# ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN, PALANI

## DEPARTMENT OF MATHEMATICS

**ALLIED MATHEMATICS II :**

**INTEGRAL CALCULUS, DIFFERENTIAL EQUATIONS, LAPLACE TRANSFORMS AND VECTOR ANALYSIS**

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Integral calculus, Differential Equations, Laplace Transform and Vector Analysis.

# Allied Mathematics - II

## UNIT - I

1. State Bernoulli's Theorem

   (Ans: $\int uv\,dx$ = $uv_1$- $u'v_2$+$u''v_3$-$u'''v_4$+……)
2. If f(x) is an odd function of x, then $\int_{-a}^{a} f(x)dx =$ _____.

   (Ans: 0)
3. If f(x) is an even function of x, then $\int_{-a}^{a} f(x)dx =$ _____.

   (Ans: $2\int_{0}^{a} f(x)dx$)
4. The value of $\int_0^{\frac{\Pi}{2}} sin^4 x dx$ is given by

   a) $\frac{3\Pi}{16}$ b) $\frac{5\Pi}{8}$ c) $\frac{3\Pi}{8}$ d) $\frac{3}{8}$

   (Ans: a )
5. The value of $\int tanx\,dx$ = _____ .

   (Ans: log secx + c)
6. $\int f(x)\,dx$ is called _____the range of integration is not specified

   (Ans: Indefinite integral )
7. The value of $\int_0^1 (3x^2 + 2x)$ dx is given by

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

   (Ans: b )
8. The value of $\int secx\,dx$ is given by

   a) log cosx+c b) log sinx +c c) log secx +c

   b) d) log (secx+tanx) +c

   (Ans: d)
9. _____ is the standard device for integration.

   (Ans: Integration by parts)

10. The value of $\int cothx\ dx$ = _____.

a) log coshx+c b) log sinhx +c c) log tanhx +c d) None

(Ans: b)

11. The value of $\int_0^{\frac{\Pi}{2}} cos^5 x dx$ = _____.

a) $\frac{4}{15}$ b) $\frac{8}{15}$ c) $\frac{15}{8}$ d) $\frac{5}{6}$

(Ans: b)

12. The value of $\int_0^{\frac{\Pi}{2}} sin^6 x dx$ is given by

a) $\frac{32}{5\Pi}$ b) $\frac{5\Pi}{32}$ c) $\frac{15}{48}$ d) $\frac{5\Pi}{64}$

(Ans: b)

13. $\int_0^{\frac{\Pi}{2}} sin^n x dx$ = ___ if n is even integer.

(Ans: $\frac{n-1}{n} . \frac{n-3}{n-2} . \frac{n-5}{n-4} \ldots\ldots \frac{1}{2} . \frac{\Pi}{2}$)

14. A formula by which the power of any variable in the integral is reduced is called a _____.

(Ans: Reduction formula)

15. $f(x)$ is odd if $f(-x)$= _____

a) $-\ f(x)$ b) $2\ f(x)$ c) 0 d) $-f(-x)$

(Ans: a)

16. The value of $\int \frac{1}{x} . \frac{1}{\sqrt{1+logx}}\ dx$ is given by

a) $log\sqrt{1+logx}\ + c$ b) $e^x(1+logx) + c$

c) $2\sqrt{1+logx}\ + c$ d) $e^x\sqrt{1+logx}\ + c$

(Ans: c)

17. The value of $\int \frac{e^x}{e^x+20}\ dx$ = _____.

(Ans: $log(e^x + 20) + c$ )

18. The value of $\int \cos(ax+b)\ dx$ = _____.

(Ans: $\frac{1}{a} sin(ax+b) + c$ )

19. The value of $\int \frac{1}{ax+b}\ dx$ = _____.

(Ans: $\frac{1}{a} log(ax + b) + c$ )

20. $\int e^{ax}[a\, f(x) + f'(x)]dx =$ _____.

