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Question Bank-2008

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STATISTICS (135)

SECTION. A.

Answer the following questions by selecting the correct alternatives given, each carries 1 mark.

(1) Write the formula which indicates the relationship between Laaspeyer's, pache's and Fisher's Index Numbers.

(A) $IF = \sqrt{IL \times IP}$ (B) $IF = \sqrt{IL \times IP} \times 100$

(C) $IF = IL \times IP$ (D) $IF = \sqrt{IL \times IP \times 100}$

(2) Which Index Number gives an idea of standard of living of people.?

(A) Total Expenditure (B) Paasches'

(C) Fishers' (D) Cost of living exp.

(3) which of the index Number is used for Construction of Consumer price index number in most of the Countries including America? and Britain.

(A) Fishers (B) Laaspeyers

(C) Paaches (D) Marshals

(4) In which of the following methods the question of Selection of Base year does not arise?

(A) Fixed Base Method (B) Chain Base method

(C) Weighted Average method (D) Current Year method.

(5) which average is used in the Construction of Cost of living index Numbers.?

(A) Combined Mean (B) Weighted Mean

(C) Geometric Mean (D) Harmonic Mean

(6) Which of the following price is Considered while constructing Cost of living Index?

(A) Whole Sale Price (B) Retail Price

(C) Market Price (D) Average price.

(7) which types of weight is not expressed numerically?

(A) Implicit Weight (B) Direct weight

(C) Explicit weight (D) Indirect weight.

(8) which is the ideal average for Construction of Index Numbers.?

(A) Simple average (B) Weighted Average

(C) Geometri Mean (D) Harmonic Mean.

(9) Which is the index Number for Base Year?
(A) 0 (B) 10
(C) 100 (D) 1000.

(10) Which of the following is taken as weight in the Construction of Family Budget Index?
(A) Expenditure of Base Year (B) Exp. of Current Year
(C) Total expenditure (D) Average yearly Exp.

(11) Which of the following is used for Comparing the long term changes in the value of the variables.?
(A) Chain Base Method (B) Laaspeyers' method
(C) Fixed Base Method (D) Paasches Method.

(12) Which type of Measure is Index Number?
(A) Absolute measure (B) Relative measure
(C) Ordinary measure (D) Average measure.

(13) Which of the following indicates the estimate of population total?
(A) $\hat{T} = n\bar{y}$ (B) $\hat{T} = n\bar{y}$
(C) $\hat{T} = N^2\bar{y}$ (D) $\hat{T} = N\bar{y}$

(14) How should be the Sample Selected from the population?
(A) Simple (B) Free from prejudice
(C) Dependent (D) Seperate from population.

(15) The results of Random experiment of tossing a Coin is an example of the following.
(A) Infinite Population (B) Imaginary population
(C) Real Population (D) Sub population.

(16) Who prepared the first Random Number Table?
(A) Tippet (B) Fisher
(B) Yates (D) Rend Corporation.

(17) Write the formula to find out possible samples 'm' drawn from a population without replacement.
(A) NC_n (B) NP_n
(C) N^n (D) n^N

(18) which type of population Sampling method is useful?

(A) Finite (B) Infinite

(C) Real (D) Imaginary.

(19) How many methods of Selecting Samples are used?

(A) 1 (B) 2

(C) 3 (D) 4

(20) which type of population is 'group of Natural numbers?

(A) Finite (B) Infinite

(C) Real (D) Imaginary.

(21) population census Conducted every year is an example of

(A) Sample and population (B) Population

(C) Sample (D) None of these.

(22) Which of the following is a Real population?

(A) Tossing a Coin (B) Natural numbers

(C) No. of Students in a University (D) Students of College.

(23) When did the first Random Number Table published?

(A) 1907 (B) 1927

(C) 1917 (D) 1997.

(24) The method of selecting Samples from a population is called?

(A) Sample (B) Sampling

(C) Infinite population (D) Finite population

(25) Which type of relationship exists between the variables x and y When the value of 'r' is nearer to 1?

(A) Partial (B) Normal

(C) Zero (D) Positive.

(26) Which is the Correct value of Correlation Co-effiecient?

(A) 1·2 (B) -1·2

(C) 1·05 (D) -0·981

(27) What is the maximum value of rank Correlation Co-efficient ?

(A) 0 (B) -1

(C) 1 (D) 3

(28) If the ranks given for x and y variables are in reverse order what will be the value of Correlation Co-efficient ?

(A) -3 to +3 (B) -1 to +1

(C) -1 (D) 1

(29) If the Correlation Co-efficient between $\frac{x}{4}$ and $\frac{y}{4}$ is 0.84, the Correlation Co-efficient between x and y will be..

(A) 0.42 (B) 0.21

(C) 0.48 (D) 0.84

(30) What type of measure is Correlation Co-efficient ?

(A) Weighted (B) Relative

(C) Absolute (D) Average.

(31) What is the range of values of Correlation Co-efficient 'r' ?

(A) $-1 \leq r \leq 1$ (B) $-1 \leq r \geq 1$

(C) $-1 \geq r \geq 1$ (D) 0 to 1

(32) Which value of 'r' indicate lack of Correlation between the variables ?

(A) $r = 0$ (B) $r = 1$

(C) $r = -1$ (D) $r = 2$

(33) If $y = ax + b$, $a < 0$ find the value of r_{xy}

(A) 0 (B) 1

(C) -1 (D) -1 to +1

(34) In the calculation of rank Correlation, if $\Sigma d^2 = 0$, what will be the value of rank Correlation Co-efficient ?

(A) 0 (B) 1

(C) -1 (D) 0.5.

(35) Who Suggested the measure of Correlation Co-efficient for the first time ?

(A) Karl Pearson (B) Fisher

(C) Spearman (D) Bowley.

(36) What types of Correlation exists between Pressure and Volume?

(A) Perfect Positive (B) Perfect negative
(C) Partial Positive (D) Partial negative.

(37) Interprete $r = 1$

(A) Perfect Positive (B) Perfect negative
(C) Partial Positive (D) Zero Correlation

(38) Write the method of calculating Correlation Co-efficient for qualitative data.

(A) Scatter Diagram (B) Least Square method
(C) Bowley's method (D) Spearman's method

(39) On which value the Sign of Correlation Co-efficient not depends?

(A) Correlation coefficient (B) Covariance
(C) Rank Correlation (D) Regression.

(40) Who gave the method of least Square for the first time?

(A) Francis Galton (B) C.F. Gaus
(C) Pascal (D) Karl Pearson.

(41) If $R^2 = r^2 = 1$ how will be the two regression lines?

(A) Coincided (B) Parallel
(C) Perpendicular (D) Bell shaped.

(42) Which of the regression equation is used to estimate the value of X for a value of Y given?

(A) $\hat{y} = a + bx$ (B) $\hat{y} = bx - a$
(C) $\hat{x} = c + by$ (D) $\hat{x} = by - c$

(43) For which value of R^2 the two regression lines are perpendicular to each other?

(A) 1 (B) 0
(C) -1 (D) 1.2

(44) The value of regression Co-efficients Should not be like the following?

(A) Positive (B) Negative.
(C) One (D) Zero.

(45) Which is used to measure the error of approximation in regression equations?

(A) $e = Y' - \hat{Y}$ (B) $e = Y + \hat{Y}$

(C) $e = X + \hat{X}$ (D) $e = Y - \hat{Y}$

(46) What is the minimum value of the product of regression Co-efficients byx and bxy?

(A) -1 (B) 0

(C) 1 (D) -3

(47) Two regression Co-efficients are -0.9 and -0.4. Find Correlation Co-efficient?

(A) 0.6 (B) -0.6

(C) 0.36 (D) -0.36.

(48) What is the value of $p(A) + p(A)'$?

(A) 0 (B) 1

(C) 2 (D) -1

(49) What types of events are primary events?

(A) Union (B) Independent

(C) Equi-probable (D) Mutually exclussive.

(50) If A is a Sub Set of U then what is the Set A Called?

(A) Certain (B) Intersection

(C) Impossible (D) Union

(51) If the probability of the event A is 3/4 what will be the probability of its Complementary event?

(A) 1/3 (B) 1/4

(C) 0 (D) 1

(52) What type of events are 'H or T' obtained in tossing a Coin?

(A) Certain events (B) Intersection of events

(C) Complementary (D) Impossible

(53) Who gave the Scientific approach to the theory of probability?

(A) Fisher and Yate (B) Smith and Kendal

(C) Pascal and Fermat (D) Francis Galton

(54) What is the value of $p(A \cap B)$, if $A \cap B = \phi$?

(A) -1 (B) 0

(C) 1 (D) -1 to $+1$

(55) If $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6\}$, What is $(A - B)$?

(A) $\{1, 2, 3, 4\}$ (B) $\{2, 3\}$

(C) $\{1, 3\}$ (D) $\{2, 4\}$

(56) What is events 'U' and '∩' for each other?

(A) Primary (B) Intersection

(C) Exclussive (D) Difference

(57) If two events A and B Cannot occur together, what are these types of events called?

(A) Complementary (B) Union

(C) Intersection (D) Mutually exclussive.

(58) What are the possible out comes when two coins are tossed together?

(A) 1 (B) 2

(C) 3 (D) 4

(59) If $P(A/B) = p(A)$ and $p(B/A) = p(B)$ what types of events are A and B ?

(A) Complementary (B) Intersection

(C) Union (D) Independent.

(60) What is total number of possible Sample points of a random experiment called ?

(A) Difference events (B) Sample space

(C) Inter Section events (D) Complementary events

(61) What will be the probability of success in each Bernoulli trials ?

