LORD KRISHNA PUBLIC SCHOOL
We Shape the Future
Affiliated to CBSE
Affiliation No.530600

10th class Assignment **TOPIC:- Respiratory System**

Q.1 Define the following terms:-

a. Respiration b. Breathing c. Glycolysis

Q.2 How many ATP are formed during:-

a. Aerobic respiration b. Glycolysis
c. Anaerobic respiration d. Kreb's cycle

Q.3 Write the chemical reaction involved during:-

a. Aerobic respiration b. Anaerobic respiration in yeast
c. Anaerobic respiration in human muscles cell.

Q.4 Write the end product produced during:-

a. Alcoholic fermentation b. Lactic fermentation
c. Aerobic respiration

Q.5 Write the differences between:-

a. Aerobic and anaerobic respiration.
b. Breathing and respiration.

Q.6 Determine the site of:-

a. Kreb's cycle b. Glycolysis

Q.7 Name two phases of breathing.

Q.8 Define the following terms:-

a. Pulmonary respiration b. Cutaneous respiration
c. Branchial respiration d. Tracheal respiration

Q.9 Name the respiratory organ in following animals:-

a. Amoeba b. Planaria

c. Insect
d. Fish
e. Amphibian (tadpole)
f. Amphibian (frog)
g. Mammals
h. Reptiles
i. Aves

Q.10 Name the animal which show exchange of gases by:-

a. Trachea
b. Skin
c. Lungs
d. Body surface
e. Gills

Q.11 Name the type of respiration in which the end products are:-

a. C_2H_5OH and CO_2
b. Lactic acid
c. CO_2 and H_2O

Class – 10th **Assignment**

1. The study of blood is called _____.
2. The covering of heart is _____.
3. Name the first heart sound _____.
4. Where is heart located _____.
5. Life span of **RBC** _____.
6. Number of **WBC** in blood _____.
7. The liquid part of blood is called _____.
8. Haemoglobin is present in _____.
9. Which blood cell lacks nucleus _____.
10. Second heart sound is produced with closure of _____.
11. All veins have deoxygenated blood except _____.
12. Which protein helps in clotting of blood _____.
13. **PH** of blood is _____.
14. blood circulation is discovered by _____.
15. Arteries and veins are joined by _____.
16. Two chambered of heart is found in _____.
17. Duration cardiac cycle is _____.
18. Opening of right atrium into right ventricle is guarded by _____.
19. Value of diastolic blood preasure is _____.
20. Name the instrument used to measure BP _____.
21. Name the instrument used to heared the heart sound _____.
22. Anti-bodies are produced by _____.
23. Life span of **WBC** is _____.
24. Name the protein present in plasma _____.
25. Number of platelets in healthy adult person _____.
26. Plasma without protein factor _____.
27. Which protein help in osmatic balance _____.
28. Which of the four chamber of human heart has the thickest muscular walls _____.
29. Increase of BP is called _____.

30. Average weight of human heart is _____.
31. Three chambered heart is found in _____.
32. Study of heart is called _____.
33. Another name of bicus pid wall _____.
34. Name the largest vein _____.
35. Name the defective heart sound _____.
36. Name the second heart sound _____.
37. Amount of haemoglobin present in healthy person _____.
38. Contruction and relaxation of heart is called _____.
39. Colour of blood plasma is _____.
40. Which plasma protein provides imunity _____.
41. How many percent protein is present in blood plasma _____.
42. Write another name of Platelets _____.
43. Process of blood formation is Known as _____.
44. Name the two types of lymphocytes _____.
45. What is the function of WBC _____.
46. When the right ventricle contracts the blood pump into _____.
47. Graveyard of RBC 's is _____.
48. blood clotting is not possible in absence of which blood corpuscles _____.
49. Lymph does not contain _____.
50. Closed circulatory system is found in _____.
51. Open circulatory system is found in _____.
52. The sound of lubb is produced during closure of _____.
53. Serum differs from blood in _____.
54. Name the reptiles which has four chambered heart _____.

1. Draw the labelled diagram of the following:-

   a. Nucleus
   b. 70's ribosome.
   c. 80's ribosome.
   d. Bacterial cell.
   e. Animal cell
   f. Plant cell
   g. Mitochondria
   h. Chloroplast.
   i. Golgi body
   j. ER
   k. Fluid mosaic model
   l. Chromosome
   m. Vacuole
   n. Polyribosome

2. Write the function of the following:-

   a. Nucleus
   b. Mitochondria
   c. Chloroplast.
   d. Golgi body
   e. ER
   f. Vacuole
   g. Cell membrane
   h. Cell wall
   i. Centriole
   j. Plastid
   k. Peroxisome
   l. Lysosome
   m. Mesosomes

DPP :-

1. Which is the largest organ in man _____.
2. In man **PH** of saliva is_____.
3. Proteins are digested by_____.
4. Stomach has **Acidic** medium due to_____.
5. The chief function of bile is to_____.
6. Digestion of protein ,fats and carbohydrates are completed in_____.
7. Trypsinogen is secreated by_____.
8. Gastric gland produce the enzymes_____
9. The function of oxyntic cell are_____
10. Gastric juice of humans contain_____
11. The functional unit for absorbtion of digested food are_____
12. The glucose is converted into glycogen stored in_____
13. Zymogen cell or chief cell secretes_____
14. In stomach HCL is secreted by_____
15. Synthesis of vit. A takes place in_____
16. Saliva converts _____
17. The structure which prevents the entry of food into respiratory tract is_____
18. Enterokinase is _____
19. Bacteria entering with food are killed in stomach by_____
20. In man gall bladder is situated in_____
21. Ptaylin Acts on_____
22. In the milk of mammals is present a diassacride known as_____
23. Bile pigment is found in _____
24. The optimum PH for ptyalin action in mammal is_____
25. Parotid salivary gland are present in_____

26. Some animals eat their faeces to digest cellulose contents again these are called _____

27. Appendix in man is situated in _____

28. In man , the bile juice secreted per day is _____

29. Pepsinogen is secreated by _____

30. Muscular contraction of alimentary canal is _____

31. Give the Location of kupffer cell_____

32. What is the approxiamate weight of largest gland _____

33. Name the cell which secretes the mucus_____

34. Name the middle part of small intestine_____

35. Stomach shape is represented by which symbol_____

36. Name another name of wind pipe and food pipe_____ ,_____

37. Name the enzyme which present in pancreatic juice_____

38. Name the enzyme found in stomach_____

39. How many salivary glands are located in man_____

40. Name the whitish and hard part of tooth_____

41. Name the vestigial organ _____

42. Name the salivary gland which is present below external ear_____

43. Dental formula of human baby is _____

44. Name the enzyme which digests fat is _____

45. The digestive juice that lack enzymes but helps in digestion is_____

46. The liver cell which are phagocytic in nature are _____

47. Presence of different types of teeth is called _____

48. Duodenum shape is represented by which symbol_____

49. How many premolar teeth present in baby and adult_____,_____

50. State the location of pancreas gland_____

1. Differences between:-
    a. Plant cell and animal cell.
    b. Prokaryotic cell and eukaryotic cell.
    c. Unicellular and multicellular organisms.
    d. RER and SER.
    e. Cell wall and plasma membrane
    f. Mitochondria and chloroplast.
    g. 70's ribosome and 80's ribosome.
    h. Leucoplast and chromoplast.
    i. Chloroplast and chromoplast.
    j. Nucleus and nucleolus.
    k. Cell organelles and cell inclusion.
    l. Nucleus and nucleoid.
    m. Diffusion and osmosis.
    n. Phagocytosis and pinocytosis.
    o. Endocytosis and exocytosis.
    p. Plasmolysis and deplasmolysis.
    q. Ribosome and centriol.
    r. Protoplasm and protoplast.
    s. DNA and RNA.

