Exam Code

SET-11, Class-10 MATHS & CHEMISTRY 17.08.20

1. Some fruits like mango, lemon, raw grapes, orange, etc., have a sour taste due to the presence of:

   (a) Acetic acid
   (b) Citric acid
   (c) Lactic acid
   (d) Oxalic acid

2. Zinc granules on treating with an acid X, form the zinc sulphate ($ZnSO_4$) salt along with the evolution of a gas Y which burns with a pop sound when brought near to a burning candle. Identify the acid X and gas evolved Y.

   (a) X- Sulphuric acid and Y- Oxygen gas
   (b) X- Hydrochloric acid and Y- Oxygen gas
   (c) X- Sulphuric acid and Y- Hydrogen gas
   (d) X- Hydrochloric acid and Y- Hydrogen gas

3. Which of the following phenomena occur, when a small amount of acid is added to water?
   i. Ionisation
   ii. Neutralisation
   iii. Dilution
   iv. Salt formation

   (a) (i) and (ii)
   (b) (i) and (iii)
   (c) (ii) and (iii)
   (d) (ii) and (iv)

4. Which of the following indicators turn red in an acidic solution?
   i. Phenolphthalein
   ii. Litmus
   iii. Turmeric
   iv. Methyl orange
   Choose the correct option:

   (a) (i) and (ii)
   (b) (ii) and (iii)
   (c) Only (ii)
   (d) (ii) and (iv)

5. Dilute acid does not produce carbon dioxide on being treated with:

   (a) washing soda
   (b) soda ash
   (c) caustic soda
   (d) Limestone

6. The sample of soil from a particular place was tested for its pH value. It came out to be 5. Which one of the following should be added to the soil to make it suitable for the plant growth?
   i. Calcium chloride
   ii. Calcium Hydroxide
   iii. Calcium oxide
   Choose the correct option:

   (a) Both (i) and (ii)
   (b) Both (ii) and (iii)
   (c) Only (i)
   (d) Only (iii)

7. Identify the products of the reaction between calcium carbonate and dil hydrochloric acid.

   (a) Calcium hydrogencarbonate and chlorine gas
   (b) Calcium chloride and water
   (c) Calcium oxide, carbon dioxide and water
   (d) Calcium chloride, carbon dioxide and water

8. An ant's sting can be treated with …………which will neutralise the effect of the chemical injected by the ant's sting into our skin. Choose the correct option from the following to be filled in the blank space:

   (a) Methanoic acid
   (b) formic acid
   (c) Baking soda
   (d) Caustic soda

9. In the following reaction, identify the salt formed
   $$\mathrm{NH_4OH\ (aq) + H_2SO_4\ (aq) \rightarrow \underline{\quad} + 2H_2O\ (l)}$$

   (a) NH_4NO_3
   (b) $(NH_4)_2SO_4$
   (c) $(NH_4)_3PO_4$
   (d) $(NH_4)_2S$

10. Which of the following salt will give acidic solution when dissolved in water?

    (a) NH_4Cl
    (b) $NaCl$
    (c) Na_2CO_3
    (d) CH_3COONa

11. Which one of the following salts will dissolve in water to form an alkaline solution?

    (a) Potassium carbonate
    (b) Sodium chloride
    (c) Sodium carbonate
    (d) Potassium sulphate

12. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
(i) Temperature of the solution decreases
(ii) Temperature of the solution increases
(in) Temperature of the solution remains the same
(iv) Salt formation takes place

(a) (i) and (iv)
(b) (i) and (iii)
(c) (ii) only
(d) (ii) and (iv)

13. In terms of acidic strength, which one of the following is in the correct increasing order?

(a) Water < Acetic acid < Hydrochloric acid
(b) Water < Hydrochloric acid < Acetic acid
(c) Acetic acid < Water < Hydrochloric acid
(d) Hydrochloric acid < Water < Acetic acid

14. What is formed when zinc reacts with sodium hydroxide?

(a) Zinc hydroxide and sodium
(b) Sodium zincate and hydrogen gas
(c) Sodium zinc-oxide and hydrogen gas
(d) Sodium zincate and water

15. Brine is an

(a) Aqueous solution of sodium hydroxide
(b) Aqueous solution of sodium carbonate
(c) Aqueous solution of sodium chloride
(d) Aqueous solution of sodium bicarbonate

