**Q.P.Code:11658**

**Time: 3 Hours** **Total Marks: 75**

Note: (1) All questions are **compulsory**
(2) Use of statistical tables and scientific calculators wherever required is permitted
(3) Graphs / Figures if any to be drawn on the answer sheet itself

Q.1 (A) Answer the following (14)

i. Calculate median and mode for the following
110, 130,130,140,150,440
ii. If you have a standard score of Z = 2, what percentage of the population has scores less than you?
iii. Name two non parametric tests for hypothesis testing
iv. Define positive and negative predictive value in Bayes Theorem
v. Name any two computer softwares used for statistical analysis
vi. A school has 80 girls and 20 boys. It is observed that 42 girls and 12 boys wear eye glasses What is the probability if a student is picked up randomly wears eye glasses and what is the probability that if a student is picked up randomly is boy and wears eye glasses?
vii. What is lognormal distribution and fudicial limits?

Q.1 B) Fill in the gaps (3)

i) For a given data coefficient of correlation is found to be 0.958 hence it is concluded that there exists _____ correlation between dependant and independent variables
a) Positive b) Negative c) No correlation

ii) A false negative result in Bayes therom is when test indicates a positive status when the true status is -_____ .
a) Positive b) Negative c) none of the above

iii) For unpaired t test the number of observations in the two sets are _____
a) Equal b) Unequal c) difference is zero

Q.1 C) Multiple choice questions ,select and write an appropriate option correctly : (3)

**i) Which section of a journal article is provided in most online electronic databases?**
a. Conclusion.
b. Abstract.
c. Results.
d. Introduction.

ii) **Which of the following would usually require the smallest sample size because of its efficiency?**
a. One stage cluster sampling
b. Two stage cluster sampling
c. Simple random sampling
d. Quota sampling

**Turn Over**

iii) **A scientific explanation that remains tentative until it has been adequately tested is called**

a. a theory.
b. a law
c. a hypothesis.
d. an experiment.

Q2.A)Write a note on sampling methods. (4)

**OR**

Q2 **A)** Scores made by certain aptitude test by nursing students are approximately normally distributed with mean of 400 and variance of 10 (4)

a) What proportion of those taking the test score below 150?
b) What is a probability that a person will score more than 450?

Q.2 B) In an experiment to investigate effect of smoking on platelet aggregation a study was carried out by expposing 12 subjects to adenosine diphosphate before and after smoking followed by determination of platelet aggrgation and the results are as follows. Apply suitable sstatistical test and state if smoking affects platelet aggregation (4)

| % Platelet Aggregation | Subjects | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Before smoking | 70 | 82 | 66 | 69 | 75 | 72 | 77 | 49 | 54 | 66 | 69 | 36 |
| After smoking | 60 | 78 | 64 | 68 | 72 | 76 | 74 | 46 | 48 | 60 | 64 | 27 |

Q.2 C) Give salient features of Normal Distribution Curve (3)

**OR**

Q.2 C) Suppose it is known that 10 percent of a certain population is color blind. If a random sample of 25 people is drawn from this population, What is the probability that exactly five will be colour blind. (3)

Q.3 (A) A study measured the % of drug dissolved in-vitro and time to achieve peak plasma concentration (in-vivo) of six phenytoin sodium products. Results are tabulated below.

| Time to achieve Cmax (Hours) | % dissolved in 30 min |
|---|---|
| 6 | 20 |
| 4 | 60 |
| 2.5 | 100 |
| 4.5 | 80 |
| 5.1 | 35 |
| 5.7 | 35 |

Calculate the correlation co-efficient. 4

**Turn Over**

(B) What are hypothesis tests? Explain the following terms associated with hypothesis tests

i. Null hypothesis and alternate hypothesis
ii. Type I and type II errors
iii. Power
iv. p value 4

OR

(B) The weights at birth (in kg) of eight children born in a civil hospital are found to be-

3.5, 4, 3, 3.2, 4.5, 3.2, 4.1, 3.6

Can it be concluded that the mean weight is significantly different from 4kg 4

(C) Write a note on linear regression. 3

Q.4 (A) Name any three experimental designs. Describe any one in detail. 4

(B) In an anti-malarial campaign, quinine was administered to 812 persons out of a total population of 3248. The number of fever cases is given below

| Treatment | Number of persons showing | |
|---|---|---|
| | Fever | No fever |
| Quinine | 20 | 792 |
| No quinine | 220 | 2216 |

Is there evidence to show that quinine is effective in controlling malaria. 4

OR

(B) Name three non-parametric tests. Discuss any one in detail. 4

(C) Complete the ANOVA table 3

| Source | Degrees of freedom | Sum of squares | Mean square | F |
|---|---|---|---|---|
| Between treatment | 6 | ?? | 16.425 | ?? |
| Within treatment | ?? | 26 | ?? | |
| Total | 19 | ?? | | |

Q.5. A) Explain the role of inquiries in the form of questionnaires, optionaires or interviews as a tool used in research (4)

B) i) Explain how literature survey is done (2)
ii) What are different types visual aids? (2)

C) Explain what is assessment and evaluation? (3)

Q.6 A) Write in detail requirements and preparation of patent proposal (4)

B) i) Give contents and format of a poster presentation (2)
ii) Write in short about computer data analysis (2)

C) Discuss in brief about contents of research paper? (3)