(A) Equal (B) Different

(C) Independent (D) More than Zero.

(62) What is mean of a binomial distribution?

(A) NP (B) np

(C) nq (D) npq

(63) If in a binomial probability distribution $p = q$ what will be the Skewness of the distribution ?

(A) Positive (B) Zero

(C) Negative (D) Infinite.

(64) What is the suitable relationship for a binomial probability distribution?

(A) $npq < np$ (B) $npq \leq np$

(C) $npq > np$ (D) $npq \geq np$.

(65) Which are the parameters of binomial probability distribution?

(A) P, q (B) n

(C) μ, σ (D) n, p

(66) In a binomial probability distribution if $q = 1/4$ what will be its Skewness?

(A) Positive (B) Negative

(C) Zero (D) Infinite.

(67) How many types of random variables are there?

(A) 2 (B) 3

(C) 4 (D) More than 1.

(68) In a binomial probability distribution if $p => \frac{1}{2}$ what will be its Skewness?

(A) Zero (B) Negative

(C) Positive (D) Unpredictable.

(69) In a binomial probability distribution $n = 8$, $q = 0.75$. What will be the value of Variance?

(A) 6 (B) 2

(C) 1.5 (D) 1

(70) For which value of P, the binomial probability distribution becomes Symmetrical?

(A) $P = 0$ (B) $P < \frac{1}{2}$

(C) $P > \frac{1}{2}$ (D) $P = 1/2$

(71) What is the value of π in probability density function of a normal distribution?

(A) 3.1416 (B) 3.1614

(C) 2.1416 (D) 2.7184

(72) what is the approximate value of Q_1 in a Standard Normal distribution ?

(A) 0.675 (B) −0.675
(C) 0.576 (D) −0.576

(73) How many percentage of observations lies between $\mu \pm 3\sigma$ in a normal curve ?

(A) 95 % (B) 98 %
(C) 99 % (D) 99.73 %

(74) What is the value of median if the quartiles of a Normal distribution are 10 and 40 ?

(A) 30 (B) 50
(C) 25 (D) 400

(75) Which types of variable is a normal distribution ?

(A) Discrete (B) Continuous
(C) Random (D) None of these.

(76) what is the mean of Standard normal distribution ?

(A) 2 (B) −1
(C) 1 (D) 0

(77) Which are the parameters of normal distribution ?

(A) X and Y (B) X and μ
(C) Z and μ (D) μ and σ

(78) What is the approximate value of Q_3 in a normal distribution ?

(A) $\mu - 0.675\sigma$ (B) $\mu + 0.675$
(C) $\mu + 0.675\sigma$ (D) $\mu - 0.675$

(79) What is the total area under Normal curve to right side of the ordinate $Z = 0$?

(A) 0 (B) −0.5
(C) 0.5 (D) 1

(80) How is the tails of normal curve and X axis ?

(A) Asymptotic (B) closed
(C) Bell shapped. (D) Triangular.

(81) which is the main components of time series?

(A) Trend (B) Variables

(C) Independent values (D) Time

(82) How many components are there in the time series?

(A) 1 (B) 2

(C) 3 (D) 4

(83) What is the duration of cyclical variations in time series?

(A) 1 to 2 years (B) 3 to 4 years

(C) 3 to 4 months (D) 10 to 20 years.

(84) Which types of variations are indicated when the sale of ready made garments increases during festive seasons?

(A) Cyclical (B) Seasonal

(C) Irregular (D) Long-term.

(85) What is the other name of trend in time series?

(A) Cyclical variations (B) Long-term variations

(C) Seasonal variation (D) Irregular variations.

(86) which of the formula gives cyclical fluctuations?

(A) $Y't = Ct - (Yt - St - Rt)$ (B) $Rt = Yt - (Y't + Ct + St)$

(C) $Ct = Yt - (Y't + St + Rt)$ (D) $St = Yt - (Y't + St + Rt)$

(87) What is the time period for seasonal variations?

(A) More than 1 year (B) Less than 1 year

(C) 10 to 20 years (D) 1 year.

(88) Which of the variations in time series are uncontrollable and unpredictable?

(A) Seasonal variation (B) Random variation

(C) Cyclical variation (D) Long term variation

(89) what is the estimated values of trend values in time series called?

(A) Trend (B) Estimation

(C) Forecast (D) Prediction.

(90) which symbol is used to describe cyclical variations ?

(A) $Y't$ (B) St

(C) Ct (D) Rt

(91) The unusual changes in the demand for an item due to technological changes in time series is called ?

(A) Long term variation (B) Cyclical variation

(C) Seasonal variation (D) Irregular variation

(92) If $Sn = na$ what will be the value of 'r' ?

(A) -1 (B) < 1

(C) 0 (D) 1

(93) what will be the common ratio of five consecutive terms of a G.P ?

(A) r (B) r^2

(C) r^3 (D) r^4

(94) which is the formula to find nth term of a Geometric Progression ?

(A) $Tn = ar^{n-1}$ (B) $Tn = (n+1)r^n$

(C) $Tn = (a+1)r^n$ (D) $Tn = ar^{n+1}$

(95) what is the other name of Geometric Progression ?

(A) Arithmatic Progression (B) Time Series

(C) Common ratio series (D) Geometric sequence

(96) write the formula to find common ratio of a Geometric Progression ?

(A) $\frac{Tn+1}{Tn}$ (B) $\frac{Tn}{Tn+1}$

(C) $\frac{Sn+1}{Sn}$ (D) $\frac{Tn-1}{Tn}$

(97) write the assumptions of the form of three consecutive terms of a G.P.

(A) a, ar, ar^2 (B) a, ar^3, ar^4

(C) $a/r, a, ar$ (D) $a/r, a, ar^2$

(98) How is the common ratio 'r' in a G.P ?

(A) Equal (B) Unequal

(C) Decreasing (D) Increasing.

(99) Find the General Term of the G.P.
2, 4, 8, 16 ...

(A) $2n-1$ (B) 2^n
(C) 2^{n+1} (D) 2^{2n-1}

(100) The first term of a G.P is 7 and its Common ratio is 1/7, Find its third term.

(A) 1 (B) 1/7
(C) 1/49 (D) 7

(101) Find the 8th term of a G.P, 1, 2, 4 ....

(A) 128 (B) 256
(C) 512 (D) 64

(102) If the first term of a G.P is 5 and Common ratio is 2 find the value of S_1

(A) 25 (B) 10
(C) 5 (D) 0

(103) What is the value of $\frac{T_7}{T_4}$ in a G.P ?

(A) r (B) r^3
(C) r^2 (D) r^4

(104) Write the formula for Geometric Series if $r < 1$.

(A) $S_n = \frac{a[r^n - 1]}{r-1}$ (B) $S_n = \frac{a[1-r^n]}{1-r}$

(C) $S_n = \frac{1-r}{[1-r^n]}$ (D) $S_n = \frac{[1-r^n]}{1-r}$

(105) What is the other name for difference operator Δ ?

(A) Interpolation (B) Extrapolation
(C) Forward difference (D) Prime operator.

(106) Which of the following method is used for linear interpolation ?

(A) Langrange' method (B) Newton's method
(C) Binomial Expansion (D) None of these.

(107) How many terms are there in Langrange's interpolation Method ?

(A) $n-1$ (B) n
(C) $n+1$ (D) n^2

(108) Write the Co-efficients in a pascal Triangle for $n=4$

(A) 1, 2, 3, 4 (B) 1, 2, 3, 4, 5

(C) 1, 4, 5, 4, 1 (D) 1, 4, 6, 4, 1

(109) Which method of interpolation is used when the difference between x variables are not equal?

(A) Newton's Method (B) Binomial expansion

(C) Langrange's Method (D) Fisher's method.

(110) What is the differences of first, second or third order differences with Suffix '0' is called?

(A) Limited difference (B) Leading difference

(C) Primary difference (D) Last order difference

(111) What is the value of 'w' in Newton's Linear interpolation Method?

(A) $w = \frac{x_0 - x}{h}$ (B) $w = \frac{x - x_0}{h}$

(C) $w = \frac{x_n - x_0}{h}$ (D) $w = w_0 - w$

(112) What is the basic in the Study of interpolation and extrapolation?

(A) Average difference (B) Leading difference

(C) Infinite difference (D) Finite difference

(113) What is Δy_0?

(A) $y - y_0$ (B) $y_0 - y_1$

(C) $y_1 - y_0$ (D) $y_2 - y_1$

(114) By which of the following n^{th} order difference is shown?

(A) Δ (B) Δ^n

(C) $\Delta^n y_0$ (D) $\Delta^n y_1$

(115) What type of differences are $\Delta y_0, \Delta^2 y_0, \Delta^3 y_0 \ldots \Delta^{n-1} y_0$ called?

(A) First order (B) Second order

(C) Leading difference (D) Nth order.

(116) If Second order differences are independent how will be the fourth order differences?

(A) Positive (B) Negative

(C) Zero (D) 1

SECTION B

Answer the following questions in one sentense. Each carries 1 mark.

1) What is weight ?
2) Why index Numbers are called barometers of Economy ?
3) What are the different methods of assigning explicit weight ?
4) If the price of an item is increased by 3/2 times what will be its Index ?
5) Write the formula to find out real wages.
6) How should be the Base Year ?
7) On the basis of which Index Number Dearness allowances of employees are decided ?
8) Why Fishers Index Number is called Ideal Index Number ?
9) What is the main differences between Fixed Base method and Chain Base method ?
10) How Should be the base year in the Calculation of Index Numbers. ?
11) What are the differen types of weights ?
12) If the price of an item is increased by 200%, what will be its Index Number ?
13) Write two Characteristics of Index Number ?
14) What is Stratum ?
15) What are the methods of Sampling ?
16) What is Sampling with replacement ?
17) What is method of estimation ?
18) Write the formula to find Variance of Sample mean.
19) What are the two methods of Selecting Samples ?
20) What is the representative Unit of population called ?
21) What is Sample ? What are its methods ?

