m/s

15. A house uses five 60 W bulbs and two 75 W fans for 6 h daily, and a 1000 W iron for 30 minutes daily. Electricity costs ₹7 per unit. The supply is 220 V. What is the monthly (30-day) bill, and which is the lowest suitable fuse rating for the main line if all appliances may run together? (Fuses of 5 A, 10 A and 15 A are available.)

A) ₹567; 5 A
B) ₹672; 5 A
C) ₹672; 10 A
D) ₹567; 10 A

16. A boy stands between two parallel cliffs and claps. He hears the first echo after 2 s and the second echo after 3.5 s. He then walks 85 m towards the nearer cliff and claps again. If the speed of sound is 340 m/s, what is the time gap between the two echoes now?

A) 0.5 s
B) 1.5 s
C) 3.5 s
D) 2.5 s

SECTION C — Chemistry

Questions 17–24 · 8 × 4 = 32 marks

17. In the chlor-alkali process, brine (concentrated NaCl solution) is electrolysed. Which option is correct?

A) H_2 at anode; Cl_2 at cathode; NaOH near anode
B) Cl_2 at anode; Na metal at cathode; NaOH near anode
C) O_2 at anode; H_2 at cathode; NaOH near cathode
D) Cl_2 at anode; H_2 at cathode; NaOH near cathode

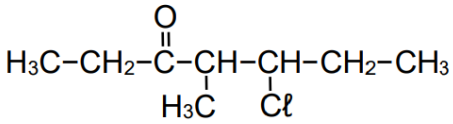
18. In the ground state, an atom has 2 electrons in its N shell and 14 electrons in its M shell. The atomic number, period and group of the element are:

A) 24, period 4 and group 6
B) 26, period 4 and group 8
C) 26, period 4 and group 2
D) 26, period 3 and group 8

19. For the reaction p MnO_2 + q Al → r Mn + s Al_2O_3, the values of p, q, r and s in the balanced equation and the oxidising agent are:

A) 3, 4, 3, 2; MnO_2 **B)** 3, 4, 3, 2; Al **C)** 4, 3, 4, 2; MnO_2 **D)** 3, 2, 3, 4; Al

20. The IUPAC name of the given organic compound is _____.



A) 3-chloro-4-methyl-5-heptanone **B)** 3-chloro-4-methyl-5-heptanal

C) 5-chloro-4-methyl-3-heptanone **D)** 5-chloro-4-methyl-5-heptanal

21. Which statement is incorrect?

A) Roasting zinc sulphide produces zinc oxide and sulphur dioxide.

B) Calcination of zinc carbonate produces zinc oxide and carbon dioxide.

C) Both roasting and calcination convert ores into oxides.

D) Roasting is carried out in the absence of air.

22. What is the number of molecules present in 1 g of hydrogen gas?

A) 6.022×10^{23} **B)** 3.011×10^{23} **C)** 1.505×10^{23} **D)** 12.044×10^{23}

23. Arrange these in increasing order of pH (all at the same concentration): HCl, NaCl, NH_4Cl, Na_2CO_3

A) HCl < NaCl < NH_4Cl < Na_2CO_3 **B)** NH_4Cl < HCl < NaCl < Na_2CO_3

C) HCl < NH_4Cl < Na_2CO_3 < NaCl **D)** HCl < NH_4Cl < NaCl < Na_2CO_3

24. The amount of calcium oxide obtained by heating 25 kg of calcium carbonate that is 80% pure is: ($CaCO_3$ → CaO + CO_2; Ca = 40, C = 12, O = 16)

A) 11.2 kg **B)** 14 kg **C)** 7 kg **D)** 5.6 kg

SECTION D Biology

Questions 25–32 · 8 × 4 = 32 marks

25. A pure tall pea plant is crossed with a pure dwarf plant. In the F_2 generation, 480 tall plants are obtained. How many of the tall plants are expected to be homozygous, and what is the total size of the F_2 generation?

A) 120 and 480 **B)** 160 and 480 **C)** 120 and 640 **D)** 160 and 640

26. The correct path of a reflex arc is

A) Effector → sensory neuron → brain → motor neuron → receptor

B) Receptor → spinal cord → sensory neuron → effector → motor neuron

C) Receptor → sensory neuron → spinal cord → motor neuron → effector

D) Receptor → motor neuron → spinal cord → sensory neuron → effector

27. Match the following.

Column I	Column II
A. Gigantism	1. Excess growth hormone in childhood
B. Cretinism	2. Deficiency of insulin or its action
C. Addison's disease	3. Deficiency of adrenal cortex hormones
D. Diabetes mellitus	4. Deficiency of thyroxine in infancy

A) A-1, B-4, C-3, D-2 **B)** A-2, B-1, C-3, D-4 **C)** A-1, B-2, C-4, D-3 **D)** A-3, B-4, C-1, D-2

28. Consider the statements:

I. Villi increase the surface area for absorption of digested food.
II. The nephron is the functional unit of the kidney.
III. Bile enters the loop of Henle.
IV. Urea is formed in the liver.