LORD KRISHNA PUBLIC SCHOOL
We Shape the Future
Affiliated to CBSE
Affiliation No. 530600

Assignment

Class – 10th **Subject : Maths**

1. If the product of two zeroes of polynomial $3x^3 + 5x^2 - 7x - 27$ be 3, then third zero is

   (a) 9 (b) 1 (c) 3 (d) $\frac{1}{3}$

2. Which of the following is not a polynomial ?

   (a) $x^4 + 1$ (b) $x^2 + \frac{1}{x^2}$ (c) $x - 1$ (d) $\sqrt[3]{x^6} + 9$

3. If the graph of a polynomial intersects the x-axis in 3 points, then its degree cannot be

   (a) 2 (b) 3 (c) 4 (d) 5

4. If one zero of the polynomial $f(x) = (k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then $k =$ _____

   (a) 2 (b) -2 (c) 1 (d) -1

5. A cubic polynomial can have atmost _____ zeroes.
6. The degree of a constant polynomial is _____
7. If $f(x) \neq 0$ for any real values of $f(x)$, then $f(x)$ has _____ zeroes
8. A quadratic polynomial may have no zeroes. (True/False)
9. $4x^2 + \frac{\sqrt{5}}{x} + \frac{3}{x}$ is a quadratic polynomial. (True/False)
10. The real zeroes of a polynomial are less than or equal to degree of that polynomial. (True/False)
11. Find a quadratic polynomial, whose zeros are -3 and 4. **[NCERT Exemplar]**
12. If on division of a non-zero polynomial $p(x)$ by a polynomial $g(x)$, the remainder is zero, what is the relation between degree of $p(x)$ and $g(x)$.
13. If the sum of zeros of $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, find the value of k.
14. If α, β are the zeros of the polynomial $x^2 + x + 1$, then find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$.
15. If one zero of the polynomial $(k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then find the value of k. *[CBSE 2013, 12]*
16. Find the third zero, if the product of two zeros of the polynomial $2x^3 + 6x^2 - 4x + 9$ is 3.
17. For what value of a and b, $(x + 2)$ is a factor of $x^2 + ax + 2b$ such that $a + b = 4$.
18. Given that two zeros of the cubic polynomial $ax^3 + bx^2 + cx + d$ are 0, find the third zero. **[NCERT Exemplar]**
19. If α and β are zeros of the polynomial $4x^2 - 2x + (k - 4)$ and $\alpha = \frac{1}{\beta}$, find the value of k. *[CBSE 2012]*
20. If one of the zeros of quadratic polynomial $p(x) = 14x^2 - 42k^2x - 9$ is negative of the other, find the value of k. *[CBSE 2013]*
21. If α and β are zeros of the polynomial $2x^2 + 5x + 1$, find the value of $\alpha + \beta + \alpha\beta$. *[CBSE 2013]*

22. If sum and the product of the zeros of a quadratic polynomial are $-\frac{1}{2}$ and $\frac{1}{2}$ respectively, find the polynomial. [*CBSE 2011*]

23. If $(x + 1)$ is a factor of $2x^3 + ax^2 + 2bx + 1$ and $2a - 3b = 4$, then find the values of a and b. [*CBSE 2011*]

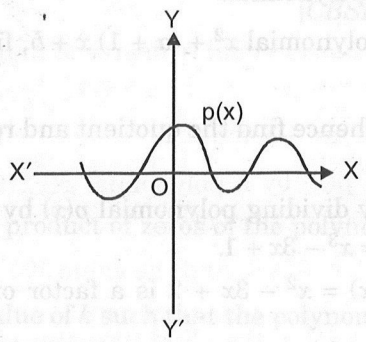
24. If the product of the zeros of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a. Find the sum of the zeros of the polynomial. [*CBSE 2014*]

25. Find the quadratic polynomial whose sum of zeros is 15 and one zero is – 3. [*CBSE 2013*]

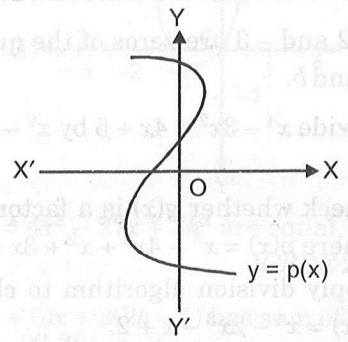
26. If one zero of the polynomial $x^2 - 4x + 1$ is $2 + \sqrt{3}$, write the other zero. [*CBSE 2010*]

27. (*i*) In the adjoining figure (*i*), the graph of a polynomial $p(x)$ is shown. Write the number of zeros of $p(x)$. **[NCERT Exemplar]**

(*ii*) In the adjoining figure (*ii*), the graph of $p(x)$ is drawn, find the number of zeros of $p(x)$. [*CBSE 2011*]

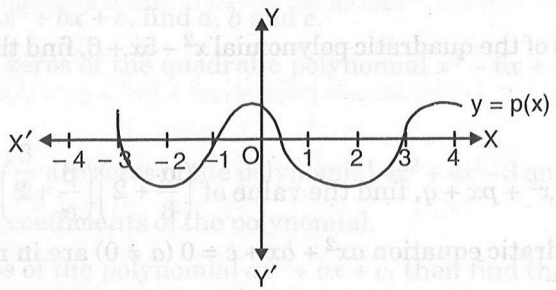


(*i*)



(*ii*)

28. Write the number of zeros lying between – 2 and 2 of the polynomial $p(x)$ whose graph is given below.



SHORT ANSWER QUESTIONS (SA) – I & II — 2 & 3 Marks

29. Find the zeros of the polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeros and the coefficients. [*CBSE 2008*]

30. Find the quadratic polynomial, the sum of whose zeros is 8 and their product is 12. Hence, find the zeros of the polynomial. [CBSE 2008]

31. If $x = \frac{2}{3}$ and $x = -3$ are the zeros of polynomial $ax^2 + 7x + b$, find the values of a and b. [CBSE 2019, 11]

32. If the polynomial $x^4 + 2x^3 + 8x^2 + 12x + 18$ is divided by another polynomial $(x^2 + 5)$, the remainder comes out to be $(px + q)$. Find the values of p and q. [CBSE 2009]

33. If p, q are zeros of polynomial $2x^2 - 7x + 3$, find the value of $p^2 + q^2$. [CBSE 2013]

34. If α, β are the zeros of the polynomial $x^2 - 5x + k$ such that $\alpha - \beta = 1$, find the value of k. [CBSE 2012]

35. Find a quadratic polynomial with zeros $3 + \sqrt{2}$ and $3 - \sqrt{2}$. [CBSE 10, 12, 13]

36. If one zero of the polynomial $3x^2 - 8x + 2k + 1$ is seven times the other, find the zeros and value of k. [CBSE 2010]

37. Find the quadratic polynomial whose zeros are 2 and -6 respectively. Verify the relation between the coefficients and zeros of the polynomial. [CBSE 2010]

