

MATHEMATICS

1. Which of the following is a rational number ?

- a) $\sqrt{2}$
- b) 0.666...
- c) π
- d) $\sqrt{3}$

2. What is the HCF of 36 and 60?

- a) 12
- b) 6
- c) 36
- d) 24

3. Which of the following is the decimal representation of the rational number $7/8$?

- a) 0.875
- b) 0.888
- c) 1.125
- d) 0.8750

4. What is the value of x in the equation $2x + 5 = 11$?

- a) 1
- b) 3
- c) 6
- d) 5

5. The quadratic equation $x^2 - 5x + 6 = 0$ has roots:

- a) 1, 6
- b) 2, 3
- c) 5, 1
- d) 4, 2

6. Find the sum of the first 20 terms of the A.P. 2, 5, 8,...

- a) 400
- b) 380
- c) 300
- d) 610

7. Which of the following is a factor of the polynomial $x^2 - 5x + 6$?

- a) $(x - 3)$
- b) $(x + 3)$
- c) $(x - 2)$
- d) $(x + 2)$

8. In a triangle ABC, if $AB = AC$, then angle B is equal to angle:

- a) A
- b) C
- c) 90°
- d) 180°

9. The area of a circle is 154 cm^2 . Find its radius. (Take $\pi = 22/7$)

- a) 7 cm
- b) 5 cm

c) 14 cm

d) 21 cm

10. What is the sum of the interior angles of a hexagon ?

a) 720° b) 1080° c) 900° d) 640°

11. If the length of the arc of a circle is 10 cm and the radius is 5 cm, find the central angle in radians.

a) 2 radians

b) 1 radian

c) 3 radians

d) 4 radians

12. Find the distance between the points A(3, 4) and B (6, 8).

a) 5

b) 6

c) 7

d) 8

13. The midpoint of the segment joining the points (2, 4) and (6, 8) is:

a) (4, 6)

b) (5, 6)

c) (4, 5)

d) (6, 8)

14. The coordinates of the origin are:

a) (0, 0)

b) (1, 1)

c) (0, 1)

d) (1, 0)

15. The volume of a cylinder is 1540 cm^3 and its radius is 7 cm. Find the height of the cylinder.

a) 10 cm

b) 20 cm

c) 25 cm

d) 30 cm

16. Find the area of a sector of a circle with radius 14 cm and angle 60° .

a) 102.66 cm^2 b) 44 cm^2 c) 50 cm^2 d) 55 cm^2

17. The surface area of a cube is 600 cm^2 . Find its edge length.

a) 10 cm

b) 15 cm

c) 20 cm

d) 30 cm

18. If $\sin \theta = 1/2$, find $\cos \theta$.

a) $\sqrt{3}/2$ b) $1/2$

c) 1

d) $\sqrt{2}/2$

19. Which of the following is the correct identity ?

- a) $\cos^2\theta + \sin^2\theta = 1$
- b) $\cos^2\theta = 1 + \sin^2\theta$
- c) $\sin^2\theta = 1 - \cos^2\theta$
- d) $\sin^2\theta + \cos^2\theta = 2$

20. The mean of 10 numbers is 20. If one more number 30 is added, what will be the new mean ?

- a) 20.90
- b) 23
- c) 25
- d) 24

CHEMISTRY

21. Which of the following correctly represents a redox reaction?

- a) $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$
- b) $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$
- c) $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$
- d) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

22. Which of the following salts will make a solution acidic ?

- a) KCl
- b) Na_2CO_3
- c) NH_4Cl
- d) CH_3COONa

23. The process of electrolytic refining is not used for which of the following metals?

- a) Aluminium
- b) Copper
- c) Zinc
- d) Silver

24. Why does diamond have a high melting point?

- a) Strong van der Waals forces
- b) Ionic bonding
- c) Covalent network structure
- d) Metallic bonding

25. A compound decomposes into KCl and O_2 when heated. Identify it:

- a) K_2CO_3
- b) KClO_3
- c) K_2SO_3
- d) KNO_3

26. Why does plaster of Paris harden when mixed with water?

- a) It undergoes a redox reaction.
- b) It absorbs CO_2 from the air.
- c) It forms a crystalline structure.
- d) It releases water of crystallization.

