PHYSICS
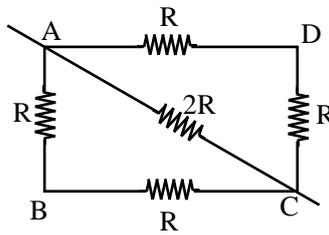
1. In the given circuit, the effective resistance between points A and C will be -

(A) $\dfrac{3}{2}R$ (B) 6R   (C) $\dfrac{2}{3}R$ (D) 3R

2. High power electrical appliances are earthed to -

(A) avoid shock   (B) avoid wastage

(C) Make the appliance look beautiful   (D) reduce the bill

3. The induced emf produced when a magnet is inserted into a coil does not depend upon:

(A) the number of turns in the coil

(B) the resistance of the coil

(C) the magnetic moment of the magnet

(D) the speed of approach of the magnet

4. Current is induced in a coil by electromagnetic induction when

(A) Only the coil moves in a magnetic field

(B) Only the magnetic is moved into a coil

(C) Coil and the magnet move with respect to each other

(D) None of the above

5. The focal length of a concave mirror is f and the distance of the object from the principal focus is a. The magnitude of magnification obtained will be-

(A) (f + a)/f   (B) f /a

(C) $\sqrt{f} / \sqrt{a}$ (D) f^2/a^2

6. A convex lens forms a real image of a point object placed on its principal axis. If the upper half of the lens is painted black.

(A) the image will be shifted backward

(B) the image will not be shifted

(C) the intensity of the image will decrease

(D) both (B) and (C)

7. Convex lens of suitable focal length can correct-

(A) short sightedness   (B) long sightedness

(C) presbyopia   (D) astigmatism

8. Most of the sources of energy we use represent stored solar energy. Which of the following is not ultimately derived from the Sun's energy?

(A) geothermal energy   (B) wind energy   (C) nuclear energy   (D) bio-mass.

CHEMISTRY

9. Which of the following statements is/are true

(A) The total mass of the substance remains same in a chemical change.

(B) A chemical change is permanent and irreversible.

(C) A physical change is temporary and reversible.

(D) All the these.

10. Neutralization reaction is an example of -

(A) exothermic reaction   (B) endothermic reaction

(C) oxidation   (D) none of these

11. Food cans are coated with tin and not with zinc because -

(A) zinc is costlier than tin.   (B) zinc has higher melting point than tin.

(C) zinc is more reactive that tin.   (D) zinc is less reactive than tin.

12. Select the alkyne form the following -

(A) C_4H_8 (B) C_5H_8 (C) C_7H_{19} (D) None of these

13. Chemical rust is -

    (A) hydrated ferrous oxide   (B) hydrated ferric oxide.

    (C) only ferric oxide.   (D) None of these

14. Cleansing action of soaps includes :

    (A) formation of micelles   (B) emulsification of oil or grease.

    (C) lowering of surface tension of water.   (D) all of the above.

15. Structure of diamond is -

    (A) linear   (B) tetrahedral   (C) trigonal   (D) hexagonal

MATHEMATICS

16. If the system $2x + 3y - 5 = 0$, $4x + ky - 10 = 0$ has an infinite number of solutions then :

    (A) $k = \dfrac{3}{2}$ (B) $k \neq \dfrac{3}{2}$ (C) $k \neq 6$ (D) $k = 6$

17. If in a fraction 1 less from two times of numerator & 1 add in denominator then new fraction will be :

    (A) $2\left(\dfrac{x-1}{y+1}\right)$ (B) $\dfrac{2(x+1)}{y+1}$ (C) $\left(\dfrac{x}{y}\right)$ (D) $\dfrac{2x-1}{y+1}$

18. Which of the following curve touches X-axis -

    (A) $x^2 - 2x + 4$ (B) $3x^2 - 6x + 1$ (C) $4x^2 - 16x + 9$ (D) $25x^2 - 20x + 4$

19. The difference between two numbers is 5 different in their squares is 620. The larger number is

    (A) 9   (B) 10   (C) 11   (D) 12

20. In the first, second and last terms of an A.P. be a,b, 2a respectively, then its sum will

    (A) $\dfrac{ab}{-a+b}$ (B) $\dfrac{ab}{2(b-a)}$ (C) $\dfrac{3ab}{2(b-a)}$ (D) $\dfrac{3ab}{4(b-a)}$

21. The area of the quadrilateral's the coordinates of whose verticals are (1, -2,) (6, 2), (5, 3) and (3, 4) are

    (A) $\dfrac{9}{2}$ (B) 5   (C) $\dfrac{11}{2}$ (D) 11
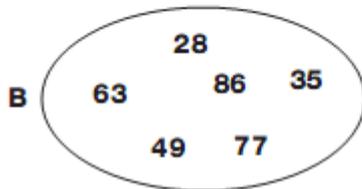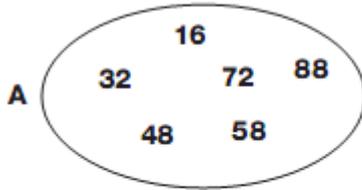
22.   In a $\triangle$ABC, AD is the bisector of $\angle$A, meeting side BC at D.

If AB = 10 cm, AC = 6 cm, BC = 12 cm, find BD.