38. If 2 and -3 are zeros of the quadratic polynomial $x^2 + (a + 1)x + b$, find the values of a and b. [CBSE 2011]

39. Divide $x^4 - 3x^2 + 4x + 5$ by $x^2 - x + 1$ and hence find the quotient and remainder. [CBSE 2011]

40. Check whether $g(x)$ is a factor of $p(x)$ by dividing polynomial $p(x)$ by polynomial $g(x)$, where $p(x) = x^5 - 4x^3 + x^2 + 3x + 1$, $g(x) = x^3 - 3x + 1$. [AICBSE 2019]

41. Apply division algorithm to check if $g(x) = x^2 - 3x + 2$ is a factor of the polynomial $f(x) = x^4 - 2x^3 - x + 2$. [CBSE 2019]

42. If α, β are zeros of $ax^2 - 5x + c$, then find the value of a and c if $\alpha + \beta = 10$ and $\alpha.\beta = 10$

43. If zeros of the polynomial $x^2 + px + q$ are double in value to the zeros of $2x^2 - 5x - 3$, find values of p and q. [CBSE 2012, 13]

44. If α and β are zeros of the quadratic polynomial $x^2 - 5x + 6$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$. [CBSE 2013]

45. If α, β are zeros of $x^2 + px + q$, find the value of $\left(\frac{\alpha}{\beta} + 2\right)\left(\frac{\beta}{\alpha} + 2\right)$.

46. If the zeros of quadratic equation $ax^2 + bx + c = 0$ $(a \neq 0)$ are in ratio $m : n$, then find the value of $\sqrt{\frac{m}{n}} + \sqrt{\frac{n}{m}}$.

47. Find the values of a and b if they are the zeros of the polynomial $x^2 + ax + b$. [CBSE 2013]

48. If the zeros of the polynomial $x^2 - kx + 6$ are in the ratio 3 : 2, find k. [*CBSE 2013*]

49. If one zero of the quadratic polynomial $2x^2 - 8x - m$ is $\frac{5}{2}$, find the other zero and value of m.

50. If squared difference of the zeros of the quadratic polynomial $p(x) = x^2 + px + 45$ is equal to 144, find the value of p.

51. Find the zeros of the polynomial $9t^2 - 6t + 1$ and verify the relationship between the zeros and the coefficients. [*CBSE 2014*]

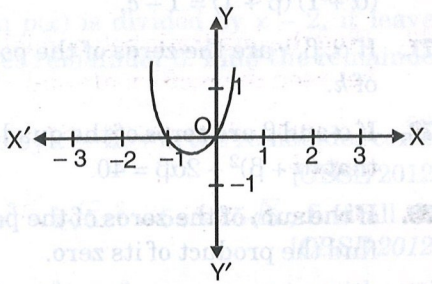
52. When a polynomial $6x^4 + 8x^3 + 29x^2 + 21x + 7$ is divided by another polynomial $3x^2 + 4x + 1$, the remainder is in the form $ax + b$. Find a and b. [*CBSE 2014*]

53. Find the polynomial, if its three zeros are $\sqrt{3}, -\sqrt{3}$ and 3. [*CBSE 2014*]

54. If sum of squares of the zeros of the polynomial $6x^2 + x + k$ is $\frac{25}{36}$, find k. [*CBSE 2015*]

55. Find the zeros of the polynomial as shown in the graph and hence find the polynomial.

[*CBSE 2015*]



56. If sum and product of zeros of the polynomial $p(x) = 4x^2 - 27x + 3k^2$ are equal, find the value of k. [*CBSE 2012, 13*]

57. Find the value of k such that the polynomial $x^2 - (k + 6)x + 2(2k - 1)$ has sum of its zeros equal to half of their product. [*CBSE 2019*]

58. If $\sqrt{5}$ and $-\sqrt{5}$ are two zeros of the polynomial $x^3 + 3x^2 - 5x - 15$, find its third zero.

59. On dividing the polynomial $p(x) = 5x^4 - 3x^2 - 2x + 1$ by another polynomial $g(x) = x^2 + 2$, if the quotient is $ax^2 + bx + c$, find a, b and c. [*CBSE 2011*]

60. If α and β are the zeros of the quadratic polynomial $x^2 - 6x + a$, find the value of a, if $3\alpha + 2\beta = 20$. [*CBSE 2011*]

61. Show that $\frac{1}{2}$ and $-\frac{3}{2}$ are zeros of the polynomial $4x^2 + 4x - 3$ and verify the relationship between zeros and coefficients of the polynomial. [*CBSE 2012*]

62. If α, β are the zeros of the polynomial $ax^2 + bx + c$, then find the value of $\alpha^3 + \beta^3$.

63. If zeros of the polynomial $x^2 - 2x - 3$ are half the zeros of the polynomial $ax^2 + bx + c$, find $a - b - c$.

64. If α, β are zeros of the quadratic polynomial $p(x) = kx^2 + 4x + 4$ such that $\alpha^2 + \beta^2 = 24$, find the value of k.

65. Verify whether 2, 3 and $\frac{1}{2}$ are the zeros of polynomial $p(x) = 2x^3 - 11x^2 + 17x - 6$ and verify the relationship between zeros and coefficients of the polynomial. [*CBSE 2013*]

66. Let $p(x) = g(x).q(x) + r(x)$. If the degree of $g(x) = 4$, degree of $q(x) = 3$ and degree of $r(x) = 2$, then find the degree of $p(x)$.

67. On dividing the polynomial $p(x) = x^4 - 3x^3 - 5x^2 + 7x - 11$ by a polynomial $g(x)$, we get remainder $-14x - 33$ and quotient $x^2 - 6x + 11$; find $g(x)$.

68. If $\sqrt{2}$ is a zero of the polynomial $6x^3 + \sqrt{2}\,x^2 - 10x - 4\sqrt{2}$, find its other two zeros.

69. Find zeros of the polynomial $2x^2 - (1 + 2\sqrt{2})\,x + \sqrt{2}$ by factorization method and verify the relation between the zeros and coefficient of the polynomial.

70. If α and β are the zeros of the quadratic polynomial $p(x) = x^2 - p(x + 1) - c$, show that $(\alpha + 1)(\beta + 1) = 1 - c$.

71. If α, β, γ are the zeros of the polynomial $kx^3 - 5x + 9$ and $\alpha^3 + \beta^3 + \gamma^3 = 27$, find the value of k.

72. If α and β are zeros of the quadratic polynomial $p(x) = x^2 - 6x + k$, find the value of k such that $(\alpha + \beta)^2 - 2\alpha\beta = 40$. [*CBSE 2016*]

73. If the sum of the zeros of the polynomial $p(x) = (a + 1)x^2 + (2a + 3)x + (3a + 4)$ is -1, then find the product of its zero. [*CBSE 2012*]

74. On dividing the polynomial $p(x)$ by a polynomial $g(x) = 4x^2 + 3x - 2$, the quotient $q(x) = 2x^2 + 2x - 1$ and remainder $r(x) = 14x - 10$. Find the polynomial. [*CBSE 2011*]

LONG ANSWER QUESTIONS (LA)

4 Marks Each

75. Obtain all the zeros of $2x^4 - 6x^3 + 3x^2 + 3x - 2$, if two of its zeros are $\pm\frac{1}{\sqrt{2}}$. [*CBSE 2011*]

76. Find all the zeros of the polynomial $2x^4 + 7x^3 - 19x^2 - 14x + 30$, if two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$. [*CBSE 2013*]

77. What must be subtracted from the polynomial $p(x) = x^4 + 2x^3 - 13x^2 - 12x + 21$, so that the resulting polynomial is exactly divisible by $x^2 - 4x + 3$? [*CBSE 2013*]

78. What must be added to $f(x) = 4x^4 + 2x^3 - 2x^2 + x - 1$ so that the resulting polynomial is divisible by $g(x) = x^2 + 2x - 3$.

