P P SAVANI UNIVERSITY

Seventh Semester of B. P.T. Examination

January 2020

SPPT4040 Research Methodology And Biostatistics

13.01.2020, Monday **Time: 09:00 a.m. To 12:00 p.m.** **Maximum Marks: 70**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 **Essay Question(Any One)** **[10]**

(i) What is research? Discuss the different steps of research process.

(ii) Discuss the methods of graphical presentation of data with appropriate diagrams.

Q - 2 **Short Note(Any Two)** **[10]**

(i) Illustrate the various levels of measurement with examples.

(ii) Identify the common problems encountered by researchers in India.

(iii) Express the need of research in the field of medical sciences.

Q - 3 **Very Short Notes(Any Five)** **[15]**

(i) Ethics in research

(ii) Types of research report

(iii) Outline the criteria for good research design

(iv) Different types of research emphasizing Qualitative Vs Quantitative research

(v) Importance of statistics in research

(vi) Research method Vs Methodology

(vii) Methods of sampling

SECTION – II

Q - 1 **Essay Question(Any One)** [10]

(i) For a bivariate data, the mean value of x is 20 and the mean value of y is 45. The regression coefficient of y on x is 4 and that of x on y is $\frac{1}{9}$. Find

(a) The coefficient of correlation.

(b) The standard deviation of x if the standard deviation of y is 12.

Also write down the equations of regression lines.

(ii) If the two lines of regression are $4x-5y+30=0$ and $20x-9y-107=0$, which of these are lines of regression of x on y and y on x? Find r_{xy} and σ_y when $\sigma_x = 3$

Q - 2 **Short Note(Any Two)** [10]

(i) A dice is tossed 120 times with the following results:

No. turned up:	1	2	3	4	5	6
Frequency (f_0):	30	25	18	10	22	15

Test the hypothesis that the dice is unbiased, given that $\left(\chi^2_{0.05,5} = 11.7\right)$.

(ii) Two random samples of sizes 9 and 6 gave the following values of the variable

Sample 1: 15 22 28 26 18 17 29 21 24

Sample 2: 8 12 9 16 15 10

Test the difference of the estimates of the population variances at 5% level of significance, given that $\left(F_{0.05}(8,5) = 4.82\right)$.

(iii) 12 individuals had taken an exam and we want to test whether their scores, all together, are significantly different from the score of 105. It is given that $\bar{x} = 109.58$, $\mu = 105$, $s = 6.25$ and given that $\left(t_{0.05,9} = 2.75\right)$.

Q - 3 **Very Short Notes(Any Five)** [15]

(i) Write the distribution function of standard normal distribution

(ii) Define ANOVA and types of ANOVA

(iii) Define Population and Sample

(iv) Write the first and second moments about the actual mean

(v) Define histogram and frequency curve

(vi) Write Skewness and Kurtosis

(vii) Define hypothesis and types of errors.

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