

2021

BIOCHEMISTRY — HONOURS

**Paper : DSE-B-4
(Research Methodology)**

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer **any five** questions from the following: 2×5
- (a) What is the difference between research methodology and methodology in research?
 - (b) What is variable?
 - (c) What do you mean by basic research?
 - (d) What do you mean by epidemiology?
 - (e) What is called 'Statistically Significant Data'?
 - (f) How do you choose study population for your research?
 - (g) Define SOP.
 - (h) What is standard error?
 - (i) What is the significance of doing research?
 - (j) How would you differentiate between simple random sampling and complex random sampling designs?
2. Answer **any two** questions from the following:
- (a) What do you mean by 'Sample Design'? What points should be taken into by a researcher in developing a sample design for this research project? 2+3
 - (b) Distinguish between cluster and area sampling. What are the guiding considerations in the construction of questionnaire? Explain. 2+3
 - (c) Distinguish between the following: 3+2
 - (i) Random sampling and non-random sampling
 - (ii) Point estimate and interval estimation.
 - (d) What is a t-test? When is it used and for what purpose(s)? Explain by means of examples. 2+3

Please Turn Over

Answer **any three** questions from the following.

3. (a) Distinguish between the following:
- (i) Null hypothesis and alternative hypothesis
 - (ii) Simple hypothesis and composite hypothesis.
- (b) What is Chi-square test? Explain its significance in statistical analysis.
- (c) Explain the meaning of analysis of variance. (2+2)+3+3
4. Explain the meaning of the following in context of Research design.
- (i) Extraneous variables; (ii) Confounded relationship; (iii) Research hypothesis; (iv) Experimental and Control groups; (v) Treatments. 2+2+2+2+2
5. Suppose a certain hotel management is interested in determining the percentage of the hotel's guests who stay for more than 3 days. The reservation manager wants to be 95 per cent confident that the percentage has been estimated to be within $\pm 3\%$ of the true value. What is the most conservative sample size needed for this problem? Describe briefly the technique of analysis of variance for one-way and two-way classifications. 5+5
6. (a) What is research design? Discuss the basis of stratification to be employed in sampling public opinion on inflation.
- (b) The following are the number of departmental stores in 15 cities:
35, 17, 10, 32, 70, 28, 26, 19, 26, 66, 37, 44, 33, 29 and 28.
If we want to select a sample of 10 stores, using cities as clusters and selecting within clusters proportional to size, how many stores from each city should be chosen? (Use a starting point of 10.)
- (c) "A systematic bias results from errors in the sampling procedures". What do you mean by such a systematic bias? Describe the important causes responsible for such a bias. 3+4+3
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