

CLASS XII VACATION HOME WORK

MATHEMATICS

SETS AND FUNCTIONS

1. If A and B are any two sets, then A-B is equal to
(a) B-A (b) A∪B (c) A-(A∩B) (d) A∩B
2. Which of the following statements is true?
(a) $0 \in \{ \}$ (b) $0 \subset \{ \}$ (c) $0 \in \{0\}$ (d) $0 \subset \{0\}$
3. If A and B are finite sets such that $A \subset B$, then
(a) $n(A \cup B) = n(A)$ (b) $n(A \cap B) = n(A)$ (c) $n(A \cup B) = n(B)$ (d) None of these.
4. In a class of 60 students 25 students play cricket and 20 students play Tennis and 10 students play both the games. Then the number of students who play neither is
(a) 0 (b) 25 (c) 35 (d) 15
5. The set of all prime numbers is
(a) A finite set (b) a singleton set
(c) an infinite set (d) none of these
6. If A is a finite set containing n elements, then number of proper subsets of A is
(a) 2^n (b) $2^n - 1$ (c) $2^n - 2$ (d) none of these
7. If $A = \{1, 2, \{3, 4\}, 5\}$ then which of the following statements is incorrect?
(a) $\{3, 4\} \in A$ (b) $\{\{3, 4\}\} \in A$ (c) $\{3, 4\} \subset A$ (d) none of these.
8. If A and B are any two sets, then which of the following is not true?
(a) $(A \cap B) \subset A$ (b) $A \subset (A \cup B)$ (c) $(A - B) \subset A$ (d) $A \subset (A - B)$
9. Which of the following collections is not a set?
(a) The collection of natural number between 2 and 20
(b) The collection of numbers which satisfy the equation $x^2 - 5x + 6 = 0$
(c) The collection of prime numbers between 1 and 100
(d) The collection of all beautiful women in Jalandhar.
10. Let F_1 be the set of all parallelograms, F_2 the set of all rectangles, F_3 the set of all rhombi, F_4 the set of all squares and F_5 the set of all trapezium in a plane, then F_1 is equal to

(a) $F_2 \cap F_3$ (b) $F_3 \cap F_4$ (c) $F_2 \cup F_5$ (d) $F_2 \cup F_3 \cup F_4 \cup F_1$

11. A vertical line can meet the graph of a function in

- (a) More than one point
- (b) Not more than one point
- (c) Infinitely many points
- (d) None of these

12. Domain of the function $\frac{1}{3x+2}$ is

- (a) $(-\frac{2}{3}, \infty)$
- (b) $[-\frac{2}{3}, \infty)$
- (c) $\mathbb{R} - \{-\frac{2}{3}\}$
- (d) None of these

13. If $\log |x|$, then R_f is equal to

- (a) \mathbb{R}
- (b) $(-\infty, 0]$
- (c) $(0, \infty)$
- (d) None of these

14. If A and B are two sets then $A \times B = B \times A$, if and only if

- (a) $A \subset B$
- (b) $B \subset A$
- (c) $A = B$
- (d) None of these

15. Range of the function $f(x) = \frac{1}{1-2\cos x}$ is equal to

- (a) $(-\infty, -1] \cup [\frac{1}{3}, \infty)$
- (b) $[-1, \frac{1}{3}]$
- (c) $[-\frac{1}{3}, 1]$
- (d) $[\frac{1}{3}, 1]$

16. If R is relation from a set A to set B, then

- (a) $R \subset B \times A$
- (b) $R \subset A \times B$
- (c) $R = A \times B$

(d) None of these

17. If A and B are two sets such that $A \times B = \phi$, then

(a) $A = \phi$ and $B \neq \phi$

(b) $A = \phi$ and/or $B \neq \phi$

(c) $A \neq \phi$ and $B = \phi$

(d) $A = \phi$ and $B = \phi$

18. The relation on N defined by $R = \{(x, y) : x + 2y = 8\}$. the range of R is

(a) $\{2, 4, 6\}$

(b) $\{1, 2, 3\}$

(c) $\{1, 2, 3, 4, 6\}$

(d) None of these

19. Let X be a family of sets and R be a relation on X defined by 'A is disjoint from B'. the relation R is

(a) Reflexive

(b) Symmetric

(c) Transitive

(d) Anti symmetric.