16. Which of the following statements is correct about an aqueous solution of an acid and of a base?
(i) Higher the pH, stronger the acid
(ii) Higher the pH, weaker the acid
(in) Lower the pH, stronger the base
(iv) Lower the pH, weaker the base

(a) (i) and (ii)
(b) (i) and (ii)
(c) (i) and (iv)
(d) (i) and (iv)

17. A solution of HCl with a concentration of 4×10 to the power -4 mol per litre has a pH of which of the following?

(a) 2.67
(b) 3.21
(c) 3.4
(d) 4.31

18. In the chlor alkali process, the byproduct gas are

(a) hydrogen only
(b) hydrogen and oxygen gas
(c) hydrogen and chlorine gas
(d) chlorine and nitrogen gas

19. Which of the following can show efflorescence.

(a) egg shell
(b) soda ash.
(c) washing soda.
(d) caustic soda.

20. When acids react with metal oxide it produces

(a) water and salt
(b) salts and hydrogen gas
(c) salts only
(d) no reaction takes place

21. If one root of $5x^2 + 13x + k = 0$ is reciprocal of the other then $k =$

(a) 0
(b) 5
(c) $\dfrac{1}{6}$
(d) 6

22. The roots of the equation $x^2 - x - 3 = 0$ are

(a) Inaginary
(b) Rational
(c) Irrational
(d) None of these

23. The difference between two numbers is 5 different in their squares is $65.$ The larger number is

(a) 9
(b) 10
(c) 11
(d) 12

24. The sum of ages of a father and son is 45 years. Five years ago, the product of their ages was 4 times the age of the father at that time. The present age of the father is

(a) 30 yrs
(b) 31 yrs
(c) 36 yrs
(d) 41 yrs

25. $x = 3$ is a solution of the equation $3x^2 + (k - 1)$ $x + 9 = 0$ if k has value -

(a) 13
(b) -13
(c) 11
(d) -11

26. The solution of $2 - x = \dfrac{x-2}{x}$ would include:

   (a) $-2, -1$
   (b) $2, -1$
   (c) $-4, 2$
   (d) $4, -2$

27. The common roots of the equations $x^2 - 7x + 10 = 0$ and $x^2 - 10x + 16 = 0$ is —

   (a) -2
   (b) 3
   (c) 5
   (d) 2

28. The sum of the roots of the equation $x^2 - 6x + 2 = 0$ is —

   (a) -6
   (b) -2
   (c) 2
   (d) 6

29. If the product of the roots of $x^2 - 3x + k = 10$ is -2 the value of k is -

   (a) -2
   (b) 8
   (c) 12
   (d) -8

30. The ratio of the sum and the product of the roots of $7x^2 - 12x + 18 = 0$ is -

   (a) $7 : 12$
   (b) $2 : 3$
   (c) $3 : 2$
   (d) $7 : 18$

31. With respect to the roots of $x^2 - x - 2 = 0$, we can say that -

   (a) both of them are natural numbers
   (b) both of them are integers
   (c) the latter of the two is negative
   (d) None of these

32. The equation $x^2 + 4x + k = 0$ has real roots, then-

   (a) $k \geq 4$
   (b) $k \leq 4$
   (c) $k \leq 0$
   (d) $k \geq 0$

33. The value of k for which $x^2 - 4x + k = 0$ has coincident roots is —

   (a) 4
   (b) -4
   (c) 0
   (d) -2

34. The equation (m being real), $mx^2 + 2x + m = 0$ has two distinct roots if -

   (a) $m \neq 0$
   (b) $m \neq 0, 1$
   (c) $m \neq 1, -1$
   (d) $m \neq 0, 1, -1$

35. If the equation $x^2 + 2(k+2)x + 9k = 0$ has equal roots, the values of k are —

   (a) $1, 4$
   (b) $-1, 4$
   (c) $1, -4$
   (d) $-1, -4$

36. Vidhya and Vandana solved a quadratic equation. In solving it, Vidhya made a mistake in the constant term and got the roots as 6 and $2,$ while Vandana made a mistake in the coefficient of x only and obtained the roots as -7 and $-1.$ The correct roots of the equation are -

