**30/03/2020 ATHAVALE CLASSES**

**Time:- 45 min Differential Equations & Matrices Marks:- 60**

1) Solution of differential equation= is

a) x - 2y + log ( y – x - 2 ) = c b) x - 2y + log (x – y + 2 ) = c

c) x + 2y + log (x – y + 2 ) = c d) x - 2y + log (x + y + 2 ) = c

2) Particular solution of differential equation (x+ 1)  + 1 = ewhen x = 1 & y = 1

a) b)

c) tanx + log= d) tanx + log= 

3) The slope of the tangent at to a curve passing through is given by , then the equation of the curve is : a) b)  c) d) None of these

4) Solution of differential equation is y = log x + c is

a) x.  +  = 0 b) x. - 3= 0 c) x. - 2  = 0 d) x.  -  = 0

5) Solution of the differential equation is a) b) c)  d) 

6) The differential equation by eliminating arbitary constant from + = 1 is

a) xy + x- y = 0 b) xy + x- y= 0

c) xy + x+ y= 0 d) xy - x- y= 0

7) The equation of the curve, which does not pass through (0,0) and having the portion of the tangent included between the co – ordinate axes is bisected at the point of contact, is: a) a st. line or an ellipse b) a circle or an ellipse c) a parabola d) a hyperbola

8) Solution of differential equation 3 x + 2 y = 0 is

a) log y +  = c b)  log y -  = c c) log y +  = c d) log y -  = c

9) Solution of differential equation  = a + x a is a)=+ + c b)= - + c c)= - + c d)=+ + c

10) Particular solution of differential equation( y – 3)= x (3x + 1),When x =1 and y = 4 is a) 4x=(3x - 1 )( y – 3 ) b) 4x =(3x - 1 )( y – 6 ) c)4x = (3x + 1)( y – 3) d) 4x=(3x + 1 )( y – 6)

11) Form the D. E. of an ellipse having principle e axes along the coordinate axes and centre as the origin and whose length of major and minor axes are half the lengths of major and minor axes of an ellipse a) b) c) d)

12) If are order and degree of the equation, then: a)  b)  c) d) 

13) Solution of differential equation x+ = y by putting y = v x is

a) = log x + c b)  = log x + c c)  = log x + c d) = log x + c

14) The elimination of the arbitrary constant k from the equation gives the differential equation a) b) c) d)

15) The solution ofis a)b) c) d) 

16) Which of the following differential equation has the same order and degree?

a) b) 

c) d)

17) The equation of the curve passing through the origin and satisfying the D. E. is a)  b)  c)  d)

18) The solution of the differential equation  a) b) c)  d) 

19) The solution of the equation is a) b) c)  d) 

20) Which of the following equation is linear?

a) b)  c) d) 

21) The differential equation representing the family of curves, where d is a positive parameter, is of a) order 2 b) degree 2 c) degree 3 d) degree 4

22) The solution of is a)  b)  c) d)

23) The solution of  a) b) c) d)

24) Consider the differential equation . If then is given by a) b) c) d)

25) Ifare twice differentiable on [ 0, 2] satisfying then is: a) – 8 b) – 9 c) – 10 d) – 12

26) If is solution is  At  the solution is: a) b)  c)  d) 

27) The differential equation foe the family of curves , where a is an arbitrary constant, is:

a)  b)  c)  d) 

28) The normal to a curve at P meets the x – axis at G if the distance of G from the origin is twice the abscissa of P, then the curve is a:

a) parabola b) circle c) hyperbola d) ellipse.