(Ans: $e^{ax} f(x) + c$ )

## UNIT - II

21. The smallest positive value of P $f(x + p) = f(x)$ is true for every value of x is called _____ of the function.

(Ans: $period$ )

22. Sinnx is a period functions of period _____.

(Ans: $\frac{2\Pi}{n}$ )

23. F(x) = $\frac{a_0}{2} + \sum_{n=1}^{\infty}(a_0\, cosnx + b_n\, sinnx)$ then the RHS series of sines and cosines is called _____ of f(x).

(Ans: $fourier\ series$ )

24. In fourier series f(x) is single valued and finite in _____.

a) $(0, \Pi)$ b) $[0, \left(\frac{\Pi}{2}\right)]$ c) $(0,2\Pi)$ d) $[0, \left(\frac{\Pi}{4}\right)]$

(Ans: $c$ )

25. In fourier series f(x) a _____ number of maxima or minima in ( 0,2Π).

a) $Infinite$ b) $finite$ c) equal d) unequal

(Ans: $b$ )

26. In F(x) = $\frac{a_0}{2} + \sum_{n=1}^{\infty}(a_0\, cosnx + b_n\, sinnx)$ $a_0, a_n, b_n$ are called_____

(Ans: $fourier\ co - efficients$ )

27. A function f(x) is said to be periodic iff _____.

[Ans: $f(x + p) = f(x)$]

28. The value of SinnΠ = _____.

(Ans: 0 )

29. The value of cosnΠ = _____.

(Ans:$(-1)^n$ )

30. $\int_0^{\Pi} f(sinx)dx$ = _____.

a) $2\int_0^{\Pi} f(sinx)dx$ b) $\int_0^{\frac{\Pi}{2}} f(sinx)dx$ c) $2\int_0^{\frac{\Pi}{2}} f(sinx)dx$

d) $2\int_0^{\frac{\Pi}{2}} f(cosx)dx$

(Ans: $c$ )

31. If f(x) is continuous at x = a in (0,2Π) then the n value of Fourier series at x=a is equal to _____.

a) $a_0$ b) $a_n$ c) $f(a)$ d) $f(x)$

(Ans: $c$ )

32. If f(x) is discontinuous at x=a in (0,2Π) then the nvalue of fourier series at x=a is equal to _____.

a) $\frac{1}{2}f(a+)+f(a-)$ b) $f(a+)+f(a-)$

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

(Ans: $a$ )

33. The value of the fourier at x=0 or x=2Π is equal to the value of _____.

[Ans:$\frac{1}{2}f(0+)+f(2\Pi-1)$]

34. If the fourier series f(x) = $x^2$ in (-Π , Π). Find the value of $a_0$

a)$\frac{3}{2}\Pi^2$ b) $\frac{2}{3}\Pi^2$ c) $\frac{2}{3}\Pi^3$ d) $\frac{3}{2}\Pi^3$

(Ans: $b$)

35. Say True or False

In the Fourier series f(x) = $x$ in (-Π , Π) the value of $a_0$ is zero.

(Ans: $True$ )

36. In Fourier series F(x) = $\frac{a_0}{2}+\sum_{n=1}^{\infty}(a_0\,cosnx+b_n\,sinnx)$ where $a_n$ = _____

(Ans: $\frac{1}{\Pi}\int_0^{2\Pi} f(x)cosnxdx$)

37. In Fourier series F(x) = $\frac{a_0}{2}+\sum_{n=1}^{\infty}(a_0\,cosnx+b_n\,sinnx)$ where $b_n$ = _____ .

(Ans: $\frac{1}{\Pi}\int_0^{2\Pi} f(x)sinnxdx$

38. If n≠0 $\int_c^{c+2\Pi} cos^2nxdx$ = _____ .

a) $-\Pi$ b) $\Pi$ c) $2\Pi$ d) 0

(Ans: $b$)

39. If n≠0 $\int_0^{2\Pi} sinnxdx$ = _____ .

a) $\Pi$ b) 0 c) $2\Pi$ d) $-\Pi$

(Ans: $b$)

40. Say True or False

If m≠0 $\int_0^{2\Pi} sinmxsinnxdx = 0$

(Ans : True)

## UNIT - III

41. An equation is of the form $\sum F_i dx_i = 0$ is called_____in n.

(Ans : Pfaffian differential equation)