79. Find k such that $x^2 + 2x + k$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$. Also, find all the zeros of the two polynomials. [**NCERT Exemplar**] [*CBSE 2013*]

80. If the zeros of the cubic polynomial $x^3 - 6x^2 + 3x + 10$ are of the form a, $a + b$ and $a + 2b$ for some real numbers a and b, find the values of a and b as well as the zeros of the given polynomial. [**NCERT Exemplar**]

81. For what values of a and b, the zero of the polynomial $g(x) = x^3 + 2x^2 + a$ are also the zeros of the polynomial $p(x) = x^5 - x^4 - 4x^3 + 3x^2 + 3x + b$ which zeros of $p(x)$ are not the zeros of $g(x)$? **[NCERT Exemplar]**

82. Find all the zeros of the polynomial $2x^4 - 9x^3 + 5x^2 + 3x - 1$, if two of its zeros are $2 + \sqrt{3}$ and $2 - \sqrt{3}$. *[CBSE 2018]*

83. Find the values of a and b so that $x^4 + x^3 + 8x^2 + ax + b$ is exactly divisible by $x^2 + 1$. *[CBSE 2014]*

84. If $x^2 + x - 12$ divides $x^3 + ax^2 + bx - 84$ exactly, find the values of a and b. *[CBSE 2013]*

85. Give one example of a polynomial division process where $p(x) = g(x).\ q(x) + r(x)$
(*i*) deg $[r(x)]$ < deg $[q(x)]$ (*ii*) deg $[p(x)]$ = deg $[q(x)]$ *[CBSE 2013]*

86. Obtain all other zeros of the polynomial $x^4 - 3\sqrt{2}x^3 + 3x^2 + 3\sqrt{2}x - 4$, if two of its zeros are $\sqrt{2}$ and $2\sqrt{2}$. *[CBSE 2014]*

87. $p(x)$ is a polynomial of degree more than 2. When $p(x)$ is divided by $x - 2$, it leaves remainder 1 and when it is divided by $x - 3$, it leaves remainder 3. Find the remainder when $p(x)$ is divided by $(x - 2)(x - 3)$.

88. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by $x^2 - 2x + k$, the remainder comes out to be $x + a$. Find the values of k and a. [CBSE 2012]

89. Given that $x - \sqrt{5}$ is a factor of the polynomial $x^3 - 3\sqrt{5}x^2 - 5x + 15\sqrt{5}$; find all the zeros of the polynomial. *[CBSE 2012]*

90. Find the condition that zeros of the polynomial $p(x) = x^3 - px^2 + qx - r$ are in arithmetic progression.

91. If the zeros of the polynomial $p(x) = x^3 - 3x^2 - 6x + 8$ are in arithmetic progression, find the zeros.

92. If $x + a$ is a factor of $p(x) = x^2 + px + q$ and $q(x) = x^2 + mx + n$, then prove that $a = \dfrac{n - q}{m - p}$.

93. If the remainder on division of $x^3 + 2x^2 + kx + 3$ by $x - 3$ is 21, find the quotient and value of k. Hence, find the zeros of the cubic polynomial $x^3 + 2x^2 + kx - 18$. *[CBSE 2010, 12, 13]*

94. If α and β are the zeros of the polynomial $p(x) = 6x^2 - 5x + k$, such that $\alpha - \beta = \dfrac{1}{6}$, find the value of k. *[CBSE 2012, 13]*

95. If the polynomial $p(x) = ax^3 + bx - c$ is divisible by $q(x) = x^2 + bx + c$, then find the value of ab.

96. If α, β are the zeros of quadratic polynomial $p(x) = x^2 - 3x - 2$, find a quadratic polynomial whose zeros are $\dfrac{1}{2\alpha + \beta}$ and $\dfrac{1}{2\beta + \alpha}$.

97. Divide $30x^4 + 11x^3 - 82x^2 - 12x + 48$ by $3x^2 + 2x - 4$ and verify the result by division algorithm. *[CBSE 2010]*

98. If α, β, γ are the zeros of the polynomial $p(x) = ax^3 + bx^2 + cx + d$, find the value of $\alpha^{-1} + \beta^{-1} + \gamma^{-1}$.

99. If sum of the zeros of the polynomial $5x^2 - (3 + k)x + 7$ is zero, find the zeros of the polynomial $2x^2 - 2(k + 11)x + 30$.

100. If product of the zeros of the polynomial $kx^2 + 41x + 42$ is 7, find the zeros of the polynomial $(k - 4)x^2 + (k + 1)x + 5$.

101. If one zero of the quadratic polynomial $ax^2 + bx + c$ is four times the other, prove that $4b^2 = 25ac$.

102. If the zeros of the quadratic polynomial be in ratio 2 : 3, prove that $6b^2 = 25ac$.

103. Rajesh donated some money and books to a school for poor children. Money and books can be represented by the zeros (*i.e.*, α and β) of the polynomial $p(x) = 2x^2 - 5x + 7$. Akshita, who is friend of Rajesh, also got inspired by him and donated the money and books in the form of a polynomial whose zeros are $2\alpha + 3\beta$ and $3\alpha + 2\beta$. Find the polynomial, whose zeros are $2\alpha + 3\beta$ and $3\alpha + 2\beta$. [*CBSE 2014*]

104. An NGO decided to distribute books and pencils to the students of a school run by some other NGO. For this they collected some amount from different people. The total amount collected is represented by $4x^4 + 2x^3 - 8x^2 + 3x - 7$. From this fund each student received an equal amount. The number of students, who received the amount, is represented by $x - 2 + 2x^2$. After distribution, $5x - 11$, amount is left with the NGO which they donated to school for their infrastructure. Find the amount received by each student from the NGO. [*CBSE 2015*]

105. If α, β, γ are the zeros of the polynomial $p(x) = x^2 + px + q$, then find the value of $\left(\frac{\alpha}{\beta} + 2\right) \cdot \left(\frac{\beta}{\alpha} + 2\right)$

106. If α, β, γ are the zeros of the cubic polynomial $p(x) = x^3 - 12x^2 + 44x + c$ and α, β, γ are in A.P., then find the value of c.

ANSWERS

VERY SHORT ANSWER QUESTIONS (VSA)

1 Mark Each

1. Two lines $a_1x + b_1y = c_1$ and $a_2x + b_2y = c_2$ are represented algebraically. Graphically these pair of lines will represent coincident lines if

(a) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (c) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (d) none of these.

2. The given equations are $x + 3y = 3$ and $3x + y = 9$. Then the values of x, y are

(a) $x = 0, y = 3$ (b) $x = 0, y = -3$ (c) $x = 3, y = 0$ (d) $x = -3, y = 0$

3. A system of simultaneous linear equations is said be inconsistent if it has

(a) infinitely many solutions (b) unique solution

(c) no solution (d) none of these.

4. The condition for the system of linear equations $ax + by = c$; $lx + my = n$ to have a unique solution is

(a) $al \neq bm$ (b) $am \neq bl$ (c) $al = bm$ (d) none of these.

5. If the graph of system of equations is parallel lines, then the system has _____ solutions.

6. Consider the system of equations :

$$a_1x + b_1y + c_1 = 0$$
$$a_2x + b_2y + c_2 = 0$$

(*a*) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then the system is _____ and has _____ solutions.

