

SUPPLEMENTARY
DOCTOR OF PHARMACY
Fourth Year Pharm. D. :SUMMER- 2022
SUBJECT : BIostatistics & RESEARCH METHODOLOGY

Day : Wednesday

Time : 02:00 PM-05:00 PM

Date : 21-09-2022

S-5746-2022

Max. Marks : 70

N. B. :

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Draw neat and labelled diagrams **WHEREVER** necessary.
- 5) Use of non-programmable electronic pocket calculator is **ALLOWED**.
- 6) Statistical tables (for reference) and the graph papers will be provided by the exam centre.

SECTION – I

- Q. 1 a)** Attempt **ANY FOUR** of the following: **(08)**
- i) What is the Latin Square Design?
 - ii) What is control group?
 - iii) Explain the importance of computer in data analysis.
 - iv) Explain the experimental design.
 - v) What is computerized retrieval?
 - vi) Write the ideal features of report writing.
- b)** Write the importance of sample size determination in research. **(03)**
- Q. 2** What is research design? Explain different steps used in planning of research design. **(12)**
- Q. 3 a)** Explain in detail importance of computer in community pharmacy. **(07)**
- b)** Elaborate in detail structure and content of research report. **(05)**
- Q. 4** Write a short note on **ANY THREE** of the following: **(12)**
- a) Case studies in clinical research
 - b) Medication order entry
 - c) Interventional studies in research
 - d) Sample size and confidential interval

SECTION – II

- Q. 5 a)** Attempt **ANY FOUR** of the following: **(08)**
- i) State any two guidelines for making the classes/groups for a big data.
 - ii) Name and give one example each of the two types of data.
 - iii) Define median.
 - iv) State any two characteristics of the Normal Distribution Curve.
 - v) Name any two non-parametric tests of inference indicating when they are used.
 - vi) What is the minimum and maximum value of the Probability?

P. T. O.

b) Explain any one of the statistical softwares. (03)

Q. 6 a) Following are the data in respect of the number of patients undergoing the treatments in a Cancer Hospital. (06)

Age (years)	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Patients	7	13	12	19	11	8	2

Draw the 'Less than Ogive' graph. Using the Graph find the approximate value of the 'Median'.

b) Find the Arithmetic Mean (\bar{x}) and the Mode (z) for the following data: (06)

Patients admitted on	Mon	Tue	Wed	Thur	Fri	Sat	Sun
No. of Patient	10	13	19	11	14	22	7

Q. 7 a) If there are on the average 3 R.B.C.s in a specific volume of blood for a healthy individual what is the probability that for a randomly selected healthy individual there are at least 2 R.B.C.s in the same volume. (06)

b) Compute the Karl Pearson's correlation coefficient for the following data: (06)

Age of the mother (years)	22	26	30	34	38
Weight of the new born baby (kgs)	3.2	3.0	3.4	2.8	2.6

Q. 8 a) Following are the observations in respect of the randomly selected Indian Ladies from a randomly selected locality: (06)

Hb Level

In 2000	12.9	12.3	13.1	13.4	12.7	12.5	13.0	12.2	13.2
In 2008	14.5	14.2	13.9	13.2	13.7	13.8	14.3	13.6	13.5

Using the sign test; test the Hypothesis that over these 8 years there is significant improvement in Hb levels for the Indian Ladies (Use 5 % L.O.S.)

b) Following is the data in respect of the exercise pattern A, B, C and D followed and the reduction in weight over a month: (06)

Reduction in weight in kgs.

A →	3.2	3.9	3.7	4.2	4.5	2.8	2.9
B →	4.2	5.7	4.3	5.4	5.8	4.9	5.1
C →	2.9	2.2	2.5	3.1	3.2	3.3	3.4
D →	5.8	6.0	6.2	6.1	5.7	5.4	5.5

Draw ANOVA table and decide whether there is a significant difference in the reduction due to the various exercise patterns. (Use 5 % L.O.S.)

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