42. An equations of the form Pdx+Qdy+Rdz=0 where P,Q,R are functions of x,y,z is called_____

(Ans :Total differential equation)

43. The auxillary equations can be solved by_____

(Ans:Lagrange's Method)

44. xP+yQ+zR=C is the solution of Pdx+Qdy+Rdz=0 when it is exact and _____ of degree n≠ -1

(Ans : Homogeneous)

45. Say true or false

A partial differential equation involves in partial derivatives

(Ans : True)

46) Say true or false

If the number of constants to be eliminated is not equal to the number of independent variables

(Ans :False)

47. The claurit's equation is_____

(Ans : y=px+f(p))

48. The claurit's form of p=log(px-y) is given by _____

a)$y=px-e^p$ b)$y=px+e^p$ c)y=px+logp d)y=p-logpx

(Ans: a)

49.In partial differential equation by eliminating arbitrary constants a&b from z=(x+a)(x+b) is _____

a)z=p/q b)z=p+q c)z=pq d)none

(Ans : z=pq)

50.The auxillary equation of the partial differential equation 2p+3q=1 is_____

(Ans : $\frac{dx}{2}=\frac{dy}{3}=\frac{dz}{1}$ )

51.The general solution of p=log(px-y) is_____

(Ans : $y=px-e^p$ )

52.Pp+Qq=R is called _____ linear equation

(Ans : Lagrange)

53.Necessary and sufficient conditions for integrability of Pdx+Qdy+Rdz=_____

(Ans : 0 )

54.If $z=(x^2+a)(y^2+b)$ where a,b are constants then $\frac{\partial z}{\partial x}$ =_____

(Ans : $2x+y^2$)

55.Say true or false

The order of partial differential equation is the order of highest derivative occurring in it.

(Ans : True)

56. Say true or false

The partial differential equation of all spheres whose centre is (a,b,0)and whose radius r is $z^2(p^2+q^2+1)=r^2$

(Ans : True)

57.Form the partial differential equation by eliminating the arbitrary functions from $z=f(x^2+y^2)$

(Ans : py-qx=0)

58.If $z=x^2+2f[(1/y)+\log x]$ Find $\frac{\partial z}{\partial x}$

(Ans:2x+2f ' [(1/y)+logx](1/x)

59.If $z=f(x^2+y^2)$ find $\frac{\partial z}{\partial y}$

(Ans : f ' $(x^2+y^2)2y$ )

60.f(x,y,z,a,b)=0 is said to be the _____ of the first order differential equation φ(x,y,z,p,q)=0

(Ans : Complete Solution )

## UNIT - IV

61.F(s) = $\int_0^\infty e^{-st} f(t)dt$ is called _____.

(Ans: $Laplace\ transform$ )

62. The value of $L(e^{at})$ = _____ if (s-a) > 0.

a) $\frac{1}{s^2+a^2}$ b) $\frac{1}{s+a}$ c) $\frac{a}{s^2-a^2}$ d) $\frac{1}{s-a}$

(Ans: $d$)

63. Find Laplace transfom of $t^n$

a) $\frac{n!}{s^{n+1}}$ b) $\frac{n!}{s^n}$ c) $\frac{(n+1)!}{s^{n+1}}$ d) $\frac{(n-1)!}{s^n}$

(Ans: $a$)

64.If L[f(t)] = F(s) then L[$e^{-at} f(t)$ ] = _____.

(Ans: [F(s + a) ] )

65.The Inverse Laplace Transform of $\frac{s}{s^2+a^2}$

a) $sinat$ b) $cosat$ c) $sinht$ d) $cos^{-1}at$

(Ans: $b$)

66.Say T rue or False

$L^{-1}$[F(s + a) ] = $e^{-at}L^{-1}$[F(s)]

(Ans: $True$ )

67.Laplace transform is linear.

(Ans: $True$ )

68.Inverse Laplace transform is linear.