22) Write the names of random Numbers Tables ?
23) When Stratified random Sampling method is used ?
24) What is real population ?
25) What are the types of Correlation ?
26) What is the main demerit of Scatter diagram ?
27) What is Correlation ?
28) What are the methods of Studying Correlation ?
29) What is the precondition for the Study of Correlation ?
30) What is 'Tie' ?
31) Give an example for perfect Correlation
32) Interprete $R = \pm 1$
33) What is Cause and effect relationship?
34) What is Regression ?
35) What is Co-efficient of determination ?
36) When do we get two regression lines ?
37) What is error ?
38) What is line of best fit ?
39) When two regression lines are Coincided ?
40) What is the result of regression lines obtained by Scatter diagram method ?
41) What is the effect of regression Co-efficients on Changes of origin and Scale ?
42) In a regression Study the value of $b_{yx} = 0.9$ and $b_{xy} = 1.20$. State whether this Statement is true or False with reason
43) Write the formula to find out Correlation Co-efficient by using Karl Pearsons Product Moment Method.

44) Sales and Profit. State which is dependent and independent variable.
45) Write the linear regression Model.
46) Explain the event $A \cup B$.
47) What is mutually exclusive events?
48) Write the rule of addition for three events.
49) Write the Statistical definition of probability.
50) Arrange them in Ascending order. $P(A)$, $P(A \cap B)$, $P(A) + P(B)$, $P(A \cup B)$, 0, 1
51) What is event?
52) Explain Complementary event by venn diagram.
53) Write Sample space for random experiment of tossing a Coin and a die Simultaneously.
54) What is an impossible event? Give an example.
55) If events A and B are independent, What is the value of $P(A \cap B)$?
56) Define favourable outcomes.
57) On which theory probability depends?
58) What are the characteristics of random experiment?
59) Write the multiplication rule for two events.
60) What is favourable outcomes?
61) Write two Characteristics of Discrete random variable.
62) What is Success and Failure?
63) What is Bernoulli trials?
64) What is dichotomous experiments?
65) Which types of variable is binomial probability distribution?
66) What is the laws of dichotomy?
67) What are assumptions of probability distribution $P(x)$?

68) what are the properties of binomial distributions?
69) Give the parameters of binomial distribution.
70) Write the definition of discrete variable.
71) Write the formula for probability density function of binomial distribution
72) Write the recurrance formula for Probability density function.
73) what is normal Curve?
74) Write the values of mean and Standard deviation of Standard normal distribution.
75) Write the range of 99.73 %. observations of a normal Curve.
76) Write the approximate value of Q_1 and Q_3 in terms of μ and σ.
77) How many percentage of observations lies between $\mu \pm 2\sigma$ and $\mu \pm 3\sigma$. in a normal Curve.
78) The extreme quartiles of a normal distribution are 32 and 48. Find the value of μ.
79) In a normal distribution $M = 36$ and $Q_1 = 25$. Find the value of Q_3.
80) Write the probability density function of Standard Normal variate.
81) When the probability distribution can be Called Normal distribution?
82) what is the range of 95 %. observations of a normal distribution?
83) what is Normal Variate?
84) On which ordinate the normal curve is absolute Symmetrical?
85) what is the total area under normal Curve and X axis?
86) what are the types of time Series?
87) what is long term variations in time Series?

88) Write the important Components of time Series.
89) What is the linear model of time Series?
90) Explain Estimation of trend.
91) Write the characteristics of Discrete time series.
92) write the types of short-term variations.
93) What is the cyclical variations in trade and Commerce Called?
94) What is time Series?
95) What is Seasonal variations? Give examples.
96) what is the time period of cyclical variations?
97) What are the Components of time Series?
98) Give the definition of Geometric progression.
99) What are the merits and demerits of geometric progression?
100) Find the Sum of first 6 terms of the Geometric progression 4, 6, 9, ...
101) Find Common ratio of the geometric progression $-625, -250, -100$
102) Why geometric progression is called equi geometric progression?
103) The numbers 4, G, 25 are in geometric progression. Find the value of G.
104) Write the three Consecutive terms of geometric progression.
105) What is geometric series?
106) What is the Symbol used for differences in Table of differences.
107) Write the definition of Second order difference.
108) What is the other name of difference operator?
109) On which the reliability of estimation through interpolation and extrapolation depends?

110) Write the limitations of Lagrange's method.

111) How many terms are there in Lagrange's formula for interpolation?

112) On which law the binomial expansion method depends?

113) When do we use the method of extrapolation?

114) $y_0 = 12$, $y_1 = 10$, $y_2 = 7$ Find $\Delta^2 y_0$.

115) Write the co-efficients in Pascals Triangle for $n = 5$.

SECTION-C.

Answer the following questions ~~21 to 32~~
Each questions carries 2 marks.

1) If $I_L = I_P$ and $I_f = 175$ find I_L and I_P.
2) The price of three items are 215, 228 and 290 respectively, and their ratio of weight are 8:7:5 Find their General Index Number.
3) If $\Sigma P_1 q_0 = 656$, $\Sigma P_0 q_0 = 320$, $\Sigma P_1 q_1 = 80$ $\Sigma P_0 q_1 = 480$ find I_P.
4) When Compared to Base year the price of Current year has increased by 20% where as there is an increase of 25% in income. Find the percentage increase in real income.
5) $I_L : I_P = 4:5$ and $I_f = 120$ find I_L.
6) Why fishers Index Number is Called Ideal index Number?
7) If the Cost of living Index number is 250 and $\Sigma IW = 77500$, $\Sigma P_1 q_0 = 440$ Find I_L.
8) The prices of five Commodities have increased by 50%, 80%, 110%, 160%, 200% respectively and their percentage of expenditures are 40%, 24%, 16% 12% and 8% respectively. Find their general Index Number.
9) If $I_f = 200$, $I_L = 250$ find I_P.
10) If $I_P = 140$ and $I_L : I_P = 15:14$ find I_f.
11) Write the formulae for Laspeyre's and Fisher's Index Numbers.
12) If Laspeyre's Index is 4/3 times of fishers Index and $I_f = 150$ find I_P.
13) If $\Sigma P_1 q_0 = 4/5 \Sigma P_0 q_0$, find I_L.
14) If $\Sigma P_1 q_1 : \Sigma P_0 q_1 = 3:2$ and $\Sigma P_1 q_0 : \Sigma P_0 q_0 = 7:5$, find I_f.

15) The price of three items A, B, C are increased by 70%, 100% and 120% where as items D and E have decreased by 15% and 10% in the current year. If the importance of A and B are two times of importance of C and D and E are half of importance of C, find their general Index Number.

16) Convert the following fixed Base Index Numbers into to Chain Base Index Numbers.

Year	2003	2004	2005
Fixed Base Index:	380	392	400

17) If $\Sigma P_1 q_0 = 205$ and $IP = 140$ find $\Sigma P_1 q_1$.

18) If $N = 400$, $n = 40$, $S = 120$ find the estimate of variance of Sample mean.

19) write the characteristics of ideal average.

20) For a population, $3N_1 = 5N_2 = 900$ and $3\bar{Y}_1 = 4\bar{Y}_2 = 153$, Find $\bar{Y}st$.

21) If $N = 100$, $n = 10$, $\bar{y} = 81.9$, $S^2 = 169$ Estimate mean and Standard deviation of population.

22) If total possible Samples $m = 45$, $n = 2$ drawn without replacement, Find N.

23) If $N_1 = 40$, $N_2 = 60$ and Stratum means are respectively 38 and 52 find $\bar{Y}st$.

24) The Sample Size $n = 2$ are drawn without replacement from a population and total Samples is 500 find the value of N.

25) what are the points to be Considered while selecting Sample size?

26) If $N = 4$, $n = 2$ $\Sigma (Y - \bar{Y})^2 = 148$ find $V(\bar{y})$

27) Estimate the mean of population and its variance from the following.
$N_1 = 220$, $N_2 = 180$, $n_1 = 10$, $n_2 = 20$
$\bar{y}_1 = 30$, $\bar{y}_2 = 40$, $S_1^2 = 25$ and $S_2^2 = 36$.

28) From a population of 50 Units, a Sample of Size 4 are drawn. Write Number of Samples with and without replacement.

29) Estimate the Standard deviation of Sample mean from the following
$N = 200$, $n = 20$ $S = 8$.

30) From a population of N Units a Sample of Size 3 are drawn with replacement. If the total Samples obtained is 120 find Units of population.

31) If $n = 15$, $Sxy = -60$, $Sx^2 = 100$, $Sy^2 = 64$ find r_{xy}.

32) If $n(n-1) = 90$ and $\Sigma d^2 = 82.5$ find rank Correlation Co-efficient.

33) If $n = 10$ $\Sigma(x-\bar{x})(y-\bar{y}) = 120$, $\Sigma(x-\bar{x})^2 = 144$ $\Sigma(y-\bar{y})^2 = 400$, find r_{xy}.

34) If $n = 10$, $\Sigma(x-\bar{x})(y-\bar{y}) = 120$, $\Sigma(x-\bar{x})^2 = 90$ $Sy = 8$, find value of 'r'.

35) The differences between ranks are $-1.5, 1;3, -1, 2.5, -2, -1, -1.5$ Find r.

