SNGS ACADEMY
SAMPLE PAPER FOR TALENT REWARD TEST
GRADE 9

MATHEMATICS

1. In a certain code, if CHAIR is written as DIBJS, how would TABLE be written in the same code?

A) SZAKD B) UBCMF C) UACMF D) UBCLE

2. A statement is followed by two conclusions. Read the statement and decide which conclusion(s) logically follow. Statement: All pens are pencils. Some pencils are erasers. Conclusion I: Some pens are erasers. Conclusion II: Some erasers are pens.

A) Only Conclusion I follows B) Only Conclusion II follows
C) Neither conclusion follows D) Both Conclusion I and Conclusion II follow

3. Among 120 students, 65 play cricket, 45 play football, and 20 play both games. How many students play neither game?

A) 20 B) 30 C) 40 D) 50

4. A is the father of B. C is the sister of A. D is the mother of B. How is C related to D?

A) Sister B) Sister-in-law C) Mother-in-law D) Cousin

5. Simplify: $1/(\sqrt{7}-\sqrt{5}) - 1/(\sqrt{5}-\sqrt{3})$

A) $(\sqrt{7}-\sqrt{3})/2$, rational B) $(\sqrt{7}-\sqrt{3})/2$, irrational
C) $\sqrt{7}-\sqrt{3}$, irrational D) $(\sqrt{7}+\sqrt{3})/2$, irrational

6. Which of the following correctly arranges the numbers in ascending order: $\sqrt{2}$, 3/2, 1.6, $\sqrt{3}$?

A) $\sqrt{2} < 3/2 < 1.6 < \sqrt{3}$ B) $3/2 < \sqrt{2} < \sqrt{3} < 1.6$
C) $\sqrt{2} < 1.6 < 3/2 < \sqrt{3}$ D) $\sqrt{3} < 1.6 < 3/2 < \sqrt{2}$

7. If $p(x) = 2x^3 - 5x^2 + 3x - 7$, what is the remainder when $p(x)$ is divided by $(x-2)$, and is $(x-2)$ a factor of $p(x)$?

A) Remainder = 0; yes, it is a factor B) Remainder = −5; no, it is not a factor
C) Remainder = 5; no, it is not a factor D) Remainder = −7; no, it is not a factor

8. Factorize completely: $x^3 - 6x^2 + 11x - 6$

A) $(x-1)(x-2)(x-3)$ B) $(x+1)(x-2)(x-3)$
C) $(x-1)(x+2)(x-3)$ D) $(x-1)(x-2)(x+3)$

9. Using an appropriate algebraic identity, evaluate 998^2.

A) 994,004 B) 996,004 C) 998,004 D) 996,400

10. Points A(2,3), B(−2,3), C(−2,−3), and D(2,−3) are joined in order. What figure is formed, and what is its area?

A) Square, area 16 sq. units B) Rectangle, area 24 sq. units

C) Rectangle, area 20 sq. units D) Parallelogram, area 24 sq. units

GENERAL SCIENCE

11. A mixture contains iron filings, sand and common salt. Which sequence of separation techniques is most appropriate?

A) Filtration → Magnetism → Evaporation

B) Magnetism → Dissolving in water → Filtration → Evaporation

C) Evaporation → Filtration → Magnetism

D) Dissolving in water → Magnetism → Evaporation → Filtration

12. A student performs paper chromatography using black ink and observes several coloured spots at different heights on the paper. This indicates that black ink:

A) Is an element B) Is a pure compound

C) Contains different components D) Cannot dissolve in water

13. An atom has 11 protons, 12 neutrons and 11 electrons. Which statement is correct?

A) Its atomic number is 23 B) Its mass number is 11

C) It is electrically neutral D) It has a charge of +1

14. Which observation from Rutherford's α-particle scattering experiment led to the conclusion that most of the atom is empty space?