(Ans: $True$ )

69.L [sinat sinbt] = L[sinat]. L[sinbt]

(Ans: $false$ )

70. Laplace transform of t [f(t)] = _____ .

$a)$ $\frac{d}{ds}$ [F(s)] b) $-\frac{d}{ds}$ [F(s)] c) $-\frac{d^n}{ds^n}$ [F(s)] d) $\frac{d^n}{ds^n}$ [F(s)]

(Ans: $b$)

71. Laplace transform of f '(t) = _____ .

(Ans: S L[f(t)] – f(0) )

72. Laplace transform of f " (t) = _____ .

(Ans: S L[f ′(t)] – f ′(0) )

73. $L^{-1}\left[\frac{1}{(s-1)^2}\right]$ is = _____.

a) $e^t$ b) $t + e^t$ c) $te^{-t}$ d) $te^t$

(Ans: $d$)

74. The Laplace transform L of f(x) is defined by

(Ans: $\int_0^\infty e^{-sx} f(x)dx$)

75. The value of L (1) is given by _____ .

a) 1 b) 0 c) $\frac{1}{s}$ d) $\frac{1}{2s^{3/2}}$

(Ans : c)

76. L$\left(\sqrt{x}\right)$ = _____.

a) $\frac{1}{s^2}$ b) $\frac{\sqrt{\Pi}}{2s^{3/2}}$ c) $\frac{\sqrt{\Pi}}{3s^{3/2}}$ d) $\frac{\Pi}{2s^{3/2}}$

(Ans: $b$)

77. L[f(ax )] is

a) $\frac{1}{a}\ F\ (s)$ b) $\frac{1}{a}\ F\ \left(\frac{s}{a}\right)$ c) $\frac{1}{a}\ F\ \left(\frac{a}{s}\right)$ d) $a\ F\ (s)$

(Ans: $b$)

78. Say True or False

If L[f(t)] = F (s), then L [$e^{-at} f(t)$ ] = F (s+a) is known as first shifting theorem.

(Ans: $True$ )

79. $L^{-1}\left[\frac{1}{s^n}\right]$ = _____ .

$\left(\text{Ans: } \frac{t^{n-1}}{(n-1)!}\right)$

80. $L^{-1}[e^{ax}]$ = _____.

$\left(\text{Ans: } \frac{1}{s-a}\right)$

## UNIT - V

81.If f(p) is a vector then the function f(p) is called a_____function.

(Ans : vector point )

82.$\frac{d}{dt}(r.r) =$ _____

a)r$\frac{dr}{dt}$ b) 2r$\frac{dr}{dt}$ c) r$\frac{dt}{dr}$ d)2r$\frac{dt}{dr}$

(Ans : b)

83.If f is a constant vector $\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y}, \frac{\partial f}{\partial z}$ are all zeros and hence_ _____

(Ans :curl f=0 or div f=0)

84.If f is a vector such that curl f=0 for all points in the region ,then it is called an _____

(Ans : irrotational vector)

85.Grad φ is defined by_____

(Ans : $\nabla\varphi = i\frac{\partial \varphi}{\partial x} + j\frac{\partial \varphi}{\partial y} + k\frac{\partial \varphi}{\partial z}$ )

86.The vector differential operator ∇ is defined by _____

(Ans: $\nabla = i\frac{\partial}{\partial x} + j\frac{\partial}{\partial y} + k\frac{\partial}{\partial z}$ )

87.The divergence of f is defined by_____

(Ans: $\nabla . f = \frac{\partial f1}{\partial x} + \frac{\partial f2}{\partial y} + \frac{\partial f3}{\partial z}$ )

88.If f is a vector such that div f=0 then it is said to be_____

(Ans : Solenoidal)

89.If r is a vector of constant direction, then r×$\frac{dr}{dt}$ =_____

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

(Ans : a)

90.Say true or false

Grad(φΨ)= φgradΨ+ Ψgrad φ

(Ans : True)

91.If r=xi+yj+zk then div r=_____

a)0 b)3 c)2 d)1

(Ans :b)

92. Say true or false

div(u×v)=v.curl u+u.curl v

(Ans :False)

93. $\nabla^2=\frac{\partial^2}{\partial x}+\frac{\partial^2}{\partial y}+\frac{\partial^2}{\partial z}$ is called the _____

(Ans: Laplacian Operator)

94.If A &B are irrotational then A×B is_____

(Ans :Solenoidal)

95.Find $\nabla\varphi$ to the surface $x^2y-2xz^2=8$ at the point $(1,0,2)$is_____

a)8i+j+8k b)4i+j+8k c)4i+4j+8k d)none

(Ans: a)

96.Say true or false

div f is a scalar

(Ans : True)

97. Say true or false

curl f is a vector

(Ans : True)

98.The value of $\nabla\times(\nabla\varphi)$is _____

(Ans :0)

99. $\nabla\varphi.dr$=_____

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

(Ans : b)

100. Say true or false

If r=xi+yj+zk then curl r=0

(Ans : True)

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PALANI.