(*b*) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, then the system is _____ and has _____ solutions.

7. The pair of equations $x = a$ and $y = b$ represents _____ lines.

8. If $7x + 9y = 42$ and $9x + 7y = 22$, then the value of $x + y =$ _____ **[NCERT Exemplar]**

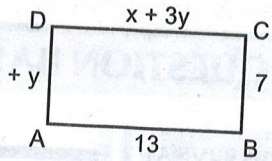
9. The line represented by $x = 7$ is parallel to x-axis (True/False) **[NCERT Exemplar]**

10. For what values of λ, do the pair of linear equations $\lambda x + y = \lambda^2$ and $x + \lambda y = 1$ have

(*a*) no solution ? (*b*) infinitely many solutions ? (*c*) a unique solution ?

11. How many solutions does the pair of equations $y = 0$ and $y = -7$ have ?

12. Find the values of x and y in the rectangle given below. **[NCERT Exemplar]**



13. Write the number of solutions of the following pair of linear equations :

$$x + 2y - 8 = 0,\ 2x + 4y = 16$$ *[CBSE 2010, 09]*

14. What is the condition that the pair of linear equations $kx + 2y = 5$ and $3x + y = 1$ have unique solution ? *[CBSE 2010]*

15. If $x = 2, y = 3$ is a solution of a pair of lines $2x - 3y + a = 0$ and $2x + 3y - b + 2 = 0$ then prove that $3a = b$. *[CBSE 2012]*

16. If $ax + by = a^2 - b^2$ and $bx + ay = 0$, find the value of $(x + y)$. *[CBSE 2013]*

17. If the pair of linear equations $2x + 7y = k$, $kx + 21y = 18$ has infinitely many solutions, find k. *[CBSE 2014]*

18. Find whether the following pair of linear equations is consistent or inconsistent ?

$$x + 2y = 4;\ 3x + 6y = 12$$ *[CBSE 2016]*

19. One linear equation is $-5x + 7y = 12$. Write another linear equation that may make a pair of dependent linear equations. *[CBSE 2015]*

20. If the angles of a triangle are x, y and $40°$ and the difference between the two angles x and y is $30°$, then find the value of x and y. **[NCERT Exemplar]**

21. A father's age is three times the sum of the ages of his two children. After 5 years his age will be two times the sum of their ages. Find the present age of the father. *[CBSE 2019]*

22. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. Find the present ages of the son and father. **[NCERT Exemplar]**

23. Aruna has only ₹ 1 and ₹ 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is ₹ 75, then find the number of ₹ 1 and ₹ 2 coins respectively. **[NCERT Exemplar]**

24. Find the value of k for which the following pair of lines equations have infinitely many solutions : $2x + 3y = 7$, $(k - 1)x + (k + 2)y = 3k$ *[CBSE 2010]*

25. Find c if the system of equations $cx + 3y + (3 - c) = 0$; $12x + cy - c = 0$ has infinitely many solutions ? *[CBSE 2019]*

26. Do the following equations represent a pair of coincident lines ? Justify your answer :

(*i*) $3x + \frac{1}{7}y = 3$ and $7x + 3y = 7$

(*ii*) $-2x - 3y = 1$ and $6y + 4x = -2$

(*iii*) $\frac{x}{2} + y + \frac{2}{5} = 0$ and $4x + 8y + \frac{5}{16} = 0$ **[NCERT Exemplar]**

27. Are the following pair of linear equations consistent ? Justify your answer

(*i*) $\frac{3}{5}x - y = \frac{1}{2}$ and $\frac{1}{5}x - 3y = \frac{1}{6}$

(*ii*) $2ax + by = a$ and $4ax + 2by - 2a = 0$, $a \neq 0$, $b \neq 0$ **[NCERT Exemplar]**

28. Find the values of p and q for which the system of linear equations $2x + 3y = 7$, $(p + q)x + (2p - q)y = 3(p + q + 1)$ has infinitely many solutions. *[CBSE 2002]*

Solve graphically each of the following systems of linear equations. Also find the coordinates of the points where the lines meet the axis of y.

29. $2x - 5y + 4 = 0$, $2x + y - 8 = 0$ *[CBSE 2005]*

30. $3x + 2y - 12 = 0$, $5x - 2y = 4$ *[CBSE 2006C]*

31. $x + 2y - 7 = 0$, $2x - y - 4 = 0$ *[CBSE 2000C]*

Solve graphically each of the following system of linear equations. Also find the coordinates of the points where the lines meet the axis of x in each system :

32. $x + 2y = 5$, $2x - 3y = -4$ *[CBSE 2005]*

33. $2x + 3y = 8, x - 2y = -3$ [CBSE 2005]

Solve the following pairs of equations :

34. $3x - 5y = 4; 2y + 7 = 9x$ [CBSE 2019]

35. $x + y = 3{\cdot}3, \frac{0{\cdot}6}{3x - 2y} = -1, (3x - 2y \neq 0)$ [NCERT Exemplar]

36. $4x + \frac{6}{y} = 15, 6x - \frac{8}{y} = 14, y \neq 0$ [NCERT Exemplar]

37. $\frac{x}{a} + \frac{y}{b} = a + b, \frac{x}{a^2} + \frac{y}{b^2} = 2, a, b \neq 0$ [NCERT Exemplar]

38. Find the solution of the pair of equations $\frac{x}{10} + \frac{y}{5} - 1 = 0$ and $\frac{x}{8} + \frac{y}{6} = 15$ and find λ, if $y = \lambda x + 5$. [NCERT Exemplar]

39. Solve for x and y : $\frac{4}{x} + 3y = 8; \frac{6}{x} - 4y = -5$. [CBSE 2010]

40. Solve for x and y :

(*i*) $99x + 101y = 1499$
$101x + 99y = 1501$
[CBSE 2010, 12, 13]

(*ii*) $x + y = a + b$
$ax + by = a^2 + b^2$
[CBSE 2013]

(*iii*) $2(3x - y) = 5xy$
$2(x + 3y) = 5xy$ [CBSE 2012]

41. Find whether the lines representing the following pair of linear equations intersect at a point, are parallel or coincident.

$$\frac{3}{2}x + \frac{5}{3}y = 7$$

$$\frac{3}{2}x + \frac{2}{3}y = 6$$

[CBSE 2014]

42. Find the value of k for which the following pair of equations has no solutions ?

$$x + 2y = 3$$

$$(k - 1)x + (k + 1)y = k + 2.$$

[CBSE 2013]

43. Solve the following pair of equations by substitution method

$$0{\cdot}2x + 0{\cdot}3y = 1{\cdot}3$$

$$0{\cdot}4x + 0{\cdot}5y = 2{\cdot}3$$

[CBSE 2016]

44. Given the linear equation $9x = 2y + 5$, write another linear equation in these two variables such that the geometrical representation of the pair so formed is (*i*) intersecting lines (*ii*) parallel lines. [CBSE 2014]

45. Solve for x and y

(*i*) $x + 2y - 3 = 0$

$3x - 2y + 7 = 0$

[*CBSE 2016*]

(*ii*) $\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}$

$\frac{10}{x+1} + \frac{2}{y-1} = \frac{5}{2}$, where $x \neq -1$ and $y \neq 1$.