27. Which of the following metals can displace hydrogen from dilute acids?

- a) Gold
- b) Zinc
- c) Copper
- d) Silver

BIOLOGY

- 28. If a plant is deprived of sunlight, what will be the most significant consequence for the plant's growth and development?**
- a) Reduced rate of transpiration
 - b) Decreased production of chlorophyll
 - c) Inhibition of photosynthesis, leading to stunted growth
 - d) Increased water absorption from the soil
- 29. Why is anaerobic respiration less efficient than aerobic respiration in terms of energy production?**
- a) Because it produces more ATP per glucose molecule
 - b) Because it only partially breaks down glucose without using oxygen
 - c) Because it leads to the production of more toxic by-products
 - d) Because it occurs faster than aerobic respiration
- 30. What would happen if a plant's xylem vessels were damaged, and water could no longer be transported efficiently?**
- a) The plant would die due to lack of water and nutrients
 - b) The plant would redirect water flow through the phloem
 - c) The plant would increase transpiration to compensate
 - d) The plant would reduce its size to reduce water consumption
- 31. In the human circulatory system, why are arteries thicker and more muscular compared to veins?**
- a) To carry oxygen-rich blood to the heart
 - b) To withstand the high pressure generated by the pumping of the heart
 - c) To allow the easy flow of deoxygenated blood to the heart
 - d) To help in gas exchange at capillary beds
- 32. How might a disruption in the cerebellum affect a person's daily functioning?**
- a) It could lead to problems with decision-making and reasoning
 - b) It could result in difficulty in regulating heart rate and blood pressure
 - c) It could cause problems with motor coordination and balance
 - d) It could affect the body's ability to respond to pain
- 33. If the endocrine system fails to secrete insulin properly, what might be the long-term consequence for the body?**
- a) Increased growth rate and muscle development
 - b) Reduced ability to regulate blood sugar, leading to diabetes
 - c) Hyperactivity of the nervous system
 - d) Difficulty in absorbing nutrients from the digestive tract

34. What is the evolutionary advantage of asexual reproduction in organisms like *Amoeba*?
- It allows for genetic diversity and adaptation
 - It requires less energy and time for reproduction
 - It facilitates the survival of the fittest through natural selection
 - It leads to the development of complex offspring with varied traits

PHYSICS

35. Two resistors of 4Ω and 6Ω are connected in parallel. Which of the following statements best describes the equivalent resistance of the combination?
- The total resistance will always be higher than the individual resistances.
 - The equivalent resistance will be lower than the smallest individual resistor.
 - The current through the combination will be divided equally between both resistors.
 - The equivalent resistance will be exactly the sum of the two resistances.
36. In a solenoid, which of the following modifications would increase the magnetic field strength?
- Increasing the solenoid's diameter
 - Decreasing the number of turns in the coil
 - Increasing the current through the solenoid
 - Placing the solenoid vertically

37. A ray of light passing through the center of curvature of a concave mirror is reflected:
- Through the focus
 - Along the same path
 - Parallel to the principal axis
 - At an angle equal to its incidence
38. A 200W heater is connected to a 220V supply. Which of the following is the correct calculation for the current flowing through the heater?
- 1.1 A
 - 0.9 A
 - 2 A
 - 0.5 A
39. Which phenomenon explains the splitting of white light into its constituent colors when passing through a prism?
- Refraction
 - Diffraction
 - Dispersion
 - Interference
40. The working principle of an electric motor is based on which of the following?
- Heating effect of electric current
 - Magnetic effect of electric current
 - Electromagnetic induction
 - Chemical effect of electric current

GEOGRAPHY

41. Which of the following is the main reason for the limited availability of renewable resources like solar and wind energy in some regions?
- a) High initial investment costs
 - b) Geographical location and weather conditions
 - c) Lack of technological advancements
 - d) Insufficient political will
42. Which of the following is a major reason why India shifted from a largely agrarian economy to a manufacturing-based one in the 19th and 20th centuries?
- a) Industrialization in the British colonies
 - b) Growing global demand for industrial products
 - c) Introduction of technology for mass production
 - d) Political movements demanding the modernization of industry
43. Which of the following factors most significantly drives the growth of the tertiary sector in India's economy today?
- a) Agricultural output
 - b) Expansion of the service sector, especially IT and finance
 - c) Heavy industrial production
 - d) Increase in foreign direct investment

44. How does the growth of the secondary sector (manufacturing) influence the primary sector (agriculture) in a developing economy like India?