36) If $n = 15$, $Sx = 4.8$, $Sy = 6.7$, $\Sigma(x-\bar{x})(y-\bar{y}) = -370$ find r_{xy}.

37) For the Calculation of rank Correlation $n(n^2-1) = 5$, $\Sigma d^2 = 720$ find r.

38) If $n = 10$, $\Sigma(x-\bar{x})(y-\bar{y}) = 120$, $\Sigma(x-\bar{x})^2 = 144$ $\Sigma(y-\bar{y})^2 = 450$. find r_{xy}.

39) If $n = 15$ $Sxy = -60$, $Sx^2 = 100$, $Sy^2 = 64$ find R_{xy}.

40) Write three examples of Dependent and Independent variables.

41) Give the properties of regression Co-efficients.

42) What are the uses of regression

43) Explain best fitted line of regression

44) If $b_{yx} = 0.5$, $r^2 = 1$, $X = -7 + BY$ Find the value of B.

45) State whether the following statements are true or false with reason.
1) $b_{yx} = 0.05$, $b_{xy} = 24$
2) $b_{yx} = 1.2$, $b_{xy} = 2.1$
3) $b_{yx} = 0.4$, $b_{xy} = 1$.

46) If $b_{yx} = 3 b_{xy}$ and $R^2 = 0.27$ find b_{yx} and b_{xy}.

47) Find the regression line of Y on X and estimate the value of Y for X = 12 from the following.
$\Sigma y = 9600$, $S_x = 60$, $S_y = 20$, $r = 0.6$, $n = 50$
$\Sigma X = 1100$.

48) Give Dependent and Independent variables from the following.
1) Maintainance expenditure and uses of vehicles.
2) Rainfall and Production of grains.

49) What is regression line? Give the method of their estimation.

50) The regression equation of Y on X $\hat{Y} = 28 + 1.2X$, if $S_{xy} = 30$ Find Standard deviation.

51) The two regression equations respectively are $\hat{y} = 58 + 0.07x$ and $\hat{x} = -99 + 3.5y$ Find 'r'.

52) Find b_{xy} from the following.
$S_x = 19.4$, $S_y = 2.7$, $r = 0.5$.

53) State whether the following Statements are true or false.
1) In a Study of regression, $b_{xy} = \frac{1}{2}$ and $b_{yx} = -2$
2) The Signs of Correlation and regression Co-efficients are Same.

54) If $\bar{x} = 169$ CM, $\bar{y} = 67$ K.g $S_x = 20$, $S_y = 3$ $r = 0.5$ find regression line of X on Y.

55) If $\hat{x} = 4y + 7$ and variance of X is 25 times of variance of Y find r.

56) Find byx, bxy and R^2 from the following. $n = 12$, $\Sigma(x-40) = 0$, $\Sigma(y-52) = 0$, $\Sigma(x-40)^2 = 175$ $\Sigma(y-52)^2 = 200$, $\Sigma(x-40)(y-52) = 140$.

57) Give the relationship between Correlation and regression.

58) If $\Sigma(x-\bar{x})(y-\bar{y}) = 360$, $\Sigma(x-\bar{x})^2 = 1092$ find the value of b.

59) Write in Ascending and descending order. $P(A)$, $P(A \cap B)$, $P(A \cup B)$.

60) Define 1) Event 2) Sample Space.

61) Give the classical definition of probability with their assumptions.

62) Give the formula for Conditional probability of the events A and B.

63) Explain the following with Venn diagram. 1) Complementary 2) Intersection.

64) Explain Equi-probable events.

65) Find the probability that there are 5 Sundays in February of a leap year.

66) If $P(A) = 0.7$, $P(B) = 0.5$, $P(A \cap B) = 0.3$ find the probability that only A and only B occurs.

67) $P(A) = 0.4$, $P(B) = 0.6$, $P(A \cup B) = 0.8$ Find $P(A \cap B)$.

68) 4 Boys and 4 girls are seated in a row. Find the probability that all the girls are seated together.

69) $P(A \cup B) = 0.8$, $P(A \cap B) = 0.15$, $P(A) = 2P(B)$ find $P(A)$ and $P(B)$.

70) Two Coins are tossed together. Find the probability that atleast one head is obtained.

71) The probability that a person buys a T.V. Set is 0.8 and a V.C.R = 0.56 and both T.V set and V.C.R is 0.42. Find the probability that he buys atleast one.

72) Write the Sample Space for the random experiment of tossing a coin and a die simultaneously.

73) There are 3 Red, 4 black and 3 white balls in a box. If a ball is drawn at random from the box find the probability that the ball drawn is Red.

74) For events A and M, If $P(M) = 1/2$ and $P(A/M) = 1/10$ find $P(A \cap M)$.

75) Prove that $P(A') = 1 - P(A)$.

76) Write the Characteristics of random experiment.

77) $P(A) = 1/3$, $P(B) = 3/4$, $P(A \cup B) = 11/22$ Find $P(A/B)$.

78) If $P(A) = 0.5$, $P(B) = 0.3$ find minimum and maximum value of $P(A \cup B)$.

79) If $P(A) = 2P(B) = P(A/B) = 0.4$ find $P(A \cap B)$ and $P(A \cup B)$.

80) Write the Sample Space for the random experiment of tossing 3 coins together.

81) 3 Boys and 2 girls are seated in a row. Find the probability that all boys are seated together.

82) $P(A \cup B) = 0.75$, $P(A \cap B') = 0.2$ find $P(B)$.

83) There are 4 Red and 3 white balls in a box. If 2 balls are drawn at random find the probability that both are of same colour.

84) Events A and B are independent. $P(A) = 2/3$, $P(B) = 3/8$ find $P(A \cup B)$.

85) If $P(A) = 2P(B) = 3P(A \cap B) = 0.6$ find $P(A \cup B)$.

86) If $P(x) = c\left(\frac{x+5}{10}\right)$, $x = 0, 1, 2, 3$ is the probability distribution of a random variable, find the value of c.

87) The mean and variance of a binomial probability distribution are 4 and 2 respectively. write the formula for probability density function.

88) In a binomial probability distribution $n = 4$, $p = 2/3$ & find $P(X=1)$.

89) If $n = 5$, $p = 3/4$ find $P(X \leq 2)$.

90) If $P(X) = nCx\, p^x q^{n-x}$, $X = 0, 1$, $P = 1/3$ find $P(0)$ and $P(1)$.

91) In a binomial Probability distribution mean = 6 and variance = 1.5 find their parameters.

92) What are the properties of binomial probability distribution?

93) Probability of failed Students is 2/3. Find the mean and variance of passed students in a group of 300 Students.

94) The probability distribution of a random variable X, $P(X) = C(1/3)^x$ $X = 0, 1, 2, 3$, find the value of C.

95) In a binomial distribution, $n = 12$, $p = 3/4$ find its variance.

96) In a binomial distribution if $n = 10$, $p = 1/3$ write the probability density function.

97) In a binomial distribution, Mean = 4 variance = 2, find its parameters.

98) In a binomial distribution, $n = 6$, $p = 1/2$ find $P(2 < X \leq 4)$.

99) A Coin is tossed 5 times. Find the probability of obtaining 3 heads.

100) If a drug is administered 90% of rats gets Stimulated. Find the probability that 3 out of 4 rats administered the drug get Stimulated.

101) The probability distribution of a random variable X is given below. Find the value of P.

X :	0,	1,	2,	3
P(X) :	P,	2/3 P,	P/2,	P/3.

102) For a binomial distribution $3n = 20p = 15$. Find $P(X \geq 1)$.

103) In a probability distribution $P(0) = 1/16$. Find $P(1)$ using recurrance formula if $n = 4$ and $P = 1/2$.

104) In a family of 3 children, probability that a child is having a defective eye is 0.25. Find mean and variance of children having defective eyes for 192 family.

105) Probability distribution of a random variable is given below. find $P(0 < X < 4)$.

X :	0,	1,	2,	3,	4
P(X) :	K,	2K	3K,	4K,	5K.

106) The parameters of a binomial distribution are $n = 8$ and $P = 0.8$. Find Variance.

107) write the properties of probability distribution.

108) The probability distribution of a random variable X is defined as follows.
$P(X) = A \times (6 - x)$, $x = 1, 2, 3, 4, 5$. Find. A.

109) A plays chess. Probability that he wins the game is 0.6. Find the probability that he wins 2 out of 3 games.

110) In a binomial probability distribution Mean : variance = 3 : 2. Find probability of Success.

111) Sachin makes a century in every 5 innings. Find the probability that he makes 2 centuries out of 3 innings.

112) 10% of the bulbs produced are defective. Find the probability that 2 out of 5 bulbs selected are defective.

113) The mean and Variance of a binomial distribution are 3 and 2 respectively. Determine whether the Skewness of the distribution is positive or negetive.

114) In a binomial probability distribution $3q - 2p = 0.15$. Determine whether the Skewness of the distribution is positive or negetive.

115) Draw Normal probability curve and Show the three quartiles.

116) The quartiles of a normal distribution are 10 and 40. Find Median.

117) For a Standard Normal variate, the means and Standard deviations are 5 and 2 respectively. write the probability Density function of X.

118) In a Normal distribution, $3Q_1 = 2Q_3 = 48$ Find its Mean.

119) Write the characteristics of Standard Normal distribution.

120) For a normal distribution $Z = 20$ and $Q_3 = 3/2\ Q_1$. Find extreme quartiles.

121) For a Standard Normal variate Z $P(Z = 1+C) = 0.5$. Find the value of C.