   (a) $6, -1$
   (b) $-7, 2$
   (c) $-6, -2$
   (d) $7, 1$

37. The roots of a quadratic equation are 5 and -2 . The equation is -

   (a) $x^2 - 3x + 10 = 0$
   (b) $x^2 - 3x - 10 = 0$
   (c) $x^2 + 3x + 10 = 0$
   (d) $x^2 + 3x - 10 = 0$

38. If the sum of the roots of a quadratic equation is 6 and the product of the roots is also $6,$ then the equation is —

   (a) $x^2 - 6x + 6 = 0$
   (b) $x^2 + 6x - 6 = 0$
   (c) $x^2 - 6x - 6 = 0$
   (d) $x^2 + 6x + 6 = 0$

39. If one root of the equation $3x^2 - 10x + 3 = 0$ is $\dfrac{1}{3}$, the other root is -

(a) $-\dfrac{1}{3}$

(b) -3

(c) 3

(d) $\dfrac{1}{3}$

40. If the sum of the roots of the equation $kx^2 + 2x + 3k = 0$ is equal to their product, then the value of k is —

(a) $\dfrac{1}{3}$

(b) $-\dfrac{1}{3}$

(c) $\dfrac{2}{3}$

(d) $-\dfrac{2}{3}$

41. If α, β are the roots of the equation $x^2 - 8x + p = 0$ and $\alpha^2 + \beta^2 = 40$, p is equal to -

(a) 8

(b) 10

(c) 12

(d) 14

42. The two parts into which 57 should be divided so that their product is 782, are -

(a) $43, 14$

(b) $33, 24$

(c) $34, 23$

(d) $44, 13$

43. Out of a group of swans, $\left(\dfrac{7}{2}\right)$ times the square root of the number are swimming in water while two remaining are playing on the shore. The total number of swans is -

(a) 4

(b) 8

(c) 12

(d) 16

44. Solve for $y : 7y^2 - 6y - 13\sqrt{7} = 0$

(a) $\sqrt{7}, 2\sqrt{7}$

(b) $3, \dfrac{2}{\sqrt{7}}$

(c) $\dfrac{13}{\sqrt{7}}, -\sqrt{7}$

(d) None of these

45. A two digit number is such that the product of it's digits is 12. When 9 is added to the number, the digits interchange their places, find the number:

(a) 62

(b) 34

(c) 26

(d) 43

46. The sum of the squares of two consecutive positive odd numbers is 290. Find the sum of the numbers :

(a) 14

(b) 24

(c) 28

(d) None of these

47. A shopkeeper buys a number of books for Rs.80. If he had bought 4 more for the same amount, each book would have cost Re.1 less. How many books did he buy?

(a) 8

(b) 16

(c) 24

(d) 28

48. The squares have sides x cm and $(x + 4)$cm. The sum of their areas is 656cm^2. find the sides of the square.

(a) 8cm, 12cm

(b) 12cm, 15cm

(c) 6cm, 10cm

(d) 16cm, 20cm

49. The number of real roots of the equation $(x - 1)^2 + (x - 2)^2 + (x - 3)^2 = 0 :$

(a) 0

(b) 2

(c) 3

(d) 6

50. The number of real solutions of the equation $2^{3x^2-7x+4} = 1$
is :

(a) 0
(b) 4
(c) 2
(d) Infinitely many

Answer Key

1. **Answer:** b

2. **Answer:** c

3. **Answer:** b

4. **Answer:** d

5. **Answer:** b

6. **Answer:** b

7. **Answer:** d

8. **Answer:** c

9. **Answer:** b

10. **Answer:** a

11. **Answer:** a

12. **Answer:** d

13. **Answer:** a

14. **Answer:** b

15. **Answer:** c

16. **Answer:** d

17. **Answer:** c

18. **Answer:** c

19. **Answer:** a

20. **Answer:** a

21. **Answer:** b

22. **Answer:** c

23. **Answer:** a

24. **Answer:** c

25. **Answer:** d

26. **Answer:** b

27. Answer: d

28. Answer: d

29. Answer: b

30. Answer: b

31. Answer: c

32. Answer: b

33. Answer: a

34. Answer: c

35. Answer: a

36. Answer: d

37. Answer: b

38. Answer: a

39. Answer: c

40. Answer: d

41. Answer: c

42. Answer: c

43. Answer: d

44. Answer: c

45. Answer: b

46. Answer: b

47. Answer: b

48. Answer: d

49. Answer: a

50. Answer: c