- a) It reduces the need for raw materials in agriculture
- b) It provides agricultural workers with new job opportunities
- c) It generates demand for industrial products, thereby improving agricultural productivity
- d) It leads to the mechanization of agriculture, reducing employment in the sector

HISTORY

45. What was the primary reason for the withdrawal of the Non-Cooperation Movement by Mahatma Gandhi in 1922?

- a) Failure to achieve independence
- b) The Chauri Chaura incident, where violence erupted
- c) Lack of support from the Indian National Congress
- d) The British government's response to the movement

46. Which of the following was a major criticism of the Indian National Congress during the early years of the nationalist movement?

- a) It was too focused on social reforms rather than political independence
- b) It did not represent the interests of the middle class

- c) It was seen as a platform for the elites to demand reforms rather than mass mobilization for independence
- d) It was unable to form alliances with Muslim leaders

47. Which country, during the 19th century, played the most significant role in the spread of nationalist ideologies in Europe?

- a) Germany
- b) France
- c) Italy
- d) Russia

POLITICAL SCIENCE

48. How does the principle of power sharing in federal systems prevent conflicts between different levels of government?

- a) By centralizing all major decisions in the federal government
- b) By ensuring that the states have no control over local policies
- c) By dividing responsibilities and giving each level of government exclusive authority in its sphere
- d) By allowing for direct communication between the local government and the central government

49. What is the primary benefit of power sharing in a democracy, especially in countries with diverse populations like India?

- a) It prevents any one group from dominating the government
- b) It increases the efficiency of governance
- c) It reduces the role of opposition parties
- d) It simplifies the process of law-making

50. Which of the following would be the most likely consequence of a lack of strong political parties in a democracy?

- a) The government would be more transparent and accountable
- b) The government would face difficulties in forming a majority
- c) Citizens would have fewer opportunities to influence the political process
- d) The political system would be more effective in responding to social needs

ENGLISH

51. Which of the following sentences is in the past perfect tense?

- a) She had finished her homework before dinner.
- b) She finishes her homework before dinner.
- c) She will finish her homework before dinner.
- d) She is finishing her homework before dinner.

52. Choose the correct sentence in future continuous tense:

- a) I am working on the project.
- b) I will be working on the project.
- c) I work on the project.
- d) I had worked on the project.

53. Identify the figure of speech in the sentence:
"The calm lake reflected the fiery sunset."

- a) Metaphor b) Hyperbole
- c) Personification d) Oxymoron

54. Which of the following is an example of alliteration?

- a) Peter Piper picked a peck of pickled peppers.
- b) The wind howled through the night.
- c) The sun smiled down on us.
- d) The tree swayed in the breeze.

55. Choose the correct one-word substitution for "A place where birds are kept":

- a) Aviary
- b) Aquarium
- c) Zoo
- d) Stable

56. Choose the correct one-word substitution for "A person who does not believe in God":

- a) Atheist
- b) Agnostic

- c) Believer
- d) Deist

57. Which of the following sentences uses the modal verb "should" correctly ?

- a) He should to go now.
- b) She should have studied more.
- c) He should be finished his work by now.
- d) You should to be more careful.

58. Choose the correct sentence using the modal verb "may" :

- a) May you help me with this task ?
- b) May I be going home now ?
- c) She may come to the party.
- d) He may to finish his work soon.

59. Choose the sentence that correctly uses a determiner :

- a) I have few books on the shelf.
- b) I have many books on the shelf.
- c) I have much books on the shelf.
- d) I have a books on the shelf.

60. Choose the correctly reported version of the sentence: "He said, 'I am going to the market.'"

- a) He said that he am going to the market.
- b) He said that he is going to the market.
- c) He said that he was going to the market.
- d) He said that he will be going to the market.