# STATISTICS

## PART - A

1. ---------- tell us the direction and extent of asymmetry in a series permit us to compare two or more series Ans: Measures of skewness
2. Karl pearson coefficient of skewness is defined by $S_{kp}$ = ------
   Ans : (Mean-Mode)/(Standard deviation) or 3(Mean-Median)/σ
3. Bowley's coefficient of Skewness is given by $S_{KB}$= ----------
   Ans: $(Q_3+Q_1-2Median)/(Q_3 - Q_1)$
4. The moment about mean are called the ---------- Ans: Central moment(μ)
5. If $\beta_1 = 0$ the distribution is -------Ans: Symmetric
6. $\beta_1 > 0$ the frequence distribution has -------Ans: Positive Skewness
7. If $\beta_1 < 0$ the If frequence distribution has -------Ans: Nagative Skewness
8. The $r^{th}$ moment about any point A denoted by $\mu_r$ is defined by----------
   Ans: $\mu_r = \sum f_i (X-A)^r/N$
9. The $r^{th}$ moment about arithmetic mean Xof a frequency distribution is given by ----------Ans: $\mu_r = \sum f_i(X_I-X)^r/N$
10. $\beta_1$ =---------- is called the measure of skewness. Ans: $\beta_1 = \mu_3^2/\mu_2^3$
11. In Symmetric distribution odd moments are always ----------Ans: Zero
12. ----------is the degree of peakedness of a distribution usually taken relative to a normal distribution Ans: Kurtosis

13. For a curve the normal curve $\beta_2 < 3$ or $\gamma_2 < 0$ and such a curve is known as----------Ans: Platykurtic
14. For a curve the normal curve $\beta_2 > 3$ or $\gamma_2 > 0$ and such a curve is known as----------Ans: Leptokurtic
15. For a normal curve $\beta_2 = 3$ or $\gamma_2 = 0$ and such a curve is known as---------- Ans:Messokurtic
16. Karl pearson and Bowley's are ----------Ans: absolute measures of skewness
17. The most important measure of Kurtosis is the value of the coefficient $\beta_2$ is defined as---------- · Ans: $\beta_2 = \mu_4/\mu_2^2$
18. $\gamma_2$ is used as measure of defined as ----------Ans: $\gamma_2 = \beta_2 - 3$
19. $\mu_2 = \mu_2^1 - (\mu_1^1)^2$ is the ----------of the frequency distribution Ans: Variance
20. The first moment $\mu_1$ about origin coiocides with the ----------of the frequency distribution.Ans: Arithmetic mean
21. The karl pearson co-efficient of correlation is_____
Ans : $r=\sum(X_i-\ddot{X})(Y_i-\bar{Y})/N\sigma_x\sigma_y$
22. $\sigma_x$ is the _____of series X. Ans: standard deviation
23. The value of the co-efficient of correlation always lie between _____
A)+1 B)-1 C) ±1 D)0 Ans : ±1
24. In correlation when r=-1,it means there is _____negative correlation between the variables. Ans : Perfect
25. In correlation when r=+1,it means there is perfect _____correlation between the variables. Ans :Positive
26. In correlation when_____,it means there is no relationship between the two variables. Ans : r=0
27. The covariance of two series X and Y is defined by
Ans : $\text{cov}(X,Y) = \sum(X_i-\ddot{X})(Y_i-\bar{Y})/N$
28. Direct method of finding out correlation co-efficient is
29. $r = \{N\sum X_iY_i - (\sum X_i)(\sum Y_i)\}/\{\sqrt{N\sum X_i^2 - (\sum X_i)^2}\ \sqrt{N\sum Y_i^2 - (\sum Y_i)^2}\}$
30. The formula for calculating the co-efficient of correlation of grouped data is _____ Ans : $r = \dfrac{N\sum fd_xd_y - (\sum fd_x)(\sum fd_y)}{\sqrt{N(\sum fd_x^2)-(\sum fd_x)^2}\ \sqrt{N(\sum fd_y^2)-(\sum fd_y)^2}}$