[*CBSE 2016*]

46. Solve for x and y (by elimination method)

$$ax + by = \frac{a+b}{2}$$

$$3x + 5y = 4$$

[*CBSE 2012*]

47. Solve for x and y, $x \neq 0, y \neq 0$

$$\frac{2}{x} + \frac{2}{3y} = \frac{1}{6} \text{ and } \frac{3}{x} + \frac{2}{y} = 0.$$

Hence, find a for which $y = ax - 4$. [*CBSE 2012, 13*]

48. For what values of a and b does the following pair of linear equations have infinite number of solutions

$$2x + 3y = 7,$$

$$a(x + y) - b(x - y) = 3a + b - 2.$$

[*CBSE 2015*]

49. Solve the following pair of equations by reducing them to a pair of linear equations :

$$\frac{10}{x+y} + \frac{2}{x-y} = 4 \text{ and } \frac{15}{x+y} - \frac{5}{x-y} = -2.$$

[*CBSE 2013*]

50. Find the integral value of m for which the x co-ordinates of the point of intersection of lines represented by $y = mx + 1$ and $3x + 4y = 9$ is an integer. [*CBSE 2014*]

51. Solve the following pair of linear equation for x and y

$$2(ax - by) + (a + 4b) = 0$$

$$2(bx + ay) + (b - 4a) = 0$$

[*CBSE 2010*]

52. Two years ago, Salim was thrice as old as his daughter and six year later he will be four years older than twice her age. How old they are now ? **[NCERT Exemplar]**

53. The sum of the digits of a two-digit number is 12. The number obtained by interchanging its digits exceeds the given number by 18. Find the number. [*CBSE 2006*]

54. The sum of a two-digit number and the number obtained by reversing the order of its digit is 99. If the digits differ by 3, find the number. [*CBSE 2002*]

55. Seven times a two-digit number is equal to four times the number obtained by reversing the order of digits and the sum of the digits of the number 3. Find the number.

56. If we divide a two digit number by sum of its digits we get 4 as a quotient and 3 as remainder. Now if we divide two digit number by product of the digits we get 3 as quotient and 5 as remainder. Then the two digit number is :

57. The sum of numerator and denominator of a fraction is 3 less than twice the denominator. If each of the numerator and denominator is decreased by 1, the fraction becomes $\frac{1}{2}$. Find the fraction. [CBSE 2010]

58. A fraction becomes $\frac{1}{3}$ when 2 is subtracted from the numerator and it becomes $\frac{1}{2}$ when 1 is subtracted from the denominator. Find the fration. [CBSE 2019]

59. In a competitive examination, 1 mark is awarded for each correct answer while $\frac{1}{2}$ mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. How many questions did she answer correctly ? **[NCERT Exemplar]**

60. The angles of a cyclic quadrilateral ABCD are $\angle A = (6x + 10)°$, $\angle B = (5x)°$, $\angle C = (x + y)°$ and $\angle D = (3y - 10)°$. Find x and y and hence the values of the four angles. **[NCERT Exemplar]**

61. Find two numbers whose sum is 75 and difference is 15. [CBSE 2015]

62. The perimeter of a rectangular garden whose length is 4 m more than its width is 40 m. Find the dimensions of the garden. [CBSE 2015]

63. A number consists of two digits, when the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places, find the number. [CBSE 2010]

64. A man travels 600 km, partly by train and partly by car. It takes 8 hours and 40 minutes, if he travels 320 km by train and the rest by car, it would take 30 minutes more if he travels 200 km by train and rest by car. Find the speed of the train and the car separately. [CBSE 2011]

65. The age of a father is equal to the sum of the ages of his 4 children. After 20 years, the sum of the ages of the children will be twice the age of the father. Find the age of the father. [CBSE 2013]

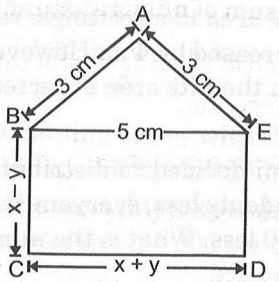
66. The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save 2000 per month, find their monthly income. [CBSE 2013, 12, 10]

67. Ramesh invested some amount at the rate of 8% simple interest and some other amount at the rate of 9% simple interest. He received yearly interest of ₹163. But if he had interchanged the amounts invested, he would have received ₹ 3 less as interest. How much did he invest at different rates ? [CBSE 2014]

68. If the larger of the two complementary angle exceed the smaller by 30°, find the angles. [CBSE 2016]

69. A part of monthly hostel charge is fixed and the remaining depends on the number of days one has taken food in the mess. When Swati takes food for 20 days, she has to pay ₹ 3000 as hostel charges whereas, Mansi who takes food for 25 days pays ₹ 3500 as hostel charges. Find the fixed charges and cost of food per day. [CBSE 2016]

70. In the adjoining figure, ABCDE is a pentagon with BE || CD and BC || ED. BC is perpendicular to CD. If the perimeter of ABCDE is 21 cm, find the value of x and y. [*CBSE 2011*]



LONG ANSWER QUESTIONS (LA) — 4 Marks Each

Solve the following system of equations :

71. $\frac{x}{a} + \frac{y}{b} = 2,\ ax - by = a^2 - b^2$ [*CBSE 2013, 05*]

72. $(a + b)x + (a - b)y = a^2 + b^2$

$(a - b)x + (a + b)y = a^2 + b^2$ [*CBSE 2013*]

73. ABC is an equilateral triangle in which AB = $(3x + 1)$ cm, BC = $(2x + 3y + 5)$ cm and AC = $(x + 9y + 6)$ cm . Find the value of x and y and the sides of the equilateral triangle. [*CBSE 2013*]

74. Three lines $x + 3y = 6$; $2x - 3y = 12$ and $x = 0$ are enclosing a triangular park. Find the point of intersections of lines graphically and area of park if all measurements are in km. [*CBSE 2016*]

75. A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, it takes him 4 hours. But, if he travels 130 km by train and rest by car, he takes 18 minutes longer. Find the speed of the train and that of the car. [*CBSE 2001*]

76. Places A and B are 80 km apart from each other on a highway. A car starts from A and other from B at the same time. If they move in the same direction, they meet in 8 hours and if they move in opposite direction, they meet in 1 hour and 20 minutes. Find the speed of the two cars. [*CBSE 2018C, 12, 02*]

77. A boat can row 8 km upstream and 24 km downstream in 4 hours. It can row 12 km downstream and 12 km upstream in 4 hours. Find the speed of rowing in still water and speed of the current. [*CBSE 2013*]

78. 2 men and 7 boys can do a piece of work in 4 days. The same work is done in 3 days by 4 men and 4 boys. How long would it take one man and one boy to do it ? [*CBSE 2011*]

79. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be 1 row less. If 3 students are less in a row there would be 2 rows more. Find the number of students. [*CBSE 2011*]

80. A boat goes 30 km upstream and 44 km downstream in 10 hours. The same boat goes 40 km upstream and 55 km downstream in 13 hours. Find the speed of boat in still water and the speed of stream. [*CBSE 2014*]

81. The area of a rectangle reduces to 160 m^2, if its length is increased by 5m and breadth is decreased by 4 m. However if the length is decreased by 10 m and breadth is increased by 2 m then its area is decreased by 100 m^2. Find the dimensions of the rectangle.
[CBSE 2014]

82. Rani decided to distribute some amount to poor students for their books. If there are 8 students less, everyone will get ₹ 10 more. If there are 16 students more, everyone will get ₹ 10 less. What is the number of students and how much amount will each student get ?
[CBSE 2014]