29) If integrating factor of: is , then P is equal to: a)  b)  c)  d) 

30) The differential equation determines

a) variable radius and a fixed centre at (0,1) b) variable radius and a fixed centre at ( 0, - 1) c) fix radius 1 and variable centres along x – axis d) fix radius 1 and variable centres along y – axis

31) If A is singular matrix then adj A is

a) non-singular b) singular c) symmetric d) skew symmetric

32) If A =,then A-1 + ( A – I)2 = a) b) c) d)

33) The value of x, y, z of the following equation x – y + z = 1, 2x – y = 1, 3x + 3y – 4z = 2 are a) x = 2, y = 3, z = 5 b) x = 1, y = 1, z = 1 c) x = 1, y = - 1, z = - 1 d) x = 3, y = 1, z = 2

34) If a point (*h, k* ) satisfies an inequationthen the half plane represented by the inequations is

a) the half plane containing the point (*h ,k*) but excluding the points on 

b) the half plane containing the point ( *h, k*) and the points on 

c) whole xy – plane d) none of these

35) If for  then X is equal to a)  b) c) d)

36) The element of second row and third column in the inverse ofis a) – 2 b) – 1 c) 1 d) 2

37) If A and B are matrices such that BA and A + B are both defined, then a) number of rows of A = number of columns of B b) A, B are square matrices not necessarily of same order. c) A and B can be any matrices d) A, B are square matrices of same order.

38) For the L.P.P.Maximize Z = x + y

Subject to the number of feasible solutions (points) is

a) 1 b) 2 c) 0 d) infinite

39) If the equations x + ky – z = 0, 2x – y + kz = 0 and kx + y + 2z = 0 are consistent, then k is equal to. a) b) c) d) - 1 , - 2

40) If A =, B = and X be a matrix such that A = BX, then find X. a) b) c) d)

41) Let A =  Ar denotes cofactor of ar then b1 A1 + b2 A2 + b3 A3 is = a) | A | b) - | A | c) 1 d) 0

42) If D = diag [ d1 d2 ….dn ] where di ≠ 0, for all I = 1, 2, 3, ….n then D-1 is equal to a) D b) *In* c) diag d) *I*

43) If A =  and n N, then An is equal to :- a) 2n-1 A b) 2n A c) 2 n+1 d) n A

44) If square matrices A and B are such that A2 = A, B2 = B and A, B commute for multiplication, then a) b) c) d)

45) If A is a square matrix of order n the IKAI = a) K|A| b) kn |A| c)  d) |A|

46) If and  x and y are a) 1, 1 b) 1, – 1 c) – 1, 1 d) –1, – 1

47) If,then = a) 6I b) 4I c) – 5I d) None of these

48) If A is a square matrix of order n and A = kB, where k is a scalar, then |A| = a) |B|. k b) k |B| c) kn |B| d) n |B|

49) If, then the correct statements is

a) A = – B b) A + B = A – B c) AC = BC d) CA = CB

50) If A and B are two matrices and (A + B)(A – B) = A2 – B2, then

a) AB = BA b) A2 – B2 = A2 + B2 c) A’B’ = AB d) None of the above

51) If A is a skew –symmetric matrix and , then An is

a) Symmetric b) Skew-symmetric c) A diagonal matrix d) a unit matrix

52) If A and B are square matrices of order 3 such that then = a) – 91 b) – 81 c) – 97 d) 82

53) If A and B are two matrices such that AB = B and BA = A, then A2 + B2 = a) 2AB b) 3BA c) A + B d) (AB)2

54) Matrices A and B will be inverse of each other only if

a) AB = O, BA = I b) AB = BA c) AB = BA = O d) AB = BA = I

55) If the matrixis singular then is a) – 3 b) 4 c) 3 d) – 4

56) The matrix is known as

a) Diagonal matrix b) Upper triangular c) Lower triangular d) Skew-symmetric

57) If A and B are symmetric matrices of order n ,then a) A + B is skew-symmetric b) A + B is symmetric c) A + B is a unit matrix d) A + B is a raw matrix

58) If A is singular matrix then adj A is:

a) symmetric b) singular c) non- singular d) not defined

59) Ifthen |adj A| is equal to a) a3 b) a6 c) a9 d) a12

60) A square matrix [aij] is such that aij = 0 for and aij = k (constant) for i = j then A is a) Scalar matrix b) Diagonal matrix c) Null matrix d) Unit matrix