21. when the numbers is large,the data are often classified into_____ called a correlation table. Ans : two way frequency distribution

22. The spearman's rank correlation co-efficient is defined as

Ans : $R=1 - \frac{6\sum D^2}{N(N^2-1)}$

23. The correlation co-efficient is independent of the change of_____ Ans: origin and scale

24. If the variables x&y are uncorrelated then _____ Ans: $\sum X-\ddot{X})(Y-\bar{Y})=0$ .

25. The _____is added for each repeated rank of the variables. Ans: correction factor

26. The equation of the regression line of Y on X is _____Ans: $Y-\bar{Y}= \frac{r\,\sigma_y}{\sigma_x}(X-\ddot{X})$

27. The equation of the regression line of X on Y is____Ans : $X-\ddot{X}= r\,\frac{\sigma_x}{\sigma_y}(Y-\bar{Y})$

28. If the curve is a straight line it is called a _____between the two variables. Ans : line of regression

29. If there is a functional relationship between the two variables $X_i$ &$Y_i$ the points in the scatter diagram will cluster around some curve called the _____ Ans : curve of regression.

30. The regression co-efficient of X on Y is given by $b_{xy} = r.\frac{\sigma_x}{\sigma_y}$

31. The regression co-efficient of Y on X is given by $b_{yx} = r.\frac{\sigma_y}{\sigma_x}$

32. If one of the regression co-efficients is greater than unity the other is _____ Ans : less than unity.

33. The sign of the correlation co-efficient is the same as that of _____ Ans : regression co-efficients.

44. The correlation co-efficient is the _____between the regression co- efficients. Ans : geometric mean.

45._____of the regression co-efficients is greater than or equal to the correlation co-efficient. Ans: Arithmetic mean

46. The two variables are uncorrelated then the lines of regression are

_____to each other.Ans: perpendicular

47.The obtuse angle between the regression lines is given by
Ans : $\tan^{-1}[(r^2-1/r)\ (\sigma_x\sigma_y/\sigma_x^2+\sigma_y^2)]$.

48.The angle between two regression lines is given by
Ans : $\theta = \tan^{-1}[(r^2-1)/r)\ (\sigma_x\sigma_y/\sigma_x^2+\sigma_y^2)]$.

34.45.If there is a perfect correlation between the two variables then the two regression lines _____Ans : coincide.

50.If $r=\pm1$,then $\theta=0$ or $\pi$, then the two lines of regression are _____
Ans : Parallel.

51.The probability attached to such an event is caled the_____ and is denoted by P(A/B). Ans: conditional probability

52.The two events A and B are dependent then the conditional probability of B given Ais _____ Ans : P(B/A) = P(AB)/P(A).

53.$P(A\cap B) = P(A)\ P(B/A)$ this relation is called _____theorem for probabilities. Ans : multiplication

54.A is said to be independent of B if _____ Ans : P(A/B) =P(A).

55.If A and B are two independent events then _____
Ans : $P(A\cap B) = P(A)P(B)$.

56._____is known as Baye's rule. Ans : $P(A_i/B) = \{P(A_i)P(B/A_i)\}/P(B)$

57.The events $A_1\ A_2...A_n$ are said to be _____if $P(A_1\cap A_2\ldots\cap A_n) = P(A_1)P(A_2)\ldots P(A_n)$. Ans : mutually independent

58.A set of events $A_1\ A_2\ \ldots A_n$ are said to be _____if $P(A_i\cap A_j) = P(A_i)P(A_j)$ for all $i\neq j$. Ans : pairwise independent

59.If $A_i\cap A_j = \omega$ for all i,j with $i\neq j$ then the sequence of subsets is said to be _____ Ans : mutually disjoint.