20. Which of the following function is periodic?

(a) $x - [x]$

(b) $\cos \frac{1}{x}$

(c) $x \sin x$

(d) $[x] + x$

21. If $f(x) = \frac{x}{x-1}$, then $\frac{f(a)}{f(a+1)}$ is equal to

(a) $f(-a)$

(b) $f\left(\frac{1}{a}\right)$

(c) $f(a^2)$

(d) $f\left(\frac{-a}{a-1}\right)$

22. Domain of the function $f(x) = \sin^{-1}(2x^2 + 3x + 1)$ is

(a) $(-1, 1)$

(b) $(-\infty, \infty)$

(c) $\left[-\frac{3}{2}, 0\right]$

(d) $\left(-\infty, \frac{1}{2}\right) \cup (2, \infty)$

23. The number of bijective functions from a set A to itself when A contains 106 elements is

(a) 106

(b) 106^2

(c) 106!

(d) 2^{106}

24. If $f(x) = \frac{x}{x-1} = \frac{1}{y}$ then f(y) is equal to

(a) X

(b) X-1

(c) 1-x

(d) 1+x

25. The function $f(x) = \sin(\log(x + \sqrt{x^2 + 1}))$ is

(a) An even function

(b) An odd function

(c) Neither even nor odd

(d) A periodic function

26. If $\phi(x) = a^x$, then $\phi(p)^3$ is equal to

(a) $\phi(3p)$

(b) $3\phi(p)$

(c) $6\phi(p)$

(d) $2\phi(p)$

27. Let a relation R be defined by $R = \{(4,5), (1,4), (4,6), (7,6), (3,7)\}$. the relation $R^{-1} \circ R$ is given by

(a) $\{(1,1), (4,4), (7,4), (4,7), (7,7)\}$

(b) $\{(1,1), (4,4), (7,4), (4,7), (7,7), (3,3)\}$

(c) $\{(1,5), (1,6), (3,6)\}$

(d) None of these.

28. Let $A = \{1, 2, 3\}$ $B = \{3, 4\}$ $C = \{4, 5, 6\}$ then $A \cup (B \cap C)$ is

(a) $\{3\}$

- (b) {1,2,3,4}
- (c) {1,2,5,6}
- (d) {1,2,3,4,5,6}

29. Two finite sets having m and n elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of m and n

- (a) 7,6
- (b) 6,3
- (c) 5,1
- (d) 8,7

30. A class has 175 students. The following data shows the number of students opting one or more subjects. Math 100, Physics 70, Chemistry 40, Math and Physics 30, Math and Chemistry 38, Physics and Chemistry 23, math, physics and chemistry 18. how many have opted for math alone?

- (a) 35
- (b) 48
- (c) 50
- (d) 22

31. $n(A) = 10, n(B) = 6, n(C) = 5$ for three disjoint sets A, B and C then $n(A \cup B \cup C) =$

- (a) 21
- (b) 11
- (c) 1
- (d) 9

32. Which of the following is an empty set:

- (a) $\{x: x \in R \text{ and } x^2 - 1 = 0\}$
- (b) $\{x: x \in R \text{ and } x^2 + 1 = 0\}$
- (c) $\{x: x \in R \text{ and } x^2 - 9 = 0\}$
- (d) $\{x: x \in R \text{ and } x^2 = x + 2\}$