122) The Variance of a normal distribution is 10 times of its mean. If mean is 10, find Standard deviation.

123) The variance of a normal variate is half of its median. If median is 32 write probability density function.

124) In a normal distribution mean is 10 and Standard deviation is 2. Find $P(8 \leq X \leq 13)$.

125) Probability density function of a normal distribution is :-

$$f(x) = \frac{1}{25\sqrt{2\pi}} e^{-\frac{(x-300)^2}{1250}}$$

Find the percentage of observations more than 350.

126) For a normal distribution $Q_3 = 40$, $Q_1 = 25$ Find its mode.

127) Find the probability that the value of the Standard Normal Variate z lies between 0.80 and 1.80.

128) Estimate the trend from the following.
$n = 5$, $T = 3$, $\bar{y}t = 123$, $\Sigma t^2 = 55$ $\Sigma tyt = 1910$

129) What are the uses of study of time Series?

130) Trend $\hat{y}t = 1.2 + 0.03(t-3)$ and $t = 4$ Estimate value of trend.

131) If $\Sigma wyt = 845$, $\Sigma w^2 = 10$ Find the value of b.
If $\Sigma yt = 3396$ and $n = 5$ Find the value of a.

132) Write the Short-cut formula for estimating the value of trend.

133) Write the merits of estimating trend line under least square method.

134) The trend line of a time series is $\hat{y}t = 675 + 80.5t$. If $t = 2$ and $t = 5$, find the estimated values of trend.

135) Fit a trend line and estimate the value of Y_{10} from the following.
$n = 9$, $\Sigma yt = 118$, $\Sigma t^2 = 285$, $\Sigma tyt = 710.4$

136) The trend line of a time series is $\hat{y}t = 1000 + 12t$. Estimate the value of trend for $t = 10$.

137) What is Seasonal Variations? Give two examples.

138) Estimate the trend line from the following
$\Sigma w = 0$, $\Sigma wy = 111$, $\Sigma w^2 = 70$, $\Sigma y = 6110$, $n = 6$

139) Estimate the trend line from the following
$n = 5$, $\Sigma t = 15$, $\Sigma yt = 1420$, $\Sigma wyt = 145$, $\Sigma w^2 = 10$, $\Sigma t^2 = 50$
Use direct method.

140) Estimate the trend line from the following data. use short-cut method.
$n=5$, $\Sigma t=15$ $\Sigma yt=1420$, $\Sigma wyt=145$, $\Sigma w^2=10$

141) What is irregular variations? When do these variations occurs?

142) Explain the graphical method of estimating trend.

143) If the first term of a G.P is 2 and its common ratio is 10, find T_4 and T_5.

144) Find 7th term of 1/16, 1/8, 1/4 ..

145) Find the Sum of first 4 terms of a G.P, 2, 6, 18.

146) The first term and Common ratio of a G.P are 5 and -2 respectively If nth term is -40, find value of 'n'.

147) The Sum of first 4 terms of a G.P is 40. and common ratio is 3 find the first term.

148) If the first term is 5 and the Product of first three terms are 1000. find Common ratio.

149) If -1, a, -4 are in G.P, find a

150) If 1.5, G, 13.5 are in G.P, find G.

151) For a geometric Progression $S_n = 2(5^n)$. Find T_3.

152) In a geometric Progression, the common ratio is 2 and 8th term is 284., Find first term.

153) The first term and Common ratio are 4 and 3 respectively. If $T_n = 8748$ find value of 'n'.

154) In a G.P, $r=10$, $T_6=100$ find a.

155) The first term of a G.P is 1 and $r=\sqrt{2}$. Find T_{11}.

156) If 6, G, 150 are in G.P, find, G.

SECTION-D

1) The prices of five items for 2000 and 2005 are given below. Taking the year 2000 as base year find general Index Number.

Items	A	B	C	D	E
2000	8	12	10	6	15
Price Rs 2005	10	18	7	9	21

2) Find General Index Numbers by Fixed Base method from the following data.

Items	Production (in lakh rupees)		
	2003	2004	2005
A	12	27.6	18
B	9	11.7	13.5
C	15	18	22.5

3) Index Number for the year 2000 is 100. In the year 2001 it is increased by 5%., in 2002 it is decreased by 10%., in the year 2003 it is decreased by 5%., in the year 2004 it is increased by 20% and in 2005 it is 125%. Find index numbers for all the 6 years and convert them in to Chain Base Index Numbers.

4) If $\Sigma P_1 q_0 : \Sigma P_0 q_0 = 3:2$ and $\Sigma P_1 q_1 : \Sigma P_0 q_1 = 5:2$ find I_L, I_P and I_F.

5) Find Index Numbers for the year 2005 by total expenditure method from the following.

Items	A	B	C	D
Year 2002	13	22	4	2
Price 2002	7	9	2.25	0.90
Price 2005	8.25	13	3.10	1.15

6) Monthly income and cost of living Index Numbers are given below. Find real income.

Year	2000	2001	2002	2003	2004
Income	2500	3000	3200	4000	5000
Index	125	140	150	200	220

7) In compared to 1995 the prices of 5 items are 2, 5/2, 3, 9/4, 18/5 times in 2004. A family spends 40%, 30%, 10%, 15% and 5% of their income on these items. Find general index Number for these items.

8) The prices of three items in the current year A, B and C have increased by 70%, 100%, and 120% and D and E have decreased by 15% and 10% respectively. If the importance of A and B are two times of C and D and E are half of C. Find general Index number of the five items.

9) Convert the following fixed Base Index Numbers in to chain Base Index.

Year :	1999	2000	2001	2002	2003	2004	2005
F.B.I. :	100	125	150	90	126	140	208

10) Compared to 1992, in the year 1995 the prices of 5 items have increased by 90%, 120%, 75%, 110% and 40% and their respective importances are 4:1:3:5:2 Find their general Index number for the year 1995.

11) The details of budget enquiry of middle class family is given below. Find the changes in the cost of living index in the year 2005, Compared to 2000.

Group :	Food	clothing	Education	Rent	Misc:
Weight :	45	20	15	10	10
Exp. 2000 :	1000	200	250	500	800
Exp. 2005 :	1300	300	300	800	960

12) The prices of Anchor Tubes are given below. Find index Number by fixed Base method.

Year :	2003	2004	2005	2006	2007
Price :	80	100	122	144	150

13) Find Cost of living index Number from the following data.

Group :	A	B	C	D	E
Weight :	66	30	45	36	23
Index :	395	258	190	205	175

14) Convert the following Chain Base Index Numbers in to Fixed Base Index Number taking 1999 as base year.

Year:	1999	2000	2001	2002	2003	2004	2005
C.B.I:	100	130	125	80	140	105	150

15) The price relatives of three items respectively are 160, 175 and 190. If their respective importances are 3:2:5, find Common index Number.

16) From a population of 10000 families of a city, a random Sample of 10% is Selected. Find the estimated total population and Standard deviation from the following.

No. of Children :	0	1	2	3	4	5
No. of families :	510	230	160	60	30	10

17) The daily wages of 100 workers of a factory are given below.
155, 164, 156, 149, 166. find the estimate of population mean and variance of the mean of sample means.

18) from 1000 students of an educational institute a sample of 100 students were taken. from the data the standard deviation of the sample obtained is 7. find the estimate of standard deviation of sample mean.

19) A population of 100 units are divided in to two stratum of equal units. from each stratum a random sample of size 3 are drawn. from the following data find estimate of population mean and its variance.
$\Sigma Y_1 = 96 \quad \Sigma Y_2 = 204, \quad \Sigma(Y_1 - \bar{Y}_1)^2 = 600$
$\Sigma(Y_2 - \bar{Y}_2)^2 = 1200$.

20) There are 100 mango trees in an orchyard from these a random sample of 10 trees are selected to study no. of mangoes per tree in the season. from these the sample mean and sample standard deviation obtained are 92 and 11 respectively. find the estimate of total mangoes in the orchyard and its variance.

21) In a population $N_1 = 18$ and $N_2 = 12$. The random samples selected from the first stratum are 11 and 17 and from the second stratum are

5, 13, 21, 25. Find the estimate of population mean.

22) Find the value of $\bar{y}_{(st)}$ and estimate the variance of sample means from the following.
$N = 200$, $N_1 = 120$, $n_1 = 12$, $n_2 = 8$, $\Sigma(y_1 - 36) = 0$
$\Sigma(y_2 - 44) = 0$, $\Sigma(y_1 - \bar{y}_1)^2 = 16740$, $\Sigma(y_2 - \bar{y}_2)^2 = 16118$.

23) A random sample of 20 electric bulbs was taken from a population of 1000 electric bulbs. The life in hours of each bulb selected in the sample was recorded. From the recorded data the sample mean and standard deviation were found to be 1057 and 40 hours respectively. What would be the estimate of population mean and standard deviation of sample mean.

24) A population is divided in to 3 strata and the following data are obtained.

Stratum	Stratum Size	Sample mean	Sample variance
1	20	5	14
2	20	11	12.5
3	10	8	6

The number of random samples drawn are 5, 4 and 2 respectively from each Stratum. Estimate the variance of mean of Stratified random sample mean.

25) A random sample of 60 observations are selected from a population of 1000 observations. From the information of $\Sigma y_i = 3900$ and $\Sigma(y_i - \bar{y})^2 = 5900$, Estimate the mean of population and variance of random sample mean.

26) The estimate of variance of Sample mean of a population of 500 Students is 0.4. If the variance of Students selected is 50, find the number of students selected as Sample.