60.If $^{\infty}U_{n=1}\ A_n = S$ then the sequence of events is said to be_____
Ans : exhaustive.

61.The mathematical expectation of X,denoted by E(X), E(X) is defined by _____ Ans : $\sum P_iX_i$.

62.A variable whose value is determined by the outcome of a random experiment is called a _____ Ans : random variable.

63.If the random variable takes the integer values it is called a _____
Ans : discrete random variable.

64.If the random variable takes all values,within a certain interval then the random variable is called a_____Ans : continuous random variable.

65.If $\int_{-\infty}^{\infty} f(x)dx=1$ then f(x) is called the _____of continuous random variable of X. Ans : probability density function

66.The function F:R→R defined by $F(x)=P(X\leq x)$ where $-\infty<x<\infty$ is called a _____of the random variable of X.

67. A random variable is also known as stochastic variable.

68.The binomial distribution is also known as Bernoulli distribution.

69.A discrete random variable of the P.d.f. of _____if r=0,1…n is said to have binomial distribution. Ans : $p(r)=nc_r p^r q^{n-r}$

70.M.g.f of a binomial distribution about the origin is _____A ns :$(q+pe^t)^n$.

71.M.g.f about the mean np of a binomial distribution is___A ns: $(qe^{-pt} + pe^{qt})^n$.

72.Characteristic function of binomial distribution is_____Ans : $(q + pe^{it})^n$.

73.Using M.g.f about the mean of the binomial distribution we can find_____ $\mu_2,\mu_3,\mu_4$. Ans : central moments

74.If $X_1 \sim B(n_1,P)$ , $X_2 \sim B(n_2,P)$ are independent random variables then $X_1 + X_2$ is _____ Ans : $B(n_1+n_2,P)$.

75.Recurrence relation for p(x) in binomial distribution is_____ Ans:$P(x+1)=(n-x/x+1)\ (p/q)P(x)$.

76.Recurrence formula of moments of the binomial distribution is _____ Ans : $\mu_{r+1}=pq[nr\mu_{r-1}+\frac{d\mu_r}{dp}]$ .

77.If (n+1)p is an integer will represent mode and the distribution is_____ Ans: bimodal.

78.If (n+1)p is not an integer will represent mode and the distribution is _____ Ans : unimodal.

79.The standard deviation of binomial distribution is _____Ans:$\sqrt{npq}$.

80.The mean of binomial distribution is_____ Ans : np.

81.The two independent constants n and p in the distribution are known as the _____of the distribution. Ans : parameters

82.Find the mode of a binomial distribution B(7,1/4) is____Ans : 1&2.

83.The measure of skewness of the binomial distribution is ____Ans : $\gamma_1=\sqrt{\beta_1}$.

84.The measure of kurnotosis of the binomial distribution is____Ans : $\gamma_2=\beta_2-3$.

85.A is defined as $P(x)=P(X=x)=\begin{cases}\frac{e^{-\lambda}\lambda^x}{x!} & \text{if } x=0,1,2\ldots\\ 0 & \text{otherwise}\end{cases}$

Where λ is a parameter of the distribution. Ans : poisson distribution

86.Mean of the poisson distribution is_____Ans : λ.

87.The S.D of the poisson distribution is _____Ans :√m.

88.Recurrence relation of pdf in poisson distribution is_____

Ans : $p(x+1)=(\lambda/x+1)\ p(x)$.

89._____ of the poisson distribution is $\lambda-1\leq x\leq\lambda$ . Ans : Mode

90 .If λ is an integer λ-1 is also an integer then mode is _____of the poisson distribution.Ans: bimodal

91.If λ is not an integer ,then the mode will represented _____of poisson

distribution. Ans : unimodal

92.M.g.f of the poisson distribution about r=0 is_____Ans : $e^{\lambda(et-1)}$ .

93.The value of $\lambda\sigma\gamma_1\gamma_2$=_____Ans :1.

94.Characteristic function of the poisson distribution is_____Ans: $e^{\lambda(eit-1)}$.

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**Signature of the HoD with Seal**

**Staff in charge**