33. Which of the following having only one subset?

- (a) $\{\}$

- (b) {4}
- (c) {4,5}
- (d) {0}

34. Which of the following is a singleton set:

- (a) $\{x; |x| = 5, x \in N\}$
- (b) $\{x; |x| = 6, x \in Z\}$
- (c) $\{x; x^2 + 2x + 1 = 0, x \in N\}$
- (d) $\{x; x^2 = 7, x \in N\}$

35. If $A \subseteq B$ then $B' - A'$ is equal to

- (a) A'
- (b) B'
- (c) $A-B$
- (d) ϕ

ALGEBRA

36. If ω is an imaginary cube root of unity then $(1 + \omega + \omega^2)^7$ equals

- (a) 128ω
- (b) -128ω
- (c) $128 \omega^2$
- (d) $-128 \omega^2$

37. The real part of $\frac{1}{1+\cos\theta - i\sin\theta}$ is

- (a) $-1/2$
- (b) $1/2$
- (c) $\sqrt{2}$
- (d) $\frac{1}{\sqrt{2}}$

38. The complex numbers $1, -1, i\sqrt{3}$ form a triangle which is

- (a) Right angled
- (b) Isosceles

- (c) Equilateral
- (d) Isosceles right angled

39. If $|z + 4| \leq 3$ then the maximum value of $|z + 1|$ is

- a. 0
- b. 4
- c. 10
- d. 6

40. $z\bar{z} = 0$ if and only if

- (a) $\operatorname{Re}(z) = 0$
- (b) $\operatorname{Im}(z) = 0$
- (c) $z = 0$
- (d) None of these

41. If z_1, z_2, z_3 are vertices of an equilateral triangle inscribed in the circle $|z| = 2$ and if $z_1 = 1 + i\sqrt{3}$ then

- (a) $z_2 = -2, z_3 = 1 - i\sqrt{3}$
- (b) $z_2 = 2, z_3 = 1 - i\sqrt{3}$
- (c) $z_2 = -2, z_3 = -1 - i\sqrt{3}$
- (d) $z_2 = 1 - i\sqrt{3}, z_3 = -1 - i\sqrt{3}$

42. If z is a complex number such that $z \neq 0$ and $\operatorname{Re}(z) = 0$, then

- (a) $\operatorname{Re}(z^2) = 0$
- (b) $\operatorname{Im}(z^2) = 0$
- (c) $\operatorname{Re}(z^2) = \operatorname{Im}(z^2)$
- (d) None of these