(A) 123.3   (B) 18

(C) 7.5   (D) 121.33

23. The length of the tangent drawn from a point 8 cm away from the centre of a circle of radius 6 cm is

(A) $\sqrt{7}$ cm   (B) $\sqrt[2]{7}$ cm   (C) 10 cm   (D) 5 cm

24. If $7 \sin \alpha = 24 \cos \alpha; 0 < \alpha < \dfrac{\pi}{2}$, then value of $14 \tan \alpha - 75 \cos \alpha - 7 \sec \alpha$ is equal to

(A) 1   (B) 2   (C) 3   (D) 4

25. The Shadow of a tower, when the angle of elevation of the sun is 30^0, is found to be 5 m longer than when its was 45^0, then the height of tower in metre is

(A) $\dfrac{5}{\sqrt{3}+1}$ (B) $\dfrac{5}{2}(\sqrt{3}-1)$ (C) $\dfrac{5}{2}(\sqrt{3}+1)$ (D) None of these.

MENTAL ABILITY TEST

26.   If BAT is coded as 283, CAT is coded as 383 and ARE is coded as 801, then the code for BETTER is—
(A) 213310   (B) 213301   (C) 123301   (D) 012334

27. If water is called black, black is called tree, tree is called blue, blue is called rain, rain is called pink and pink is called fish in a certain language then what is the colour of sky called in that language ?
(A) Blue   (B) Fish   (C) Rain   (D) Pink

28. A man walks 3 km northwards and then turns left and goes 2 km. He again turns left and goes 3 km. He turns right and walks straight. In which direction he is walking now ?
(A) East   (B) West   (C) North   (D) South
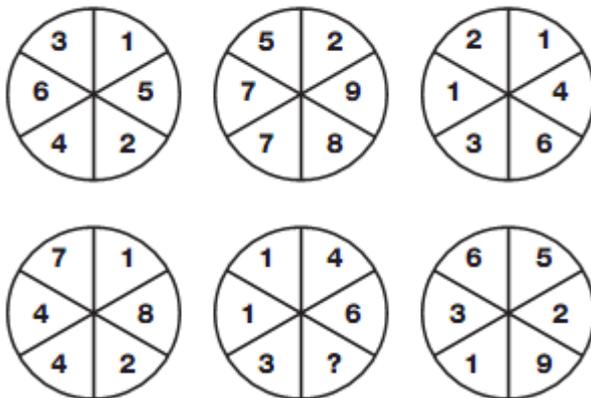
29. Which number is the odd one out in each oval?

Which number is the odd one out in each oval?

(A) A:58 B:86   (B) A:48 B:63

(C) A:88 B:28   (D)A :32 B:49

30. which number repleces the question mark?

Which number replaces the question mark?

(A) 6   (B) 7   (C) 8   (D) 9

31. In an examination Raj got more marks than Moti but not as many as Meena. Meena got more marks than Ganesh and Rupali. Ganesh got less marks than Moti but his marks are not the lowest in the group. Who is second in the descending order of marks?
(A) Meena   (B) Rupali   (C) Raj   (D) None of these

32. Each of these questions are based on the information given below:

   a) A ,B, C, D and E are five men sitting in a line facing to south - while M, N, O, P and Q are five ladies sitting in a second line parallel to the first line and are facing to North.
   b) B who is just next to the left of D, is opposite to Q.
   c) C and N are diagonally opposite to each other.
   d) E is opposite to O who is just next right of M.
   e) P who is just to the left of Q, is opposite to D.
   f) M is at one end of the line.

Who is sitting third to the right of O ?

(A) Q

(B) N

(C) M

(D) Data inadequate

33. If Amit's father is Billoo's father's only son and Billoo has neither a brother nor a daughter. What is the relationship between Amit and Billoo ?

(A) Uncle—Nephew   (B) Father—Daughter

(C) Father—Son   (D) Grandfather—Grandson

34. An application was received by inward clerk in the afternoon of a weekday. Next day he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk next day evening put up the application to the desk officer. Desk officer studied the application and disposed off the matter on the same day, i.e., Friday. Which day the application was received by the inwarclerk

(A) Tuesday   (B) Earlier week's Saturday   (C) Wednesday   (D) Monday

35. Flight to Mumbai leaves every 5 hours. At the information counter I learnt that the flight took off 25 minutes before. If the time now is 10 : 45 a.m., what is the time for the next flight ?

(A) 2 : 20 a.m   (B) 3 : 30 a.m.   (C) 3 : 55 p.m   (D) 3 : 20 p.m.

36. Babloo ranked 16th from the top and 29th from the bottom among those who passed an examination. 6 boys did not participate in the competition and 5 failed in the examination. How many boys were there in that class ?

(A) 44   (B) 40   (C) 50   (D) 55

37. Indra is 7th from the left and Jaya is 5th from the right. When they interchange their position Jaya becomes 19th from the right. What is Indra's position from the left ?

(A) 21st (B) 19th (C) 23rd (D) 20th

38. How many 5's are there in the following sequence of numbers which are immediately preceded by 7 ?

8 9 5 3 2 5 3 8 5 5 6 8 7 3 3 5 7 7 5 3 6 5 3 3 5 7 3 8

(A) One   (B) Two   (C) Three   (D) Four

39. If it takes 2 hours to drive to City A and the city is 120km away, what speed was the vehicle travelling at?

(A) 30 km per hour   (B) 40 km per hour

(C) 50 km per hour   (D) 60 km per hour

40. Pointing to a photograph of a girl, Rajan said "She has no sister or daughter but her mother is the only daughter of my mother." How is the girl in the photograph related with Rajan's mother ?
(A) Sister in law   (B) Grand daughter
(C) Daughter in law   (D) None of these

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