

Question Bank for Statistics part-II

Chapter # 10

- 1- Write p.d.f. of standard normal distribution.
- 2- Find the value of maximum ordinate for a normal distribution with mean 25 and variance 16.
- 3- If $Z \sim N(0,1)$, then find the value of a such that $P(Z > a) = 0.025$
- 4- If $X \sim N(40,49)$, find median and standard deviation?
- 5- In a normal probability distribution, what are the first four moments about mean?
- 6- In a normal distribution $Q_1 = 8$, $Q_3 = 17$. Find the value of mean and mode.
- 7- If $Z \sim N(0,1)$, then find $P[|z| < 1.64]$.
- 8- Write four properties of standard normal distribution.
- 9- Find the ordinate of the standard normal curve at $z = -0.84$
- 10- Define standard normal distribution?
- 11- Define the point of inflexion in a normal distribution.
- 12- In a normal distribution $\mu = 24$ and $\sigma = 4$. Find the fourth moment about mean?
- 13- Find the standard deviation, if Q.D. = 3.3725 for a normal distribution.
- 14- What is the relationship between mean, median and mode in a normal distribution?
- 15- Define standardized normal distribution.
- 16- In a normal distribution $\mu = 103$ and $Q_3 = 171.094$, find the standard deviation.
- 17- If $Z \sim N(0, 1)$, find $P(Z < -1.645)$?
- 18- Define normal frequency distribution.
- 19- In a normal distribution $\mu_4 = 768$, find μ_2
- 20- If $X \sim N(25,25)$, find the value of maximum ordinate?
- 21- In a normal distribution the $Q_1 = 18$ and $Q_3 = 26$. Find its mean and standard deviation.
- 22- Define normal distribution?
- 23- Write down the equation of normal curve.
- 24- What is range of normal variable?
- 25- What is the shape of the normal curve?
- 26- In a normal distribution what are the values of μ_2 and μ_3 ?
- 27- Write down the formulas for mean deviation, lower and upper quartiles in normal distribution.
- 28- If $Z \sim N(0, 1)$, find $P(Z < -1.96)$?



Chapter # 11

- 1- Define sample and sampling?
- 2- Explain sampling with replacement and without replacement?
- 3- Define sampling distribution of means.
- 4- Find $\sigma_{\bar{x}}$ if $\sigma^2 = 2.25$ and $n = 4$.
- 5- If $n_1 = n_2 = 2$ and $P_1 = \frac{1}{3}$, $P_2 = \frac{2}{3}$, find $E(\hat{P}_1 - \hat{P}_2)$ and $\sigma_{\hat{P}_1 - \hat{P}_2}$? Here P_1 and P_2 are population proportions.
- 6- What is population?
- 7- What is non-sampling error?
- 8- Explain the properties of the sampling distribution of a mean?
- 9- Distinguish between finite and infinite population.
- 10- Given $N_1 = 3, n_1 = 2$, and $N_2 = 4, n_2 = 2$. If $\sigma_1^2 = 8/3$ and $\sigma_2^2 = 5/4$. Find $var(\bar{X}_1 - \bar{X}_2)$ when sampling is done without replacement?
- 11- Define sample survey?
- 12- Define meaning of census?
- 13- Define sampling?
- 14- What do you mean by non-probability sampling?
- 15- If $\sigma = 4$, $N = 2$, $n = 10$, find $\sigma_{\bar{x}}$, if sampling is done with replacement?
- 16- Define random digits in sampling?
- 17- What is meant by parameter?
- 18- Define sampling error?
- 19- Describe sampling units?
- 20- Write two advantages of sampling?
- 21- Given $n_1 = 30$, $n_2 = 25$, $\sigma_1^2 = 300$ and $\sigma_2^2 = 150$. Find $\sigma^2_{\bar{X}_1 - \bar{X}_2}$
- 22- Define parameter and statistic?
- 23- What is meant by bias?
- 24- Take all possible sample of size of 2, without replacement from the following population: 2,4,6,8,10.
- 25- Take all possible sample of size 2 $n = 2$, with replacement from the following population: 2,4,6,8,10.
- 26- What do you know about sampling frame?
- 27- What is sample design?
- 28- Explain the term non-sampling error. How it is reduced?
- 29- What is probability sampling?
- 30- For finite population of size $N = 4$, find $\sigma_{\bar{x}}$ if $\mu = 6$, $\sigma = 5$ and $n = 2$.
- 31- A population consists of values 0, 3, 6, 9. How many possible samples should be drawn without replacement of size 3?



Chapter # 12

- 1- Explain what is meant by statistical estimation.
- 2- Given $n = 4$, $\sum X = 120$, $\sum(X - \bar{X}) = 303$, compute the best unbiased estimates of the population mean μ and of variance σ^2 .
- 3- Define interval estimation.
- 4- Differentiate between estimate and estimator.
- 5- What is meant by estimation?
- 6- Write down only the name of the properties of good estimator.
- 7- Explain the statistical inference.
- 8- What is meant by unbiasedness?
- 9- Write a short note on critical region.
- 10- If $\bar{X} = 100$, $\sigma = 8$ and $n = 64$, set up a 95% confidence interval for μ ?
- 11- Distinguish between point estimate and interval estimate.