43. The smallest positive number n for which $(1+i)^{2n} = (1+i)^{2n}$ is

- (a) 4
- (b) 8
- (c) 2
- (d) 12

44. The number of real solutions of the equation $x^2 - 3|x| + 2 = 0$ is

- (a) 3
- (b) 2

(c) 4

(d) 1

45. For all $x \in R$, $x^2 + 2ax + 10 - 3a > 0$ then the interval in which a lies is

(a) $(-\infty, -5)$

(b) $(-5, 2)$

(c) $(5, \infty)$

(d) $(2, 5)$

46. If α, β are the roots of the equation $x^2 + x + 1 = 0$, the equation whose roots are α^{19}, β^7 is

(a) $x^2 - x - 1 = 0$

(b) $x^2 - x + 1 = 0$

(c) $x^2 + x - 1 = 0$

(d) $x^2 + x + 1 = 0$

47. If the equation $x^2 - (2 + m)x + (m^2 - 4m + 4) = 0$ has coincident roots then

(a) $m=0, m=1$

(b) $m=0, m=2$

(c) $m=2/3, m=6$

(d) $m=2/3, m=1$

48. The number of values of k for which the system of equations

$$(k+1)x + 8y = 4k$$

$$kx + (k+3)y = 3k-1$$

has infinitely many solutions is

(a) 0

(b) 1

(c) 2

(d) Infinite

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

(a) $K=0$

(b) $K=5$

(c) $K=1/6$

(d) $K=6$

50. If α, β are the roots of $ax^2 + bx + b = 0$ then $\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}} + \sqrt{\frac{b}{a}}$ is equal to
- 0
 - 1
 - 2
 - $2\sqrt{\frac{b}{a}}$
51. The roots the equation $(x - b)(x - c) + (x - c)(x - a) + (x - a)(x - b) = 0$ are equal if
- $a+b+c=0$
 - $a+bw+cw^2=0$
 - $a-b+c=0$
 - none of these.
52. If $\sin\theta$ and $\cos\theta$ are roots of the equation $lx^2 + mx + n = 0$, then
- $l^2 - m^2 + 2ln = 0$
 - $l^2 + m^2 + 2ln = 0$
 - $l^2 - m^2 - 2ln = 0$
 - $l^2 - m^2 - 2ln = 0$
53. If the three sides of a triangle are in AP, and the greatest angle of the triangle is double the smallest angle, the ratio of the sides of the triangle is
- 3:4:5
 - 4:5:6
 - 5:6:7
 - 7:8:9
54. Let two numbers have A.M 9 and G.M 4. Then these numbers are the roots of the equation
- $X^2+18x+16=0$
 - $X^2-18x+16=0$
 - $X^2+18x-16=0$
 - $X^2-18x-16=0$
55. Sum of infinite number of terms of a GP is 20 and sum of their squares is 100. the common ratio of the GP is

- (a) 5
- (b) $\frac{3}{5}$
- (c) $\frac{8}{5}$
- (d) $\frac{1}{5}$

56. The sum of all 2 digit odd numbers is

- (a) 2475
- (b) 2530
- (c) 4905
- (d) 5049

57. The sum of few terms of a ratio series is 728. if common ratio is 3 and last term is 486, then first term of the series is

- (a) 1
- (b) 2
- (c) 3
- (d) 4

58. If a, b, c are in AP then $(a+2b-c)(2b+c-a)(c+a-b)$ equals

- (a) $\frac{abc}{2}$
- (b) abc
- (c) $2abc$
- (d) $4abc$

59. The value of $\cos 1^\circ \cos 2^\circ \cos 3^\circ \cos 4^\circ \dots \dots \cos 179^\circ$ is equal

- (a) $\frac{1}{2}$
- (b) -1
- (c) 0
- (d) 2

60. $\sqrt{3} \operatorname{cosec} 20^\circ - \sec 20^\circ =$

- (a) 2
- (b) 4
- (c) $2 \frac{\sin 20^\circ}{\sin 40^\circ}$
- (d) $4 \frac{\sin 20^\circ}{\sin 40^\circ}$

61. The value of $\sin 12^\circ \sin 48^\circ \sin 54^\circ$ is

- (a) $\frac{1}{4}$
- (b) $\frac{1}{8}$
- (c) $\frac{1}{16}$
- (d) None of these

62. If $\tan\theta = \frac{1}{2}$ and $\tan\phi = \frac{1}{3}$, then the value of $\phi + \theta$ is equal to

- (a) $\pi/6$
- (b) π
- (c) Zero
- (d) $\frac{\pi}{4}$

63. If $0 < \theta < \pi$, then $\sqrt{2 + \sqrt{2 + \sqrt{2 + \dots \dots \dots \sqrt{2(1 + \cos\theta)}}}}$ there being n number

of 2's is equal to

- (a) $2\cos\frac{\theta}{2^{n-1}}$
- (b) $2\cos\frac{\theta}{2^n}$
- (c) $2\cos\frac{\theta}{2^{n+1}}$
- (d) None of these