27) Find $V(\bar{y}_{st})$ from the following data.
$N_1 = 40$, $N_2 = 60$, $n_1 = 4$, $n_2 = 6$, $\Sigma(y_1 - \bar{y}_1)^2 = 585$
$\Sigma(y_2 - \bar{y}_2)^2 = 1180$.

28) For a random variable the estimate of population total and estimate of its Standard deviation are in 40:3 ratio. If $\hat{T} = 96000$, $N = 2400$, estimate the mean of population.

29) A population of 60 units is divided into two Strata of equal size. A random Sample of size 3 is drawn from each Stratum. The Sample observations drawn from the first Stratum are 2, 4 and 6 and the Samples drawn from the Second Stratum are 11, 6, 14. Find the estimate of population mean and the variance of the Stratified Sample mean.

30) If $N = 200$, $n = 10$, $\Sigma y_1 = 1500$, $\Sigma(y_1 - \bar{y}_1)^2 = \cancel{216}$ 261,000
find population mean, population total and estimate of variance.

31) Find Correlation Co-efficient between the variables X and Y from the following.
$n = 25$, $\Sigma XY = 85$, $\Sigma X = 50$, $\Sigma Y = 40$, $\Sigma X^2 = 116$
$\Sigma Y^2 = 80$.

32) Find Correlation Co-efficient from the following.
$n=8$, $\Sigma x = 108$, $\Sigma y = 132$, $\Sigma(x-12)^2 = 400$
$\Sigma(y-15)^2 = 80$.

33) Find Correlation Co-efficient between the variables x and y from the following.
Rank for x: 6, 5, 1, 2, 3, 4
Rank for y: 5, 6, 3, 4, 1, 2

34) Find Karl Pearsons Correlation Co-efficient from the following data.
x: 80, 140, 180, 120, 100, 80
y: 15, 35, 50, 45, 40, 20

35) Find rank Correlation Co-efficient from the following data.
x: 1.08, 1.8, 1.008, 1.72, 1.8, 1.65
y: 1.1, 1.01, 1.1, 1.8, 1.09, 1.01

36) Interprete $r=0$, $r=1$, $r=-1$

37) If $r=0.8$, $\Sigma(x-\bar{x})(y-\bar{y}) = 146.52$, $S_y^2 = 20.25$
$\Sigma(x-\bar{x})^2 = 150.59$, Find the number of pairs of observations.

38) If $\Sigma uv = 128$, $\Sigma u = 22$, $\Sigma v = 23$, $\Sigma u^2 = 156$, $\Sigma v^2 = 127$
$n = 10$.

39) Find rank Correlation Co-efficient from the following data.
x: -8, -4, 12, 10, -2, 10, -8, -6
y: 34, 22, -17, -32, 16, -32, 37, 28

40) Two random variables x and y are related with the equation $y = 2x+1$, if $x = 1, 2, 3, 4, 5, 6$; draw a Scatter diagram and interprete it.

41) What is Correlation? Explain their merits and demerits.

42) Explain the method of Spearman's rank Correlation.

43) If $r(xy) = 0.5$
i) what is the Correlation Co-effient between $\frac{1}{2}x$ and y.
ii) what is the Correlation Co-efficient between $50x$ and y.
iii) what is the Correlation Co-efficient between $3x$ and $2y$.

44) For a bivariate data $S_x = 19.4$, $S_y = 2.7$ $r = 0.5$ Find S_{xy}.

45) Explain. Scatter Diagram. perfect Correlation and Tie.

46) From the following find regression equation of y on x and estimate the value of y when $x = 20$.
$n = 50$, $\Sigma x = 650$, $\Sigma y = 750$, $\Sigma xy = 10000$,
$\Sigma x^2 = 8800$, $\Sigma y^2 = 11000$.

47) The regression line of x on y is $\hat{x} = a - 0.2y$ and $\bar{x} = 85$ $\bar{y} = 100$, $S_x^2 = 100$ $S_y^2 = 900$ Find:
i) Value of a
ii) Estimate value of x when $y = 90$
iii) R^2 and interprete it.

48) Explain Co-efficient of determination what are its uses?

49) Find regression line of Y on X from the following.
$n = 10$, $\Sigma X = 210$, $\Sigma Y = 180$, $\Sigma (X - \bar{X})^2 = 100$,
$\Sigma (Y - \bar{Y})^2 = 80$, $\Sigma (X - \bar{X})(Y - \bar{Y}) = -30$

50) What are the properties of regression Co-efficients?

51) For a bivariate data $\bar{x} = 40$, $\bar{y} = 25$, $S_x = 6$, $S_y = 2.4$, $r = 0.8$ find regression equation of Y on X and estimate value of Y when $X = 25$.

52) Find regression line of Y on X from the following by Scatter diagram method.

53) For a bivariate data, $n = 10$, $\bar{x} = 14$, $\bar{y} = 21$ $S_x = 2.3$, $S_y = 2.1$, $r = 0.8$ find the regression equation of X on Y.

54) If $\bar{x} = 150$, $\bar{y} = 300$, $S_x = 10$, $S_y = 30$ and $Cov(X, Y) = -260$, find Co-efficient of determination and interprete it

55) Explain Scatter diagram method of estimating regression lines.

56) Find the estimated value of Y when $X = 60$ from the following.
$n = 15$, $\Sigma X = 750$, $\Sigma Y = 500$, $r = 0.72$,
$S_x^2 : S_y^2 = 45 : 80$.

57) State whether the following Statements are true or false with reasons.
i) When Correlation Co-efficient is Zero, two regression lines Coincided.

ii) The regression equation with minimum error of approximation is called best fitted line of regression.
iii) For a data $b_{yx} = 0.8$ and $b_{xy} = 1.2$

58) Explain the terms. Independent variable Regression Co-efficient, Regression.

59) For a bivariate data $\hat{y} = 58 + 0.07x$ and $\hat{x} = -99 + 3.54$. find regression Co-efficients between X and Y.

60) Explain the least square method of estimating regression lines.

61) A card is drawn from a pack of 52 well shuffled cards at random find the probability that the drawn card is a
i) Face card
ii) Club card
iii) King card.

62) A problem in mathematics is given to A and B. Probability that they solve the problem correctly are 0.8 and 0.6 respectively. find the probability that the problem is solved correctly.

63) There are two children in a family. If the first child is a girl, find the probability that both are girls.

64) There are 2 white and 3 Red balls in a Box; and 2 Red and 4 Black balls in another box. If one box is selected at random and a ball is drawn find the probability that the ball drawn is red.

65) Out of two individuals, A speaks the truth in 3 out of 5 cases, and B speaks the truth in 3 out of 8 cases and both of them speaks the truth in 2 out of 5 cases. Find the probability that they speaks truth

66) There are 3 Red, 4 white and 3 Black balls in a box. If balls are drawn at random find the following:
i) Probability that one ball drawn is white.
ii) Two balls drawn at random are of same colour.
iii) Three balls drawn are of each colour.

67) A and B are two events. If $p(A) = 0.56$ and $p(B) = 0.40$, $p(A \cup B) = 0.64$ find $P(A/B)$, $p(B/A)$.

68) In a parking plot 3 maruti and 3 fiat cars are arranged in a row. Find the probability that maruti and fiat cars appear alternatively.

69) Sample space $U = \{1, 2, 3, \ldots 20\}$. If a number is drawn at random from it find the probability that
i) The number drawn is a even number
ii) The number drawn is divisible by 3.
iii) The number drawn is divisible by 2 or 3.

70) If events A, B and C are mutually exclusive and $p(A) = 2/5$, $p(B) = 4/15$ and $p(C) = 2/15$ find $p(A \cup B \cup C)$.

71) 4 pages out of 20 pages of a book are with printing mistake. If two pages are opened one after the other find the probability that
i) both of the pages are without printing mistakes
ii) both of the pages are with printing mistakes.

72) If $p(A) = 0.59$, $p(B) = 0.30$, $p(A \cap B) = 0.21$ find i) $P(A \cup B)$ ii) $p(A' \cap B')$ iii) $P(A' \cup B')$.

73) If two dice numbered 1 to 6 are thrown Simultaneously find the probability that :-
i) The Sum obtained on two dice are 7.
ii) Same number appears on both dice
iii) The Sum obtained on two dice are more than 10.

74) Three Coins are tossed together. Find the probability that
i) Three heads are obtained.
ii) Same results are obtained on three Coins.
iii) One head and two tails are obtained.

75) For events A, M and F, $P(M) = p(F) = 1/2$ and $P(A/m) = 1/10$, $p(A/f) = 0.5$, find $p(A \cap m)$ and $p(A \cap F)$.

76) A problem in probability is given to Aaju, Kaju and Baju. The probability that they solve the problem Correctly are respectively are $1/2$, $1/5$, and $3/4$. Find the probability that the problem is Solved Correctly.

77) If events A, B and C are mutually exclussive and exhaustive events, and $2p(A) = 3p(B) = 4p(C)$, Find $P(A \cup C)$.

78) There are 5 white, 4 Red and 3 yellow flowers in a basket. If 3 flowers are taken at random from it find the probability that
i) Three flowers are White.
ii) Three flowers are of different Colours.
iii) Three flowers are of Same Colour.

79) Find the probability that there are 53 Sundays in a leap year.

80) There are 6 white and some black balls in a box. The probability that 2 white balls are drawn is 1/3, find the number of black balls.

81) There are 25 Electric bulbs in a box. Out of which 20% are defective bulbs. If two bulbs are selected at random one by one, find the probability that both the bulbs are non defective.

82) If $P(A) = \frac{1}{2}$, $P(B) = 4/5$ and $P(A/B) = 1/5$ find $P(B/A)$ and $P(A \cap B')$.

