## UNIVERSITY OF THE PUNJAB, LAHORE

## Examination B.A/B.Sc. (Part-II) <br> Statistics (Sample Paper)

## Students will be given hundred (75) MCQs and a specified time for each question. Following is the sample for the same.

Note: $\quad$ Attempt ALL questions. All questions carry equal marks.
In all bellow $\theta$ is parameter (population characteristic) and $\hat{\theta}$ represents a sample estimate, OLS represent ordinary least square estimator.

| Q. | Some possible answers are given for each of the followings, encircle (or tick) the correct answer. | Difficul ty level | $\begin{aligned} & \hline \text { ke } \\ & \mathbf{y} \\ & \hline \end{aligned}$ | Syllabus portion |
| :---: | :---: | :---: | :---: | :---: |
| 1. | Sample is the ------ portion of a population that represents almost all the properties of the population under study. | easy | B | Sampling \& sampling distributions |
|  | A) small B) small enough |  |  |  |
|  | C) sufficiently large ${ }^{\text {D) maximum portion }}$ |  |  |  |
| 2. | A systematic random sample does not yield good results if | easy | A | Sampling \& sampling distributions |
|  | A) variation in units is periodic |  |  |  |
|  | B) variation in units is constant |  |  |  |
|  | C) variation in samples is constant |  |  |  |
|  | D) each sample results in different output |  |  |  |
| 3. | The mean of a chi-square distribution is equal to ----and its variance is equal to ---- | Difficult | D | Hypothesis testing |
|  | $\begin{array}{ll}\text { A) } \bar{x}, \sigma^{2} / n & \text { B) zero, } \sigma^{2} / n\end{array}$ |  |  |  |
|  | C) $2 \mathrm{n}, \mathrm{n}$ D $\mathrm{n}, 2 \mathrm{n}$ |  |  |  |
| 4. | The test statistic to be used to test $H_{o}: \sigma^{2}=c$ vs $H_{o}: \sigma^{2} \neq c$ with usual notations is | modera te | A | Hypothesis testing |
|  | A) $\chi^{2}=\left[(n-1) s^{2}\right] / c \quad$ B) $\chi^{2}=\left[(n-1) s^{2}\right] / c^{2}$ |  |  |  |
|  | C) $\chi^{2}=\left[n s^{2}\right] / c \quad$ D) $\chi^{2}=[(n-1) s] / c$ |  |  |  |
| 5. | the mean of the $t$-distribution is ---- when $v \geq 2$ and the mean is ----- for $v=1$. where $v$ is degree of freedom | Difficult | B | Hypothesis testing |
|  | $\begin{array}{ll}\text { A) zero,1 } & \text { B) zero, undefined }\end{array}$ |  |  |  |
|  | $\begin{array}{ll}\text { C) undefined, } 1 & \text { D) } 1, \text { zero }\end{array}$ |  |  |  |
| 6. | The F-distribution is skewed to the ---. But as the degrees of freedom $v_{1}$ and $v_{2}$ become large, the F -distribution approaches the ----- distribution. | modera te | C | Hypothesis testing |


|  | A) right, poisson $\quad$ B) left, poisson |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | C) right, normal $\quad$ D) left, normal |  |  |  |
| 7. | The between samples sum of squares is calculated by the formula------- where $r$ and $c$ represent the number of rows and columns respectively. | modera te | B | ANOVA |
|  | A) $c \sum_{j=1}^{k}\left(\bar{X}_{\cdot j}-\bar{X} . .\right)^{2}$ <br> B) $\sum_{j=1}^{k}\left(\bar{X}_{. j}-\bar{X} . .\right)^{2}$ |  |  |  |
|  | C) $r \sum_{j=1}^{k}\left(\bar{X}_{i .}-\bar{X} . .\right)^{2}$ <br> D) $r \sum_{j=1}^{k}\left(\bar{X}_{. j}-\bar{X}_{. .}\right)^{2}$ |  |  |  |
| 8. | The between samples sum of squares is calculated by the formula------- where $r$ and $c$ represent the number of rows and columns respectively. | modera te | A | ANOVA |
|  | A) $\frac{\sum_{j} T_{j}^{2}}{r}-\frac{T_{.}^{2}}{n}$ <br> B) $\frac{\sum_{j} T_{. j}^{2}}{c}-\frac{T_{.}^{2}}{n}$ |  |  |  |
|  | $\begin{array}{ll}\text { C) } c\left(\frac{\sum_{j} T_{. j}^{2}}{r}\right)-\frac{T_{.}^{2}}{c} & \text { D) }\left(\frac{\sum_{j} T_{. j}^{2}}{r}\right)-\frac{T_{.}^{2}}{c}\end{array}$ |  |  |  |
| 9. | Randomized complete block design is a | easy | C | Design of experiments |
|  | $\begin{array}{ll}\text { A) three restrictional design } & \text { B) no restrictional design }\end{array}$ |  |  |  |
|  | C) one restrictional design $\quad$ D) two restrictional design |  |  |  |
| 10 | A replication is used to decrease the ----- and thereby to increase -----, which is a measure of the variability of the experimental error | difficult | D | Design of experiments |
|  | A) sample size, precision $\quad$ B) labor, sample size |  |  |  |
|  | C) error, efficiency $\quad$ D) experimental error, precision |  |  |  |