64. If $3 \sin x + 4 \cos x = 5$ then $4 \sin x - 3 \cos x$ is equal to

- (a) 0
- (b) 1
- (c) 5
- (d) None of these

65. Maximum value of $\sin^6 x + \cos^6 x$ is

- (a) $\frac{1}{4}$
- (b) $\frac{1}{2}$
- (c) $\frac{3}{4}$
- (d) None of these

66. In any ΔABC , If $\cot\frac{A}{2}, \cot\frac{B}{2}, \cot\frac{C}{2}$ are in A.P, then a,b,c are in

- (a) AP
- (b) GP

- (c) HP
- (d) None of these

67. If $\tan 2\theta \tan \theta = 1$ then θ is equal to

- (a) $n\pi + \frac{\pi}{6}$
- (b) $n\pi \pm \frac{\pi}{6}$
- (c) $2n\pi \pm \frac{\pi}{6}$
- (d) *none of these*

68. General solution for $|\sin x| = \cos x$ is

- (a) $2n\pi + \frac{\pi}{4}$
- (b) $n\pi + \frac{\pi}{4}$
- (c) $2n\pi \pm \frac{\pi}{4}$
- (d) None of these

69. If in a ΔABC , $8R^2 = a^2 + b^2 + c^2$, then the triangle ABC is

- (a) Right angled
- (b) Isosceles
- (c) Equilateral
- (d) None of these.

70. In a triangle ABC, $\frac{a \cos A + b \cos B + c \cos C}{a + b + c}$ is equal to

- (a) r/R
- (b) R/r
- (c) $2r/R$
- (d) $R/2r$

CALCULUS

71. $\lim_{x \rightarrow 0} \frac{(1 - \cos 2x) \sin 5x}{x^2 \sin 3x} =$

- (a) $10/3$
- (b) $3/10$
- (c) $6/5$

(d) 5/6

72. If $\sin y = x \sin(a + y)$, then $\frac{dy}{dx}$ is

(a) $\frac{\sin a}{\sin a \sin^2(a+y)}$

(b) $\frac{\sin a \sin^2(a+y)}{\sin a}$

(c) $\sin a \sin^2(a + y)$

(d) $\frac{\sin^2(a+y)}{\sin a}$

73. Let $f(2) = 4, f^1(2) = 4$ then $\lim_{x \rightarrow 2} \frac{xf(2) - 2f(x)}{x-2}$

(a) 2

(b) -2

(c) -4

(d) 3

74. If $y = \log|x|$, then $\frac{dy}{dx}$ is

(a) 1/x

(b) -1/x

(c) $\frac{1}{|x|}$

(d) None of these.

75. The derivative of $f(x) = |x|$ at $x=0$ is

(a) 1

(b) 0

(c) -1

(d) Does not exist

STATISTICS AND PROBABILITY

76. The S.D of 5 scores 1,2,3,4,5 is

(a) 2/5

(b) 3/5

(c) $\sqrt{2}$

(d) $\sqrt{3}$

77. A group of 10 items has mean 6. If mean of 4 of these items is 7.5, then mean of remaining items is

- (a) 6.5
- (b) 5.5
- (c) 4.5
- (d) 5.0

78. If in a frequency distribution, the mean and median are 21 and 22 respectively, then its mode is approximately

- (a) 25.5
- (b) 24
- (c) 22
- (d) 20.5

79. The average marks of boys in a class is 52 and that of girls is 42. The average marks of boys and girls combined is 50. The percentage of boys in the class is

- (a) 60
- (b) 40
- (c) 0
- (d) 80

80. If $2x+y=7$ and $x+2y=7$ are the two regression lines respectively, the correlation coefficient between x and y is

- (a) 1
- (b) -1
- (c) $\frac{1}{2}$
- (d) $-\frac{1}{2}$

81. The reciprocal of the mean of reciprocals of n observations is

- (a) A.M
- (b) GM
- (c) HM
- (d) None of these.

82. Ranks of 10 students of a class in two subjects are

$(1, 10), (2, 9), (3, 8), (4, 7), (5, 6), (6, 5), (7, 4), (8, 3), (9, 2), (10, 1)$, then rank correlation coefficient is

- (a) 0
- (b) -1

- (c) 1
- (d) 0.5

83. Correlation coefficient is

- (a) GM between the regression coefficients
- (b) AM between the regression coefficients
- (c) HM between two regression coefficients
- (d) Product of GM and AM of the regression coefficients.