A) Most α-particles were deflected through large angles

B) Most α-particles passed straight through the gold foil

C) All α-particles were reflected back

D) Electrons were found inside the nucleus

15. An atom has the electronic configuration 2, 8, 7. Which of the following is correct?

A) It has 7 protons and 17 electrons

B) Its atomic number is 17 and it tends to gain one electron

C) Its atomic number is 18 and it tends to lose one electron

D) It has 17 neutrons and 7 electrons

16. Assertion (A): Plant cells kept in a hypertonic solution undergo plasmolysis, but animal cells in the same solution would crenate (shrink) rather than plasmolyse. Reason (R): The rigid cell wall in plant cells prevents the cell from shrinking uniformly, so the plasma membrane pulls away from the wall while the cell shape is retained.

A) Both A and R are true, and R correctly explains A

B) Both A and R are true, but R does not correctly explain A

C) A is true, R is false

D) A is false, R is true

17. A tissue sample shows elongated, dead cells with thick lignified walls and no protoplasm, providing mechanical support in mature plant parts. Which tissue is this?

A) Parenchyma B) Sclerenchyma C) Collenchyma D) Xylem parenchyma

18. Cardiac muscle is striated like skeletal muscle but functions involuntarily and contracts as a single coordinated unit. Which structure allows this coordinated contraction?

A) Sarcoplasmic reticulum B) Intercalated discs

C) Sarcomeres D) Neuromuscular junctions

19. If a ring of bark (including phloem) is removed from a tree trunk (girdling), what is the most likely long-term outcome, and why?

A) The tree wilts immediately because water transport stops

B) Only the leaves die while roots continue normal growth

C) The tree eventually dies as roots starve from lack of food supply via phloem

D) The tree survives indefinitely since xylem is unaffected

20. A tissue has living cells with thickened corners (extra cellulose and pectin), providing flexibility and mechanical support to young, growing plant parts like the petiole. Why can't sclerenchyma perform this same role instead?

A) Sclerenchyma cells are dead and rigid, so they can't stretch or bend during growth

B) Sclerenchyma is only found in roots, not stems or petioles

C) Sclerenchyma cells are too small to provide support

D) Sclerenchyma lacks any structural strength

21. A particle starts moving from rest along the x-axis with a uniform acceleration a. After traveling a distance S, it undergoes uniform retardation of magnitude 2a until it comes to a complete stop. What is the total distance traveled by the particle?

A) 1.5 S B) 2 S C) 2.5 S D) 3 S

22. Two bodies of masses 2 kg and 4 kg are attached to the ends of a light string passing over a smooth, frictionless pulley. If the system is released from rest, what is the acceleration of the center of mass of the two-block system? (Take $g = 10\ m/s^2$)

A) $10/9\ m/s^2$ B) $10/3\ m/s^2$ C) $5/3\ m/s^2$ D) $20/9\ m/s^2$

23. A train of length L passes a fixed signaling post. The front engine passes the post with speed u and the last coach passes the post with speed v. If the train accelerates uniformly, with what speed does the middle point of the train pass the post?

A) $(u + v) / 2$ B) $\sqrt{(u^2 + v^2) / 2}$ C) $\sqrt{[(u^2 + v^2) / 2]}$ D) $\sqrt{(uv)}$

24. A body is dropped from the top of a tower of height H. During the last second of its fall, it traverses a distance of $9H / 25$. What is the total time taken by the body to hit the ground?

A) 4 s B) 5 s C) 6 s D) 7.5 s

25. A force $F = (20 - 4t)$ N acts on a stationary object of mass 2 kg starting at time $t = 0$. At what time t will the velocity of the object reach its maximum value?

A) 2.5 s B) 5 s C) 10 s D) 20 s

ANSWER KEY

Mathematics Answer Key

1. B
2. C
3. B
4. B
5. B
6. A
7. B
8. A
9. B
10. B

General Science Answer Key

11. B
12. C
13. C
14. B
15. B
16. A
17. B
18. B
19. C
20. A
21. A
22. A
23. C
24. B
25. B