

1. Which of the following reactions will not occur?

- A. $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$
- B. $\text{Cu} + \text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{H}_2$
- C. $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$
- D. $\text{Fe} + 2\text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2$

2. Rancidity can be prevented by

- A. Adding anti-oxidants to oily food-stuff
- B. Flushing nitrogen gas into packets of oily food during packaging
- C. Both (A) and (B)
- D. None of these

3. Iron filings were added to a solution of copper sulphate. After 10 minutes, it was observed that the blue colour of the solution changed and a deposit at the bottom of the beaker was observed. The colour of the solution and that of the deposit would respectively be

- A. Yellow and green
- B. Brown and blue
- C. Red and greenish-blue
- D. Green and reddish-brown

4. If pH of solution is 13, it means that it is

- A. Weakly acidic
- B. Weakly basic
- C. Strongly acidic
- D. Strongly basic

5. Match both the columns and mark the correct option from the codes given below

Column I	Column II
(a) Gastric Juice	(i) 2.2
(b) Lemon Juice	(ii) 1.2
(c) Blood	(iii) 10
(d) Milk of Magnesia	(iv) 7.4

A.	B	C	D
A			
(ii)	(iii)	(iv)	(i)

B.	B	C	D
A			
(i)	(ii)	(iii)	(iv)

C.	B	C	D
A			
(i)	(ii)	(iv)	(iii)

D.	B	C	D
A			

(ii)	(i)	(iv)	(iii)
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6. Which of the following gives CO_2 on heating?

- A. Slaked
- B. Quick lime
- C. Lime stone
- D. Soda ash

7. A process employed for the concentration of sulphide ore is

- A. Forth floatation
- B. Roasting
- C. electrolysis
- D. bessemerisation

8. Which of the following oxides is amphoteric in nature?

- A. Na_2O
- B. MgO
- C. CaO
- D. Al_2O_3

9. Most abundant metal on the surface of the earth

- A. Iron
- B. Aluminium
- C. Calcium
- D. Sodium

10. Dilute alkaline KMnO_4 solution is

- A. an oxidising agent
- B. a reducing agent
- C. a bleaching agent
- D. none of these

11. Process of conversion of wood into coal by biochemical process, taking over millions of years, is called

- A. Catenation
- B. Carbonation
- C. Pyrolysis
- D. Destructive distillation

12. Which of the following is not a characteristic property of carbon?

- A. Catenation
- B. Multiple bond formation

- C. Availability of d-orbitals for bonding
- D. Highest electronegativity in the group

13. Which of the following are the demerits of Mendeleev's periodic table?

- (i) No proper position for hydrogen is given
- (ii) Grouping of chemically dissimilar elements
- (iii) Position given to isotopes
- (iv) Presence of anomalous pairs

Correct statements are

- A. (i) & (ii)
- B. (i), (ii) & (iii)
- C. (i), (ii) & (iv)
- D. All of these

14. Which scientist came up with the concept of a periodic table that included all of the known elements?

- A. Jason Priestly
- B. Dmitri Mendeleev
- C. Antoine Lavoisier
- D. Albert Einstein

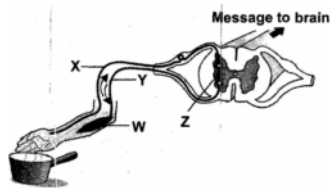
15. Which of the following sets of atomic number belongs to alkali metals?

- A. 1, 12, 30, 4, 62
- B. 37, 19, 3, 55
- C. 9, 17, 35, 53
- D. 12, 20, 56, 53

16. Which of the following pairs is incorrectly matched ?

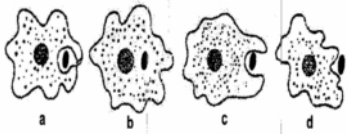
- A. Saprotrophic nutrition - Orchids, yeasts
- B. Autotrophic nutrition - All green plants
- C. Parasitic nutrition - Cuscuta, Plasmodium
- D. Holozoic nutrition - Grasshopper, Amoeba

17. Given figure is showing the pathway taken by a nerve impulse in a reflex action. Which part serves as a link between other neurons?



