

PHYSICS

1. **Two resistors of 4Ω and 6Ω are connected in parallel. Which of the following statements best describes the equivalent resistance of the combination?**
 - a) The total resistance will always be higher than the individual resistances.
 - b) The equivalent resistance will be lower than the smallest individual resistor.
 - c) The current through the combination will be divided equally between both resistors.
 - d) The equivalent resistance will be exactly the sum of the two resistances.
2. **In a solenoid, which of the following modifications would increase the magnetic field strength ?**
 - a) Increasing the solenoid's diameter
 - b) Decreasing the number of turns in the coil
 - c) Increasing the current through the solenoid
 - d) Placing the solenoid vertically
3. **A ray of light passing through the center of curvature of a concave mirror is reflected :**
 - a) Through the focus
 - b) Along the same path
 - c) Parallel to the principal axis
 - d) At an angle equal to its incidence
4. **A 200W heater is connected to a 220V supply. Which of the following is the correct calculation for the current flowing through the heater ?**
 - a) 1.1 A
 - b) 0.9 A
 - c) 2 A
 - d) 0.5 A
5. **Which phenomenon explains the splitting of white light into its constituent colors when passing through a prism?**
 - a) Refraction
 - b) Diffraction
 - c) Dispersion
 - d) Interference
6. **The working principle of an electric motor is based on which of the following ?**
 - a) Heating effect of electric current
 - b) Magnetic effect of electric current
 - c) Electromagnetic induction
 - d) Chemical effect of electric current

CHEMISTRY

7. **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) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

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

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

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

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

10. Why does diamond have a high melting point?

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

11. 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

12. 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.

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

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

BIOLOGY

14. 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

15. 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

- 16. 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
- 17. 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
- 18. 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
- 19. 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
- 20. What is the evolutionary advantage of asexual reproduction in organisms like Amoeba?**
- a) It allows for genetic diversity and adaptation
 - b) It requires less energy and time for reproduction
 - c) It facilitates the survival of the fittest through natural selection
 - d) It leads to the development of complex offspring with varied traits

HISTORY

21. 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

22. 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

23. 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

24. 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

25. 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

- 26. 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

GEOGRAPHY

- 27. 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
- 28. 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

- 29. 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

- 30. 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

ENGLISH

- 31. 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.
- 32. 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.
- 33. Identify the figure of speech in the sentence:**
"The calm lake reflected the fiery sunset."
- a) Metaphor b) Hyperbole
 - c) Personification d) Oxymoron
- 34. 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.
- 35. Choose the correct one-word substitution for "A place where birds are kept" :**
- a) Aviary
 - b) Aquarium
 - c) Zoo
 - d) Stable
- 36. Choose the correct one-word substitution for "A person who does not believe in God" :**
- a) Atheist
 - b) Agnostic
 - c) Believer
 - d) Deist
- 37. 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.
- 38. 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.
- 39. 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.

40. 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.

MATHEMATICS

41. Which of the following is a rational number?

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

42. What is the HCF of 36 and 60 ?

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

43. 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

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

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

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

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

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

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

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

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

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

- a) A
- b) C
- c) 90°
- d) 180°

49. 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

50. What is the sum of the interior angles of a hexagon?
 a) 720°
 b) 1080°
 c) 900°
 d) 640°
51. 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
52. Find the distance between the points A(3, 4) and B(6, 8).
 a) 5
 b) 6
 c) 7
 d) 8
53. 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)
54. The coordinates of the origin are:
 a) (0, 0)
 b) (1, 1)
 c) (0, 1)
 d) (1, 0)
55. 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
56. 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
57. 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
58. If $\sin \theta = 1/2$, find $\cos \theta$.
 a) $\sqrt{3}/2$
 b) $1/2$
 c) 1
 d) $\sqrt{2}/2$
59. 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) $\sin^2 \theta + \cos^2 \theta = 2$
60. 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