83) If A and B are independent and $P(A) = \frac{1}{3}$ $P(B) = 3/4$ find $P(A \cup B)$ and $P(A \cup B')$.

84) If $A \cup B = U$ and $P(A) = 0.8$, $P(B) = 0.4$ find $P(A \cap B)$.

85) Events A, B and C are mutually exclussive and exhaustive events. If $P(C') = 0.8$, $3P(B) = 2P(A')$ find $P(A)$ and $P(B)$.

86) A number is selected at random from numbers 1 to 100. Find the probability that the number selected is divisible by 3 or 7.

87) What is a random experiment? What are its characteristics.

88) If $P(A) : P(B) : P(A \cap B) = 6 : 4 : 3$ and $P(A) = 1/4$ find $P(A \cup B)$.

89) 4 boys and 3 girls are arranged in a row. find the probability that all the 3 girls comes together.

90) Explain the following events with Venn diagram
i) Complementary
ii) Difference
iii) Mutually exclussive.

91) Explain Merits and Demerits of Langrange's method of interpolation and extrapolation.

92) If $\log_{10} 20 = 1.3010$, $\log_{10} 40 = 1.6021$ then find the estimate of $\log_{10} 35$ by the method of linear interpolation.

93) What are the assumptions of interpolation and extrapolation ?

94) From the following estimate the value of Y for X = 2.

X :	0,	3,	7
Y :	1,	8,	64

95) If $Y_0 = -1$, $Y_2 = 3$, $Y_4 = X$ find value of X by using binomial expansion method.

96) From the following data estimate value of Y by langrange's method.

X :	1,	2,	3,	5,	6
Y :	10,	20,	50,	(?)	200

97) The weights of students according to their ages are given below. find the estimated weight of a Student who is 12.5 years old.

Age :	11,	12,	13,	14
Weight:	20,	23,	27,	32.

98) What are the importance of interpolation and extrapolation ?

99) From the following information of a Company estimate the missing informations.

Year :	2000,	2001	2002,	2003	2004
Sales : (000's)	148,	157	(?)	181	202

100) From the following estimate the production of 2005 by Langrange's method.

Year	:	1995	1996	2000	2004
Production (M.T) :		8,	18,	93,	52.

101) If $Y_0 = 3$, $Y_4 = 12$, $Y_{12} = 30$ Estimate Y_8.

102) The literacy rates of India for the last 3 decades are given below. Estimate literacy rates for the year 2011.

Year :	1981	1991	2001
Literacy rate (%)	44	52	65

103) From the following details of a Cement Company Prepare a table of differences.

Year	:	1999,	2000,	2001,	2002,	2003,	2004
Production (000' M.T)	:	50,	70,	85,	95,	108	115

SECTION-E

1) The marks obtained in statistics out of 70 marks of T.Y. B.com examination of a University of 10000 Students are in Normal distribution. If the mean and Standard deviation of the distribution are 30 and 10 respectively. Find the number of Students getting marks less than 25.

2) The distribution of a random variable X is normal. Find the percentage of observations
   i) More than $\mu + 2.3\sigma$
   ii) Less than $\mu + 2.3\sigma$

3) In 500 branches of a departmental stores, the average daily sales is Rs 1500 and Standard deviation is Rs 100. If the distribution of sales is normal find the number of branches having sales more than Rs 1680.

4) The distribution of weights of 100 individuals are normal. The mode of the distribution is 55 Kg. If the weights of 242 individuals are less than 45 Kg find the variance of distribution.

5) The monthly income of a group of 500 employees are normaly distributed. If the mean of the distribution is Rs 700 and Variance is Rs 400, find the range of middle 40% of employees getting monthly salary

6) In a normal distribution 7·35% of observations are less than 35 and 89·44% observations are less than 65. Find mean and Standard deviation of the distribution.

7) The monthly income of a group of employees are normally distributed. The mean of the distribution is Rs 5000 and variance is Rs 62500. Find the lower limit of 67% employees getting highest income.

8) The value of random variable $X_1 = 90$ and $Z_1 = -0.6$ and $X_2 = 126$ and $Z_2 = 1.2$. Find the parameters of the normal distribution.

9) If $P(Z \geq Z_2) = 0.0228$ and $Z_2 = \frac{x_2 - 60}{10}$ find the value of X_2.

10) In a normal distribution 28% of observations are less than 45 and 9% observations are more than 65. Find mean and Standard deviation of the distribution.

11) Mean and Standard deviation of a distribution are 75 and 20 respectively. Find the value of D_2 and P_{62}.

12) For a normal distribution Median is 200 and Standard deviation is 40. If $P(X \leq K_1) = 0.7300$ and $P(X \leq K_2) = .1400$ find K_1 and K_2.

13) The probability density function of a random variable X is :-

$$f(x) = \frac{1}{5\sqrt{2\pi}} e^{-\frac{x^2 - 60x + 900}{50}}$$

Find i) $(X \leq 23)$ ii) $P(27 \leq X \leq 36)$

iii) $P(X \geq 28)$

14) For a normal distribution mean is 4500 and Standard deviation is 1000.
Find i) limits of middle 65% observations
ii) lower limits of 11% observations having highest values
iii) upper limit of 13% observations having lowest values.

15) The third ~~quartile~~ Percentile of a normal distribution is 74.75. If variance is 100 find its median.

16) The details of profit of a company from 1998 to 2003 are given below. Estimate the trend line and estimate profit for the year 2005.

Year	1998	1999	2000	2001	2002	2003
Profit (Crores)	6	9	12	10	15	13

17) If $t = 1, 3, 5$ $Yt = 100$ and $t = 2, 4, 6$, $Yt = 150$. Estimate the trend line and also estimate trend values.

18) From the following time series after Converting the variables in to W, estimate the trend line and also estimate the Production of 2008.

Year	2001	2002	2003	2004	2005	2006
Production (lakhs)	90	160	120	130	105	145

19) From the following estimate trend line and trend values

Time. t	1,	2,	3,	4,	5
Yt	2.3,	4.0,	5.4,	8.0,	10.3

20) The details of Sales from 2000 to 2004 of a company are given below. Estimate trend line and Y2007.

Year	2000	2001	2002	2003	2004
Sales (in lakhs)	240	280	295	305	310

21) Fit a trend line for the following time series and estimate trend values. Also estimate short-term and random variations

t :	1,	2,	3,	4
Yt :	625,	500,	450,	565.

22) Fit a trend line for the time series and estimate Y2002 from the following.

Year :	1996	1997	1998	1999	2000	2001
Demand : (000's)	8·6	7·4	9·0	5·3	6·4	8·9

23) The details of sales during a week in a Stores (Rs1000's) are given below. Fit a trend line by the method of least square

$Yt = 125$, $t = 1, 3, 5, 7$

$Yt = 200$, $t = 2, 4, 6$

24) For a time series $n = 6$, $\Sigma Yt = 6120$ $\Sigma tYt = 21840$, Estimate trend line and t_7.

25) Fit a trend line and estimate trend values from the following time series.

time. t :	1,	2,	3,	4,	5
Yt :	7·6,	7·9,	7·9,	7·5,	8·1

26 The Cost of living Index Numbers of a city from 2001 to 2005 are given below Fit a trend line and estimate Cost of living Index for the year 2006.

Year :	2001	2002	2003	2004	2005
C.L.I :	425	448	462	480	495

27) The time Series data relating to sales (in 000's) are given below. Convert the variable in to w and fit a trend line and estimate Sales for the 7th year.

Time t :	1,	2,	3,	4,	5,	6,	7
Sales :	6,	8,	10,	10,	12,	9,	13

28) For a geometric progression $T_4 = 3/32$ and $T_7 = 3/4$. Find T_{10}.

29) If the three positive numbers $(K+1)$, $(3K-1)$ and $(5K+1)$ are in G.P find. K.

30) If the Second term and 4th term of a G.P are 4 and 32 respectively, find the general term.

31) If $S_n = 2/3(4^n - 1)$. Using the result $T_{n+1} = S_{n+1} - S_n$ find T_1 and T_2.

32) If the Sum and product of three terms of a G.P are 28 and 512 respectively. Find the three terms.

33) If $S_n = 3/2(2^n - 1)$ find T_2 and T_5.

34) Find the unknown quantity from the table given below.

NO.	a	r	n	T_n
1	100	1/5	?	4/25
2	4	?	5	1/4

35) A person decides to purchase a grinder in 4 monthly instalments. His instalments respectively are a, b, c, d. If the instalments are in G.P and $a+b=1200$ and $d=27a$ find instalments.

36) Numbers 6, G, 150 are in G.P. Find G. Also find Common ratio and S_3.

37) The Sum of the terms $1+3+3^2+\cdots n$ is not more than 365. ($S_n=365$). find the maximum value of n using log

38) For a G.P the first term is 1000 and 13th term is 2012 find the Common ratio using logarithm.

39) For a G.P. $S_4=7.5$ and $T_2+T_3=3$ find first term.

40) If a, b, c, d, e are in G.P show $ae=bd$

41) In a Geometric Series $a=81$ and $r=1/3$. If $S_n=\frac{9841}{81}$ find 'n'.

42) For a geometric Series $T_5=243$, $T_2=9$ find the general formula.

43) Find the missing value from the following table.

No	a	r	n	S_n
1	100	0.2	?	124.9
2	?	-1	15	1

44) The Sum of first three terms of a G.P is 2. If the first term is 2 find Common ratio.