- A. W
- B. X
- C. Y
- D. Z

18. The given figures show holozoic nutrition in Amoeba. Arrange figures in correct sequence so as to give complete steps of nutrition



- A. b,c,a&d
- B. a,b,d&c
- C. d,c,a&b
- D. d,a,c&b

19. During grafting, the portion of plant that is grafted is called

- A. Stock
- B. Scion
- C. stalk
- D. stem

20. Which of the following shows vegetative reproduction by means of leaf buds?

- A. Rhizopus
- B. Bryophyllum
- C. Kalnchoe
- D. Both (B)&(C)

21. Which among the following diseases is not sexually transmitted?

- A. syphilis
- B. Gonorrhoea
- C. HIV - AIDS
- D. Hepatitis

22. When pea plants showing two separate traits are bred with each other phenotypes, the ratio of phenotypes in F₂ generation will be

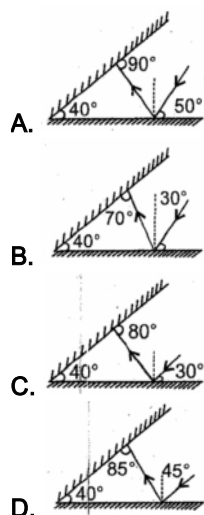
- A. 1:2:1
- B. 3:1
- C. 9:3:3:1
- D. 12:3:1

23. The given figures show the wings of two animals with analogous organs. Identify them.



- A. Dinosaur and bird
- B. Bat and insect
- C. Bat and bird
- D. Insect and bird

24. Which of the following correctly depicts reflections in case of plane mirrors inclined at 40° ?



25. Read the given statements and mark the correct option.

Statement 1 : If refractive index of one medium is equal to refractive index of second medium, then beam does not bend at all

Statement 2 : The bending of light does not depend on refractive indices of media

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1
- B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1
- C. Statement 1 is true but statement 2 is false
- D. Statement 1 is false but statement 2 is true

26. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
(a) Choroid	(i) Detects light stimulus
(b) Retina	(ii) Absorbs light and prevent it from being reflected within the eyeball
(c) Cornea	(iii) Controls the size of the pupil
(d) Iris	(iv) Helps to focus light as it enters the eye

A.	B	C	D
A			
(ii)	(i)	(iv)	(iii)

B.	B	C	D
A			
(i)	(ii)	(iii)	(iv)

C.	B	C	D
A			
(ii)	(iii)	(ii)	(i)

D.	B	C	D
A			
(iii)	(iv)	(i)	(iii)

27. When a person is myopic, he/ she can clearly see

- A. both nearby and for off objects
- B. Only nearby objects
- C. only far off objects
- D. Neither nearby nor for off objects

28. A metallic conductor has loosely bound electrons called free electrons. The metallic conductor is

- A. negatively charged
- B. positively charged
- C. neutral
- D. Either positively charged or negatively charged

29. Current I flows through a conductor connected across a voltage source. Now the resistance of the conductor is reduced to half its initial value and connected across the same voltage source. In doing so the heating effect in the conductor will become

- A. Half
- B. Double
- C. One-fourth
- D. Four times

30. Forces acting on a stationery charge of in the magnetic field B is

- A. BQv
- B. BQ/v
- C. Bv/Q
- D. zero

31. A current carrying loop lying in a magnetic field behaves like a

- A. A magnetic dipole
- B. Magnetic mono pole
- C. Magnetic material
- D. Non-magnetic material

32. Solar cells are made of

- A. metals
- B. insulator
- C. semi conductors
- D. none of these

33. Read the passage carefully and answer. Ocean waves are derived sources of energy. Wind is the agent which transfer the Sun's energy to the surface of the sea. The unequal solar heating of the earth generates wind and wind blowing over water generates waves. The energy possessed by ocean and sea waves is called wave energy. Various systems have been designed

to use wave energy for commercial production of electricity. Which of the following is wrong regarding to wave energy?

- A. Wave energy is renewable source of energy
- B. Wave power projects require a specific site
- C. The total amount of power available in the world from wave energy is 2 to 3 million MW
- D. Wave power project require large land area

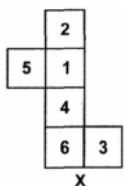
34. Canal systems leading from large dams can transfer large amounts of water to greater distances. Which of the following canals brought greenery to considerable areas of Rajasthan?

- A. Jawahar canal
- B. Indira Gandhi canal
- C. Ganga river water canal
- D. Narmada canal

35. A schematic diagram of a pond ecosystem is given below. Identify the aquatic organisms at place 'a' and 'b'. Spirogyra? 'a'? Small fish? Large fish? 'b'

- A. Cyano bacteria and fungi
- B. Anabaena and nitrifying bacteria
- C. Dinoflagellates and putrefying bacteria
- D. Euglena and frog

36. The figure (X) given in each problem, is folded to form a box. Choose from amongst the alternatives (A), (B), (C) and (D), the boxes that are similar to the box formed.



- A.
- B.
- C.
- D.

