

**M. Sc. (Audiology) (2018 Course) Sem – I : SUMMER - 2019**  
**SUBJECT : RESEARCH METHODS, STATISTICS AND EPIDEMIOLOGY**

**Day** : Tuesday  
**Date** : 21/05/2019

**S-2019-3976**

**Time** : 10.00 AM TO 01.00 PM  
**Max. Marks** : 80

**N.B.**

- 1) All questions are compulsory.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Answer to both the parts A and B should be written in **SEPARATE** answer book.

**PART – A (RESEARCH AND EPIDEMIOLOGY)**

- Q.1** Attempt **ANY TWO** of the following. **(2 x 15 = 30)**
- a) Explain different types of research in behaviour science.
  - b) Explain the application of group and single subject designs.
  - c) Explain the influence of epidemiology on ethical and professional issues.
- Q.2** Attempt **ANY FOUR** of the following. **(4 x 5 = 20)**
- a) Statistical techniques used in epidemiological research.
  - b) Any two methods of sampling.
  - c) Advantages and disadvantages of cross sectional studies.
  - d) Briefly explain health technology assessment in terms of research publication.
  - e) Explain experimental and control group.

**PART - B - STATISTICS**

- Q.3** Attempt **ANY TWO** of the following. **(2 x 10 = 20)**
- a)
- i) Define probability. Explain various types of events and define two theorems of probability.
  - ii) Two research laboratories have independently produced drugs that provide relief to arthritis sufferers. The first drug was tested on a group of 90 arthritis sufferers and produced an average of 8.5 hours of relief and a sample S.D. of 1.8 hours. The second drug was tested on 80 arthritis sufferers, producing an average of 7.9 hours of relief and a sample S.D. of 2.1 hours. At 5 % I.O.S. does the second drug provide a significantly shorter period of relief.

b)

- i) The editor in chief of a major metropolitan news paper has been trying to convince the papers owner to improve the working conditions in the pressroom. He is convinced that the noise level when the presses are running creates unhealthy levels of tension and anxiety. He recently had a psychologist conduct a test during which press operators were placed in rooms with varying levels of noise and then given a test to measure mood and anxiety levels. The following table shows the index of their degree of arousal or nervousness and the level of noise to which they were exposed

Noise level	4	3	1	2	6	7	2	3
Degree of arousal	39	38	16	18	41	45	25	38

- a) Plot this data.
  - b) Find two regression equations.
  - c) Predict the degree of arousal we might expect when the noise level is 5.
- ii) Write short note on 'ANOVA'.

**P.T.O.**

- c)
- i) Distinguish between parametric and non-parametric test of significance.
  - ii) An educator has the opinion that the grades high school students make depend on the amount of time. They spend listening to music. To test this theory he has randomly given 400 students a questionnaires. Within the questionnaires 2 questions. How many hrs. per week do you listen to music? What is average grade for all your classes? The data from the survey are in the following table. Using a 5% I.O.S. test whether grades and time spend listening to music are independent or dependent.

Hours spent listening to me	Average grade					
	A	B	C	D	F	
25 hrs	13	10	11	16	5	55
5-10 hrs	20	27	27	19	2	95
11-20 hrs	9	27	71	16	32	155
720 hrs	8	11	41	24	11	95
	<b>50</b>	<b>75</b>	<b>150</b>	<b>75</b>		<b>400</b>

**Q.4** Attempt ANY TWO of the following.

(2 x 5 = 10)

- a) Explain with example partial and multiple correlations.
- b) Write short note on 'measure of dispersion'.
- c) Explain properties of Arithmetic mean.

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