SECTION: F

1) Find I_L, I_P and I_F from the following data

Items	Year 2003		2005	
	Total Exp.	Quantity	Total Exp	Quantity
A	180	60 k.g.	187.5	25 k.g
B	80	10 Ltr	208	20 Ltr.
C	240	15 k.g.	306.6	6 k.g.
D	168	3 k.g	200	2.5 k.g

2) Find I_L, I_P from the following.

Items	Base Year		Current Year	
	Price	Total Exp	Price	Total Exp
A	8	80	10	110
B	10	90	12	108
C	16	256	20	340

3) Find I_L, I_P and I_F from the following data

Items	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	3	18	6	25
B	7	20	10	15
C	5	24	8	30
D	4	9	5	22

4) Find Index Numbers using fixed Base method.

Year: 1995, 1996, 1997, 1998, 1999, 2000

Price: 10, 12, 16, 20, 24, 30

5) Find I_F, I_P and I_F from the following data.

Items	Year 2001		Year 2004	
	Quantity	Total Exp.	Quantity	Total Exp.
A	80	320	130	676
B	20	50	30	99
C	15	375	20	640

6) Convert the following Chain base Index into Fixed base Index Numbers.

Year :	1999	2000	2001	2002	2003	2004	2005
C·B·I :	100	130	125	80	140	105	150

7) Find Index number by family budget method from the following data.

Items	Units	Quantity 2000	Price 2000	Price 2004
A	Quintal	20 K.g.	185	230
B	20 K.g.	45 K.g.	75	92
C	1 K.g.	10 K.g.	7	11
D	1 Dozen	8 Pieces	3	4.80
E	20 Ltr.	15 Litr.	22	30
F	1 Meter	20 Meter	2	5

8) Find Fishers Index Number from the following data.

Items	Base Year		Current Year	
	Price	Total Exp.	Price	Total Exp
A	4	44	8	96
B	10	70	8	120
C	3	39	9	99
D	13	195	20	360

9) Find IF from the following data.

Items	Units	2000		2006	
		Price	Quantity	Price	Quantity
A	1 Quintal	650	10 K.g	1400	15 K.g
B	10 K.g.	30	5 K.g	44	7 K.g
C	1 K.g.	4	3000 gm	8	4 K.g
D	5 Dozen	120	3 Dozen	140	48 Pieces

10) Find Index Number by Suitable method :

Items	Weight	Price	
		2000	2006
A	42	12	21
B	28	30	48
C	20	20	35
D	10	5	11

11) Find Index Number by total Expenditure method.

Items	Units	Quantity 2000	Price 2002	Price 2000
A	1 K.g.	30 K.g.	5	4
B	20 K.g	45 K.g.	60	40
C	1 Mtr	20 Mtr	100	60
D	50 K.g	25 K.g	450	250
E	1 K.g	4 K.g	20	10

12) Find Index Number from the following.

Group	Food	Clothing	Education	Rent	Misc:
Exp.(%)	45	20	15	10	10
Exp. 1990	750	200	150	500	300
Exp. 1993	900	300	180	800	360

13) Find Laaspeyers, Paasche's and Fishers Index Numbers from the following.

Items	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	4	19	5	22
B	5	24	8	30
C	7	20	10	15
D	3	18	6	25

14) Find real incomes from the following data.

Cost of living Index	320	325	326	330	332	335
Monthly income	370	4700	4800	4850	4900	4900

15) The prices of 5 items for the year 2004 are 2, 5/2, 3, 9/4 and 18/5 times the prices of the same items for the base year 1995. If a family on an average spends 40%, 30%, 10%, 15% and 5% of its income respectively on these items, find Common index Number for these items.

16) Find Correlation Co-efficient from the following data.

X	30	32	35	32	35	30	29
Y	110	100	150	120	90	140	160

17) Find Correlation Co-efficient.

Height (C.M)	145	148	150	145	152	142
Weight (K.G)	42	44	48	45	56	40

18) Find Correlation Co-efficient and interprete it.

X	80	40	180	120	100	80
Y	15	35	50	45	40	20

19) Find Correlation Co-efficient by product moment method.

Price (Rs)	28	32	40	35	42	30	38
Demand (Units)	105	88	79	100	68	110	67

21) Find Correlation Co-efficient from the following.

X	7	2	-1	-3	0	4	5
Y	5	10	12	15	12	10	8

22) Find Correlation Co-efficient and interprete it.

X	10	-8	-6	-2	10	12	-4	-8
Y	-32	37	28	16	-32	-17	22	34

23) Find Correlation Co-efficient between age and weight from the following data.

Age (Years)	8	6	8	5	7	6	9	7
Weight (K.g)	20	16	18	14	14	10	15	15

24) Find Karl Pearsons Correlation Co-efficient.

X	75	70	72	78	90	95	80
Y	73	82	90	92	78	74	79

25) Find rank Correlation Co-efficient from the following data.

X :	96	72	60	45	60	70	72
Y :	90	72	52	52	50	55	55

26) Find Correlation Co-efficient from the following data.

X	17.1	18.5	19.5	20.9	21.2	21.2	23	24.1	25.3	25.6
Y	22.5	22.8	23.1	23.2	23.6	25.2	26.9	25.8	22.3	25.8

27) Find Correlation Co-efficient from the following data.

X	80	150	175	120	105	90
Y	20	35	50	40	53	25

28) From the following data estimate the weight of a person whose height is 150. C.M.

Height (c.m)	130	135	140	143	150	132	127	138
Weight (K.g)	50	52	56	56	58	54	55	51

29) Find regression equation of Y on X from the following data.

X	10	7	8	11	11	13	12	19	15	14
Y	7	8	6	10	12	15	13	16	11	12

30) Find regression equations and estimate Y for $X=1$ and X for $Y=4$.

X : 3, 2, -1, 6, 4, -2, 5, 7

Y : 13, 12, -1, 2, 20, 5, 0, -3

31) Find both regression lines and Co-efficient of determination from the following data.

$n=10$, $\bar{X}=100$, $\bar{Y}=400$, $S_x=20$, $S_y=30$

$Cov(X,Y) = -260$.

32) Find b_{yx}, b_{xy} and R^2 from the following

X: 96, 72, 60, 45, 47, 70, 29

Y: 90, 72, 52, 50, 55, 80, 35

33) If the regression line of X on Y is $X = a - 0.2Y$, $\bar{X}=88$, $\bar{Y}=100$, $S_x=10$ $S_y=30$

Find i) value of a.

ii) value of X when $Y=90$

iii) R^2 and interprete it.

34) Find regression equation of Y on X and estimate the value of X when ~~X~~ $X=90$

X : 100, 150, 70, 50, 120, 70

Y : 2·5, 4·0, 1·4, 2·0, 2·5, 2·0

35) Find regression equation of X on Y and estimate value of X when $Y=70$

X : 82, 40, 102, 29, 29, 86, 74, 66, 69, 43

Y : 91, 58, 98, 67, 75, 69, 93, 65, 60, 54

36) Find regression equation of Y on X from the following:-

X : 130, 135, 140, 148, 150, 132, 128, 138

Y : 50, 52, 56, 56, 58, 54, 55, 51

37) Estimate the population of 1971 from the following data.

Year :	1931,	1941,	1951	1961
Population (crores) :	30,	40,	48,	60.

38) Estimate value of Y when X = 2 and X = 4 by Langrange's method.

X :	0,	1,	3
Y :	5,	9,	36

39) Estimate the population of 2000 by using binomial expansion method

Year : :	1980	1985	1990	1995
Population :	1234	2340	3400	4000

40) find the estimated value of Y when X = 12 by Langrange's method.

X :	6,	14,	18
Y :	168,	120,	72

41) If $\sqrt{5} = 2.236$, $\sqrt{6} = 2.449$, $\sqrt{7} = 2.646$ $\sqrt{8} = 2.828$ Estimate the value of $\sqrt{7.5}$ using interpolation method.

42) Prepare a table of differences and show that $\Delta^3 y_0 = y_3 - 3y_2 + 2y_1 - y_0$

X :	1,	2,	3,	4
Y :	-5,	-1,	6,	17

43) Estimate the value of dependent variable Y_x when X = 5 from the following.

X :	0,	2,	3
Y :	2,	6,	10.

44) Using Newtons method estimate Y_{15} from the following data:

X :	12,	14,	16,	18,	20
Y :	10,	16,	25,	30,	33

45) If L_x denotes the number of living persons aged x years find the value of L_{40} by the method of Binomial Expansion using the following data.
$L_{20} = 50$, $L_{30} = 30$, $L_{50} = 24$, $L_{60} = 14$.

46) Estimate the value of Y by using Langrange's method from the following.

Time (Hours) : X :	1,	2,	3,	5,	6
Numbers (000's) Y :	10,	20,	50,	?,	200.

47) Using Newtons Method Estimate the number of literate for the year 2007.

X : Year	:	2001	2003	2005
Y : Number (000's)	:	150	180	240

48) The details of marks obtained by the Students are given below. Find number of students getting marks less than 40.

Marks less than	:	20	30	45	50
No. of Students	:	32	40	60	65

49) Estimate price of petrol per litter in the year 2005 from the following.

Year:	2001	2002	2004
Price :	25	33	39

50) The number Students Studying in Higher Secondary per year in a state is given below. Estimate the number of Students for the Year 2002.

Year	:	1998	1999	2000	2001	2002
No. of Students (000's)	:	393	410	419	484	?

51) Estimate the production for the year 2005 from the following:

Year	:	1995,	1996	2000	2004
Production	:	8,	18,	33,	51

52) Using Newtons Method find $f(x)$ and estimate $f(x)$ for $x = 5$.

X	:	0,	2,	4
Y	:	9,	7,	5