37. The ratio of money with Ram and Gopal is 7: 17 and that with Gopal and Krishan is 7: 17. If Ram has Rs. 490, Krishan has _____

- A. Rs. 2890
- B. Rs. 2330

C. Rs. 1190

D. Rs. 2680

38. The value of $\left(\frac{4}{3}\cot^2 30^\circ + 3\sin^2 60^\circ - 2\operatorname{cosec}^2 60^\circ - \frac{3}{4}\tan^2 30^\circ\right)$ is

A. $\frac{10}{3}$

B. 3

C. $\frac{8}{3}$ D. $\frac{9}{4}$

39. Arun used a trailer to haul dirt. The trailer is in the shape of a rectangular prism. The interior of the trailer has a length of 8 feet, a width of 4 feet, and a length of 2 feet. What is the total number of cubic feet of dirt that the trailer can hold when it is filled so that the dirt is level with the top?

A. 14 cubic feet

B. 56 cubic feet

C. 64 cubic feet

D. 112 cubic feet

40. The number of real roots of the equation $\frac{A^2}{x} + \frac{B^2}{x-1} = 1$, where A and B are real numbers not equal to zero simultaneously is _____

A. 1

B. 2

C. 3

D. Can't say

41. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball then the number of blue balls in the bag is

A. 10

B. 5

C. 8

D. 7

42. Which of the following describes the line containing the points (0,4) and (3,-2)?

A. $y = 2x + 4$ B. $y = \frac{1}{2}x - 6$ C. $y = 4 - 2x$

D. $y = \frac{1}{2}x + 6$

43. Each question given below consists of a statement, followed by two arguments I and II. You have to decide which of the arguments is a strong argument and which is a weak argument.

Statement : Should an organisation like UNO be dissolved?

Arguments: I. Yes. With cold war coming to an end, such organisations have no role to play.

II. No. In the absence of such organisations there may be a world war

- A. Only argument I is strong
- B. Only argument II is strong
- C. Either I or II is strong
- D. Neither I nor II is strong

44. For one roots of $ax^2 + bx + c = 0$ to be double the other, the coefficients a, b, c must be related as follows

- A. $4b^2 = 9c$
- B. $2b^2 = 9ac$
- C. $2b^2 = 9a$
- D. $b^2 - 8ac = 0$

45. The equation below shows the profit, p, from selling n cups of coffee.

$$p = 2n - 10$$

Which of the following best describes the relationship between p and n?

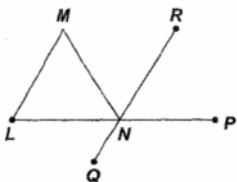
- A. As n increases, p decreases
- B. As n increases, p increases
- C. As n increases, p stays the same
- D. As n increases, p sometimes increases and sometimes decreases

46. The sum of first 24 terms of the sequence whose nth term is

$$a_n = 3 + \frac{2}{3}n$$

- A. 275
- B. 272
- C. 280
- D. 270

47. In the figure drawn below, \overline{LM} & In the figure drawn below, \overline{LM} &



- A. 90°
- B. 120°
- C. 150°

D. 180°

48. A cylinder open at both ends has radius $\frac{5}{\pi}$ cm and height 12 cm. If A and B are diametrically opposite points lying on the top and bottom rims, the shortest distance between A and B is

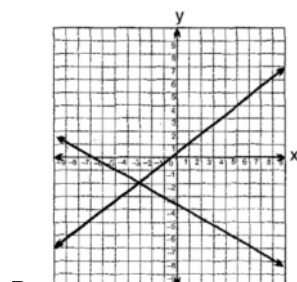
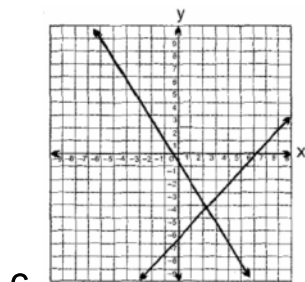
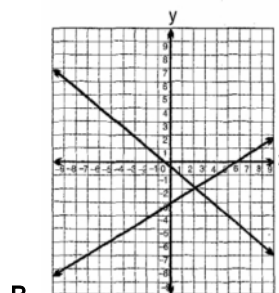
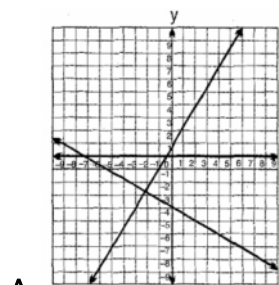
A. 13 cm

B. 17 cm

C. $12\frac{10}{\pi}$ cm

D. $\sqrt{12^2 + \left(\frac{10}{\pi}\right)^2}$ cm

49. Which graph best represents a solution to this system of equations? $2x - 3y = 0$ $x + 2y = -7$



50. In a $\triangle ABC$, D and E are points on the side AB and AC respectively such that $DE \parallel BC$

- A. 2
- B. 1
- C. 5
- D. 9

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