84. The SD of first n natural numbers is

- (a) $\frac{n+1}{2}$
- (b) $\sqrt{\frac{n(n+1)}{2}}$
- (c) $\sqrt{\frac{n^2-1}{12}}$
- (d) None of these.

85. Median can be graphically determined from

- (a) Ogive
- (b) Histogram
- (c) Frequency curve
- (d) None of these

86. The average speed of a car running at the rate of 15km/hour during the first 30 km, at 20 km/hour during the second 30 km and at 25 km/hour during the third 30 km is

- (a) 19.15km/hr
- (b) 20 km/hr
- (c) 19.65km/hr
- (d) 19.75km/hr

87. Which one is not correct?

- (a) If each item of a series is increased by a then mean is increased by a
- (b) If each item of a series is decreased by a then mean is also decreased by a
- (c) If each item of a series is multiplied by a then the mean is also multiplied by a

a

(d) Mean remains unaffected in each case

88. The AM of $n_{c_0}, n_{c_1}, n_{c_2}, n_{c_3} \dots n_{c_n}$ is

(a) $\frac{2^n}{n+1}$

(b) $\frac{2^n}{n}$

(c) $\frac{2^{n-1}}{n+1}$

(d) None of these

89. If A and B are independent events then $P(A \cap B) =$

(a) $P(A)P(B)$

(b) $P(A)+P(B)$

(c) $P(A/B)$

(d) $P(B/A)$

90. Three identical dice are rolled. The probability that the same number will appear on each of them is

(a) $1/6$

(b) $1/36$

(c) $1/18$

(d) $3/28$

91. Two dice are thrown, the probability that the sum of the points on the dice is 7, is

(a) $5/36$

(b) $6/36$

(c) $7/36$

(d) $8/36$

92. If the probability for A to fail in an examination is 0.2 and that for B is 0.3, then the probability that either A or B fails is

(a) 0.38

(b) 0.44

(c) 0.5

(d) 0.94

93. A six faced fair die is thrown until 1 comes, then the probability that 1 comes in even number of trials is

(a) $5/11$

- (b) $\frac{5}{6}$
- (c) $\frac{6}{11}$
- (d) $\frac{1}{6}$

94. The probability that a number selected at random from the set of numbers $\{1, 2, 3, \dots, 100\}$ is cube is

- (a) $\frac{1}{25}$
- (b) $\frac{2}{25}$
- (c) $\frac{3}{25}$
- (d) $\frac{4}{25}$

95. The probability that a leap year has 53 Sundays is

- (a) $\frac{1}{7}$
- (b) $\frac{2}{7}$
- (c) $\frac{3}{7}$
- (d) $\frac{4}{7}$

MATHEMATICAL REASONING

96. Negation of each of the following conjunctions is given. Which one is not correct?

- (a) Delhi is in India and London is in England. Delhi is not in India or London is not in England.
- (b) $3+7=10$ and $9<12$, $3+7\neq 10$ or $9\leq 12$.
- (c) Ram is honest or Kailash is dishonest. Ram is not honest and Kailash is not dishonest.
- (d) $19>13$ or $12<15$, $19\geq 13$ or $2\leq 15$.

97. Which of the following is not a statement?

- (a) Two plus three is seven
- (b) A triangle has four sides
- (c) Have you ever been to Delhi?
- (d) 5 is an odd number.

98. Truth value of each of the following statements is given. Which one is incorrect?

- (a) Every set is an empty set. False
- (b) $2+11=12$ True.
- (c) 0 is a real number. True.
- (d) $3+7<5$ False.