Chapter # 13

- 1- Distinguish between null hypothesis and alternative hypothesis.
- 2- Define simple hypothesis.
- 3- If $\alpha = 0.05$, what will be the value of $Z_{\frac{\alpha}{2}}$?
- 4- What are the assumptions of student's t-statistics?
- 5- Define level of significance.
- 6- Given $\bar{X} = 28, \mu_0 = 28$. Find the value of z-score.
- 7- Define acceptance region.
- 8- Define a type – I error.
- 9- What is meant by critical value?
- 10- Explain simple and composite hypothesis.
- 11- Write down the steps in testing hypothesis of population mean μ , when the sample size is large.
- 12- Explain level of significance
- 13- Given $n_1 = 6$ and $\sum(X_1 - \bar{X}_1)^2 = 6500, n_2 = 8$ and $\sum(X_2 - \bar{X}_2)^2 = 1000$, find S_p
- 14- Differentiate between acceptance region and rejection region.



Chapter # 14

- 1- Express two properties of regression line.
- 2- What is meant by intercept?
- 3- Differentiate between regressor and regressand?
- 4- Write any two formulae of correlation co-efficient.
- 5- Given $S_{xy} = 16$ and $S_x \cdot S_y = 81$, find r_{xy}
- 6- Write down any two properties of correlation co-efficient.
- 7- Sketch scatter diagram indicating negative correlation.
- 8- Explain the term regression co-efficient.
- 9- Given $x = 2,4,6$ and $y = 4,4,4$. Find simple correlation co-efficient.
- 10- Write the relationship between regression coefficient and correlation coefficient.
- 11- What is curve fitting?
- 12- If $\sum(X - \bar{X})(Y - \bar{Y}) = 8400$ and $\sum(X - \bar{X})^2 = 2800$, find $b_{yx} = ?$
- 13- What is difference between correlation and correlation coefficient?
- 14- Interpret the meaning when $r = 0$.
- 15- Define negative correlation and positive correlation.
- 16- Define regression analysis.
- 17- The regression equations of x on y is $x = 40.7 - 0.587y$ and of y on x is $y = 20.8 - 0.912x$, find r_{xy} .
- 18- Given that $n = 15$, $S_y = 16.627$, $S_x = 7.933$ and $\sum(X - \bar{X})(Y - \bar{Y}) = 8400$, find $b_{yx} = ?$ and $b_{xy} = ?$
- 19- Explain the difference between fixed variable and random variable.
- 20- Given $\bar{X} = 40$, $\bar{Y} = 180$ and $b = 2$, find the value of intercept "a".
- 21- If $b_{yx} = 1.6$ and $b_{xy} = 0.4$, find the value of r_{xy} .
- 22- Given $b_{xy} = -0.86$, $b_{yx} = -0.85$, find r_{xy}
- 23- Define simple linear regression.
- 24- Find the slope and intercept of the line whose equation is $3x - 5y = 20$.
- 25- Given $\sum(X - \bar{X})(Y - \bar{Y}) = 0$, $\sum(X - \bar{X})^2 = 10$, $\sum(Y - \bar{Y})^2 = 10$ and $n = 5$, find the coefficient of correlation.
- 26- Explain the method of least square.
- 27- What is the range of the correlation coefficient "r".
- 28- If $r = 0.48$, $s_{xy} = 36$, $s_x^2 = 16$, find the value of S_y .
- 29- Explain scatter diagram.
- 30- What are the parameters of the simple linear regression model?
- 31- Explain the term residual.



Chapter # 15

- 1- Define contingency table.
- 2- Define rank correlation.
- 3- Give formulae for spearman's rank correlation.
- 4- Give formulae for yule's co-efficient of association.
- 5- Define class and class frequency in contingency table.
- 6- Define the term dichotomy for attributes.
- 7- What is positive and negative association?
- 8- What is a contrary class?
- 9- Define independence of attributes.
- 10- Whether the two attributes are independent or associated for the given data:
N = 1024, (A) = 640, (B) = 384 and (AB) = 54
- 11- Given that $\chi^2 = 20.178$, if d.f. = 4 , $\alpha = 0.01$. find table value of χ^2 (*chi square*) would be.
- 12- What is difference between attribute and variable?
- 13- Explain the term association of attributes.
- 14- Interpret the meaning of Q = +1
- 15- Given (AB) = 30 , (A) =40, find $(A\beta)$.
- 16- What is perfect positive association?
- 17- Define chi-square.
- 18- Given (A) = 200, (B) = 800 and N = 1000, find (AB). Assuming A and B are independent.



Chapter # 16

- 1- Define analysis of time series.
- 2- Write down main components of time series.
- 3- Write two merits of moving average method.
- 4- Define seasonal variations.
- 5- Define principle of least square.
- 6- Write down two properties of least square line.
- 7- Enlist the different methods of measuring secular trend.
- 8- Define time series in short.
- 9- Write down four phases of a business cycle.
- 10- Given that $\sum X = 0$, $\sum Y = 245$, $\sum X^2 = 28$, $\sum XY = 66$ and $n = 7$. Fit linear trend.
- 11- Explain irregular trend.
- 12- Give two examples of seasonal trend.
- 13- Write the name of methods to measure secular trend.
- 14- Define signal.
- 15- Define stationary time series.
- 16- Define the term secular trend.
- 17- Define noise.
- 18- Write down two advantages of the semi-average method.
- 19- What is historigram?
- 20- Give any two examples of cyclical variations.
- 21- Explain two models of time series.
- 22- Define seasonal variation and give examples.



Chapter # 17

- 1- Differentiate between hardware and software.
- 2- What is secondary storage> explain with examples.
- 3- What is computer software?
- 4- What is compiler?
- 5- Define central processing unit.
- 6- What is a super computer?
- 7- What do you understand by ALU?
- 8- What is mean by programming?
- 9- What is minicomputer?
- 10- What do you know about DOS?
- 11- Write down the names of different computers.
- 12- What is CPU?