83. Two persons are walking along the boundary of a park with different speeds, which has a perimeter of 1.5 km. If they move in the opposite directions, they meet after 15 minutes, while if they move in the same direction they meet in 45 minutes. Find their speeds in km/hr.
[CBSE 2014]

84. 5 books and 7 pens together costs ₹ 285 and 4 books and 4 pens together cost ₹ 220. Monu purchased 3 books and 5 pens and calculated total cost to be ₹ 195, he paid ₹ 195 to the shopkeeper. Shopkeeper rechecked and returned some money to Monu. How much money did shopkeeper returned to Monu ?
[CBSE 2017]

85. Yash scored 40 marks in a test getting 3 marks for each right answer and 1 mark is deducted for each incorrect answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would scored 50 marks. How many questions were there in the test.
[CBSE 2015]

86. If 2 is added to the numerator of a fraction, it reduces to $\frac{1}{2}$ and if 1 is subtracted from the denominator it reduces to $\frac{1}{3}$. Find the fraction.
[CBSE 2012]

87. Scooter charges consist of fixed charges and remaining depending upon the distance travelled in km. If a person travels 10 km, he pays ₹ 65 and for travelling 16 km he pays ₹ 95. Find the fixed charges and rate per km.
[CBSE 2013]

88. DDA wants to make a rectangular park in the colony. If the length and breadth of the park is decreased by 2 m, then the area will be decreased by 196 sq. metres. Its area will be increased by 246 sq. metres if its length is increased by 3 m and breadth is increased by 2 m. Find the length and breadth of the park.
[CBSE 2015]

89. In a two digit number, the digit in the units place is twice of the digit in the tens place. If the digits are reversed, the new number is 27 more than the given number. Find the number.
[CBSE 2014]

90. At a certain time in a zoo, the number of heads and the number of legs of tigers and peacocks were counted and it was found that there were 47 heads and 152 legs. Find the number of tigers and peacocks in the zoo.
[CBSE 2014]

91. A bird, flying in the same direction as that of the wind, covers a distance of 45 km in 2 hours 30 minutes. But it takes 4 hours 30 minutes to cover the same distance, when it flies against the direction of the wind. Ignoring the conditions other than the wind conditions find : (*i*) the speed of the bird in still air (*ii*) speed of the wind.
[CBSE 2012]

92. A man sold a chair and a table together for ₹ 1,520, thereby making a profit of 25% on the chair and 10% on the table. By selling them together for ₹ 1,535, he would have made a profit of 10% on the chair and 25% on the table. Find the cost price of each.

93. A part of monthly expenses of a family is constant and the remaining varies with the price of rice. When the cost of rice is ₹ 250 per quintal, the monthly expenditure of the family is ₹ 1000 and when the cost of rice is ₹ 240 per quintal, the monthly expenditure is ₹ 980. Find the monthly expenditure of the family when the cost of rice is ₹ 300 per quintal.
[*CBSE 2011*]

94. The sum of a two digit number and number obtained on reversing the digits is 99. If number obtained on reversing the digits is 9 more than the original number, then find the number.
[*CBSE 2014*]

95. Mr. Saini and Mr. Gulati are family friends and they decided to go for a trip. For the trip, they reserved their rail tickets. Mr. Saini has not taken a half ticket for his child who is 6 years old, whereas Mr. Gulati has taken a half ticket for his child who is 6·5 years old. A railway half ticket costs half of of the full fare but the reservation charges are the same as on a full ticket. Mr. and Mrs. Saini paid ₹ 1450, while Mr. and Mrs. Gulati paid ₹ 1875. Find the full fare of one ticket and the reservation charges.
[*CBSE 2016*]

96. In a painting competition of a school, a child made an Indian National Flag whose perimeter was 50 cm. Its area will be decreased by 6 square cm, if length is decreased by 3 cm and breadth is increased by 2 cm. Find the dimensions of the flag.
[*CBSE 2014*]

ANSWERS

LORD KRISHNA PUBLIC SCHOOL
We Shape the Future
Affiliated to CBSE
Affiliation No.530600

SUMMER HOLIDAY WORK

CLASS – 10th **Subject – Physics**

Assignment – 1

Solve all the questions with explanation.

1. The number of image formed by two plane mirrors inclined at an angle 60° of an object placed between mirror is:-

a. 5 b. ∞ c. 6 d. 7

2. Give a point source of light, which of the following can produce a parallel beam of light?

a. concave lens
b. convex mirror
c. concave mirror
d. Two plane mirror inclined at 90° to each other

3. The mirror used by a dentist to examine the teeth of a person is:-

a. convex b. concave c. plane d. any one

4. A concave mirror can not be used as :-

a. A magnifying mirror
b. torch reflector
c. dentist's mirror
d. rear view mirror

5. A ray of light passes from glass into air. The angle of refraction will be:-

a. Equal to the angle of incidence.
b. Greater then the angle of incidence

c. Smaller then the angle of incidence.

d. 45°

6. A ray of light travelling in air goes into water . The angle of refraction will be.

a. 90°

b. Smaller then the angle of incidence

c. equal to the angle of incidence

d. greater then the angle of incidence.

7. The speed of light in air is:-

a. 3×10^8 m/s b. 3×10^8 cm/s

c. 3×10^8cm/s d. 3×10^8 mm/s

8. When a ray of light travelling in glass enters into water obliquely.

a. Is refracted towards the normal.

b. It is not refracted at all.

c. It goes along the normal.

d. Away from the normal.

9. A ray of light passes from a medium X to another medium Y. No refraction of light occurs if the ray of light hits the boundary of medium Y at an angle of:- a. 0° b. 45° c. 90° d. 120°

10. The refractive index of glass with respect to air is $\frac{3}{2}$ and the refractive index of water with respect to air is $\frac{4}{3}$. The refractive index of glass with respect to water will be:-

a. 1.525 b. 1.225 c. 1.425 d. 1.125

11. The refractive index of water is:-

a. 1.33 b. 1.50 c. 2.42 d. 1.36

12. Which one of the following materials can not be used to make lens.

a. Water b. Glass c. Plastic d. Clay

13. In order to obtain a real image twice the size of the object with a convex lens of focal length 15cm, the object distance should be:-

a. $< 5 > 10$ b. $< 10 > 15$

c. $< 15 > 30$ d. $< 30 > 60$

14. A small bulb is placed at the focal point of a converging lens. When the bulb is switched on, the lens produces.

a. Converging beam of light b. Divergent beam of light

c. Parallel beam of light d. Patch of coloured light

15. An object is placed at the following from a convex lens of focal length 15cm.

a. 35cm b. 30cm c. 20cm d. 10cm

16. A lens of focal length 12cm forms an erect image three time the size of the object. The distance between the object and image is:-

a. 8cm b. 16cm c. 24cm d. 36cm

17. A Virtual , Erect and magnified image of an object is to be obtained with a convex lens for this purpose, the object should be placed:-

a. between 2f and ∞ b. between F and optical centre

c. between F and 2f d. at F

18. Magnification produced by a concave lens is always:-

a. more then 1 b. equal to 1

c. less then 1 d. more or less then 1.