99. Which of the following pairs of statements are not logically equivalent?

- (a) $\sim (\sim p) = p$
- (b) $p \vee (p \wedge q)$ and q
- (c) $\sim (p \wedge q)$ and $(\sim p) \vee (\sim q)$
- (d) $\sim [(\sim p) \wedge q]$ and $p \vee (\sim q)$

100. Which of the following is a statement?

- (a) Please help me
- (b) Hurrah India has won the match
- (c) Good night to all
- (d) 17 is a prime number.

COORDINATE GEOMETRY

101. (0,-1) and (0,3) are opposite vertices of a square. The other two vertices are:

- (a) (0,1) ,(0,-3)
- (b) (3,-1) ,(0,0)
- (c) (2,1) ,(-2,1)
- (d) (2,2) ,(1,1)

102. In centre of the triangle whose vertices are (6,0) (0,6) and (7,7) is

- (a) $(9/2,9/2)$
- (b) $(7/2,7/2)$
- (c) $(11/2,11/2)$
- (d) None of these

103. The points (-2,2) and (2,-2) are symmetrical about the line

- (a) $x+y=0$
- (b) $x=y$
- (c) $x+y=1$
- (d) none of these

104. ratio in which the join of (2,1) and (-1,2) is divided by the line $x+3y+5=0$ is
- (a) 1:1 internally
 - (b) 1:1 externally
 - (c) 2:1 externally
 - (d) None of these

105. The number of real tangents that can be drawn from (2,2) to $x^2 + y^2 - 6x - 4y + 3 = 0$ is
- (a) 0
 - (b) 1
 - (c) 2
 - (d) 3

106. The length of common chord of the circles $(x - a)^2 + (y - b)^2 = c^2$ and $(x - b)^2 + (y - a)^2 = c^2$ is
- (a) $\sqrt{c^2 - (a - b)^2}$
 - (b) $\sqrt{4c^2 - 2(a - b)^2}$
 - (c) $\sqrt{2c^2 - (a - b)^2}$
 - (d) $\sqrt{4c^2 + (a - b)^2}$

107. The equation of the directrix of the parabola $y^2 + 4y + 4x + 2 = 0$ is
- (a) $X=-1$
 - (b) $X=1$
 - (c) $2x+3=0$
 - (d) $2x-3=0$

108. Coordinates of the focus of the parabola $x^2 - 4x - 8y - 4 = 0$ are
- (a) (0,2)
 - (b) (2,1)
 - (c) (1,2)
 - (d) (-2,-1)

109. The curve with parametric equations $x = 1 + 4\cos\theta, y = 2 + 3\sin\theta$ is
- (a) An ellipse
 - (b) A parabola
 - (c) A hyperbola
 - (d) A circle
110. If A and B are two fixed points and P is a variable point such that $PA+PB=4$, the locus of P is
- (a) A parabola
 - (b) An ellipse
 - (c) A hyperbola
 - (d) None of these
111. the eccentricity of the ellipse represented by the equation $25x^2 + 16y^2 - 150x - 175 = 0$ is
- (a) $2/5$
 - (b) $3/5$
 - (c) $4/5$
 - (d) None of these
112. The eccentricity of rectangular hyperbola is
- (a) 2
 - (b) $\sqrt{2}$
 - (c) 0
 - (d) None of these
113. The equation of the hyperbola with vertices (3,0) (-3,0) and semi-latus rectum 4 is given by
- (a) $4x^2 - 3y^2 + 36 = 0$
 - (b) $4x^2 - 3y^2 + 12 = 0$
 - (c) $4x^2 - 3y^2 - 36 = 0$
 - (d) None of these
114. The equation of the circle passing through (2,1) and touching coordinate axis is

(a) $x^2 + y^2 - 2x - 2y + 1 = 0$

(b) $x^2 + y^2 + 2x + 2y + 1 = 0$

(c) $x^2 + y^2 - 2x - 2y - 1 = 0$

(d) $x^2 + y^2 + 2x + 2y - 1 = 0$

115.