Which statements are correct?

A) II, III and IV only **B)** I, III and IV only **C)** I, II and III only **D)** I, II and IV only

29. Which sequence correctly traces an oxygen molecule from the alveolus to a muscle cell?

A) Alveolus → pulmonary capillary → pulmonary vein → right atrium → right ventricle → aorta → muscle
B) Alveolus → pulmonary capillary → pulmonary vein → left atrium → left ventricle → aorta → muscle
C) Alveolus → pulmonary artery → left atrium → left ventricle → vena cava → muscle
D) Alveolus → pulmonary capillary → vena cava → right atrium → pulmonary artery → muscle

30. **Assertion (A):** Double fertilisation is a unique feature of flowering plants.
Reason (R): One male gamete fuses with the egg, while the other fuses with one polar nucleus to form the triploid endosperm.

A) Both Assertion (A) and Reason (R) are true, and R is the correct explanation of A
B) Both A and R are true, but R is not the correct explanation of A
C) A is true, but R is false
D) A is false, but R is true

31. Read the statements:

I. Whittaker proposed the five-kingdom classification in 1969.
II. Kingdom Monera includes prokaryotes.
III. Kingdom Protista includes multicellular organisms.

Which of the statements are correct?

A) I and II only **B)** II and III only **C)** I and III only **D)** I, II and III

32. Match the following.

Column I	Column II
A. Hinge joint	1. Between atlas and axis
B. Ball and socket joint	2. Knee
C. Pivot joint	3. Hip
D. Gliding joint	4. Between wrist bones

A) A-1, B-3, C-2, D-4 **B)** A-2, B-3, C-4, D-1 **C)** A-2, B-3, C-1, D-4 **D)** A-3, B-2, C-1, D-4

SECTION E — Mathematics

Questions 33–40 · 8 × 4 = 32 marks

33. For how many natural numbers n, where 1 ≤ n ≤ 100, does the rational number $\frac{n}{12}$ have a terminating decimal expansion?

A) 25 **B)** 33 **C)** 50 **D)** 100

34. If $\sin\theta\cos\theta = \frac{2}{5}$, where $0° < \theta < 90°$, what is the value of $\tan\theta + \cot\theta$?

A) $\frac{2}{5}$ **B)** $\frac{5}{2}$ **C)** 5 **D)** $\frac{25}{4}$

35. How many terms of the AP 5, 9, 13, 17, … that are less than 1000 are perfect squares?

A) 8 **B)** 15 **C)** 16 **D)** 31

36. O(0, 0), A(6, 0) and B(0, 3) are the vertices of △OAB. P is a point on the side AB such that the area of △OAP is one-third of the area of △OAB. What are the coordinates of P?

A) (2, 2) **B)** (3, 1.5) **C)** (4, 1) **D)** (4.5, 0.75)

37. If x_1 and x_2 are the two solutions of the equation $2(\log_{10} x)^2 - 9\log_{10} x + 4 = 0$, what is the value of $\log_{10}(x_1x_2)$?

A) 2 **B)** 4 **C)** 4.5 **D)** 9

38. A frustum of a cone has circular ends of radii 6 cm and 2 cm, and its height is 12 cm. It was obtained by cutting a solid right circular cone with a plane parallel to its base. What is the volume of the smaller cone that was removed?

A) $8\pi\ \text{cm}^3$ **B)** $24\pi\ \text{cm}^3$ **C)** $208\pi\ \text{cm}^3$ **D)** $216\pi\ \text{cm}^3$

39. AB is a diameter of a circle with centre O and AB = 12 cm. C is a point on the circle such that ∠ABC = 30°. The line BC, when produced beyond C, meets the tangent drawn to the circle at A in the point D. What is the area of △ACD?

A) $6\sqrt{3}\ \text{cm}^2$ **B)** $12\sqrt{3}\ \text{cm}^2$ **C)** $18\sqrt{3}\ \text{cm}^2$ **D)** $24\sqrt{3}\ \text{cm}^2$

40. For which values of x is $(x^2 - 9)(x^2 - 4) > 0$?

A) $-3 < x < -2$ or $2 < x < 3$ **B)** $x < -3$ or $-2 < x < 2$ or $x > 3$

C) $x < -3$ or $x > 3$ **D)** $-3 < x < 3$

END OF QUESTION PAPER