19. An object is 0.09 m from a magnifying lens and the image is formed 36cm from the lens. The magnification produce is:-

a. 0.4 b. 1.4 c. 4.0 d. 4.5

20. Magnification produced by a concave lens is always:-

a. mere then 1 b. equal to 1

c. less then 1 d. more or less then 1

ONE MARK QUESTIONS

1. Write down the magnification formula for lens.

2. Explain the sigh convention for spherical lenses.

3. Write the use of concave and convex lenses.

4. Give one example each of parallel, converging and diverging beam of light.

5. A doctor has prescribed a corrective lens of power + 1.5D. Find the focal length of a lens.

6. Define the following terms:-

1. Optical centre 2. Centre of curvature

7. Define 1 diopter of power of a lens.

8. The refractive index of diamond is 2.42. What is the meaning of this statement?

9. Find the power of a concave lens of focal length 2m.

10. A concave lens of focal length 115cm forms an image 10cm from the lens. How far is the object place from the lens? Draw a ray diagram.

Assignment – 02

Solve all the questions with explanation.

1. The angle of reflection is equal to the angle of incidence.

a. always b. sometime

c. under special condition d. never

2. The angle between an incident ray and the plane mirror is 30°. The total angle between the incident ray and reflected ray of light will be:-

a. 45° b. 90 ° c. 60 ° d. 120°

3. The image of an object formed by a plane mirror is

a. virtual b. real c. diminished d. upside-down

4. In a convex spherical mirror , reflection of light take place at:-

a. Flat surface b. bent- in surface

c. bulging-out surface d. an uneven surface.

5. A diverging mirror is:-

a. Plane mirror b. convex mirror

c. concave mirror d. shaving mirror

6. If R is the radius of curvature of a spherical mirror and 'f' is its focal length, then R = ?

a. R = f b. R = 2f c. R = $\frac{f}{2}$ d. R = 3f

7. The focal length of a spherical mirror of radius of curvature 30cm is:-

a. 10cm b. 15cm c. 20cm d. 30cm

8. If the focal length of a spherical mirror is 12.5 less cm , its radius of curvature is:-

a. 25cm b. 15cm c. 20cm d. 35cm

9. The real image formed by a concave mirror is large then the object, when the object is :- (d = distance)

a. d = R b. d < f c. between ‘f’ and ‘c’ d. d > R

10. The image formed by a concave mirror is virtual erect and magnified . The position of the object is:-

a. at f b. between ‘f’ and ‘c’

c. at P d. between ‘f’ and ‘P’

11. The image formed by a concave mirror is real, inverted and highly diminished. The object must be:-

a. between p and f b. at f

c. at ‘c’ d. at ∞

12. The angle of incidence for a ray of light passing through the centre of curvature of a concave mirror is:-

a. 45° b. 90° c. 0° d. 180°

13. In a concave reflector of a torch , the bulb is placed:-

a. between p and f b. at f

c. between f and c d. at c

14. The focal length of a small concave mirror is 2.5cm. In order to use this concave mirror as a dentist’s mirror, the distance of tooth from the mirror should be:-

a. 2.5cm b. 1.5cm c. 4.5cm d. 3.5cm

15. One of the following does not apply to a concave mirror. This is:-

a. Focal length is (-)

b. Image distance can be (+) or (-)

c. Image distance is always (+)

d. Height of image can be (+) or (-)

16. Linear magnification produced by a concave mirror may be:-

a. ≥ 1 b. ≤ 1 c. $> 1, < 1, = 1$ d. $> 1, < 1$

17. Magnification produced by a convex mirror is always:-

a. < 1 b. > 1 c. $= 1$ d. more or less then 1

18. Magnification produced by a plane mirror is

a. > 1 b. < 1 c. zero d. $= 1$

19. A concave mirror produce a magnification of +4. The object is placed.

a. at F b. between F and C

c. between F and P d. beyond C

20. Linear magnification (m) produced by a rear view mirror fitted in vehicles.

a. $= 1$ b. < 1 c. > 1 d. $<, >$ then 1

ONE MARK QUESTIONS:-

1. Name the various types of beans of light.

2. In which mirror would you be able to see a full size image of a far off large object.

3. Can a concave mirror form a virtual image of same size of the object?

4. State the expression for a lateral magnification.

5.Which mirror has negative focal length?

6. Difference between Real and Virtual image?

7. Define aperture of a mirror.

8. What are the condition for no refraction of light?

9. What is meant by optical centre of a lens?

10. A tank of water is 4 meter deep. How deep does it appear when seen normally?

LORD KRISHNA PUBLIC SCHOOL
We Shape the Future
Affiliated to CBSE
Affiliation No. 530600

Class – 10th **Physics** **Assignment**

Q.1 When a ray of light passes from a denser to a rare medium, which angle is greater: angle of incidence or angle of refraction? (1)

Q.2 What is the unit of refractive index (1)

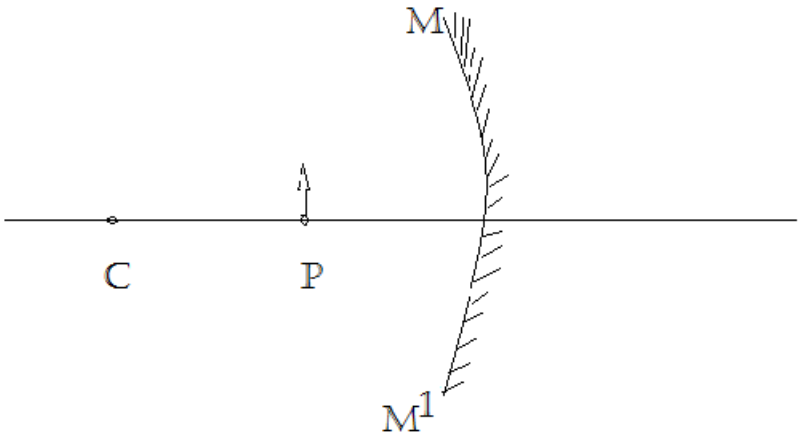
Q.3 Snell's law is $\frac{Sini}{Sinr}$ = constant specify the name of the constant. (1)

Q.4 If you want to see an enlarged image of your face; which mirror will you use; concave or convex? (1)

Q.5 At what position should the object be placed to form a real image of equal size by a concave mirror? (1)

Q.6 "The magnification produced by a spherical mirror is -3. List four information's you obtain from this statement about the mirror image. (2)

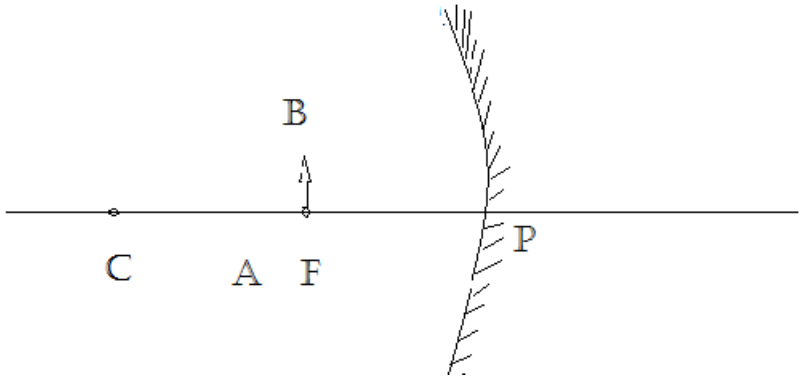
Q.7 In the following diagram MM' is mirror and AB is object. Compete the diagram.



Write Charactercties of image

(ii) A concave mirror produces three times magnified image on a screen. If the object is placed 20 cm in front of the mirror how far is the screen from the object?

Q.8 Complete the ray diagrams:



Write characteristics of image.

Q.9 What is refractive index? How it varies with speed of light.

Q.10 What is reflective refractive index? Explain refraction through rectangular glass slab.