The distance

of (1,2,5) from x axis is

(a) $\sqrt{5}$

(b) $\sqrt{29}$

(c) $\sqrt{26}$

(d) $\sqrt{30}$

116.

The ratio in

which the xy plane divides the line joining points (-2,4,5),(6,5,9) is

(a) 5:9

(b) 9:5

(c) -9:5

(d) -5:9

117.

Equation of

YOZ plane is

(a) $X=0$

(b) $Y=0$

(c) $Z=0$

(d) None of these

118.

The centre of

sphere $(x + 5)(x - 5) + (y - 2)(y + 2) + (z - 3)(z + 3) = 0$ is

(a) (-3,2,3)

(b) (2,-2,-3)

(c) (0,0,0)

(d) (1,2,3)

119.

The area

bounded by the curves $y = |x| - 1$ and $y = |x| + 1$ is

(a) 1

- (b) 2
- (c) $2\sqrt{2}$
- (d) 4

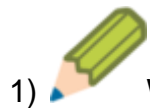
120.

The lines

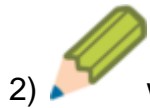
$ax + by + c = 0, bx + cy + a = 0$ and $cx + ay + b = 0$ are concurrent only when

- (a) $a^2 + b^2 + c^2 = 2abc$
 - (b) $a^2 + b^2 + c^2 = 3abc$
 - (c) $a + b + c = 3abc$
 - (d) None of these
-

ENGLISH



1) Write a *diary entry* on _'a day in lockdown'_. (200 words)



2) write a *letter to a friend* who is stranded in our school suggesting him activities he can get involved to keep himself healthy and sound.



3) Write an *essay* on how the 21 day lockdown period changed the way you and your family lived. (500 words)

* you may include the innovative ideas (jugaads) adapted.

* the improvement in family bonding

* better understanding of each other.

* adjustments made to cope up with the crisis etc.

BIOLOGY

Chapter : reproduction in flowering plants

Answer the following questions

1. Draw the structure of Anther and label all the parts.
2. Draw the labeled diagram of ovule.
3. What is double fertilization? Explain.
4. What are post-fertilization changes?
5. Explain the structure of dicot seed with the help of diagram.

CLASS – XII – Chemistry

1. Read the chapter named Chemistry in everyday life and answer all the in-text and exercise questions.
2. Read the chapter named Surface chemistry and write the definitions of all the important terms.
3. Read the chapter – isolation of elements and write a short note on Froth flotation, Zone refining, Van Arkel's method, Mond's Process.
4. Read all 4 chapters on organic chemistry in part – II text book and write all the named reactions with a short note and appropriate chemical reactions for each one of them.
5. Read the concepts mentioned in the UPSC syllabus – chemistry section.

PHYSICS

DOWNLOAD THE CONTENT OF NCERT TEXT BOOK AND READ THE FOLLOWING CHAPTERS

OR

IN ANDROID MOBILE PHONE DOWNLOAD THE APP NAMED "NCERT BOOKS AND SOLUTIONS" AND EXPLORE THE FOLLOWING CHAPTERS OF PHYSICS CLASS – XII

Chapter–11: Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's Photoelectric equation-particle nature of light. Matter waves-wave nature of

particles, de-Broglie relation, Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Chapter–13: Nuclei

Composition and size of nucleus, Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier; Special purpose p-n junction diodes: LED, photodiode, solar cell and Zener diode and their characteristics, zener diode as a voltage regulator.

Computer Science:

1. Differentiate between:
 - a) List and tuple
 - b) Identifier and keyword
 - c) Search and sort techniques
 - d) Primary key and candidate key
 - e) Continue and break statements in python programming
 - f) Implicit and explicit conversion
2. Write about different types of errors with example
3. Write syntax of all DDL and DML commands.
4. What is the role of 'is', '=', 'in' and 'between' operator in SQL? explain with simple sql commands

5. Define the terms:

- a. Node in networks
- b. VIRUS
- c. IT act
- d. Record in DBMS

