2015 (A) Roll No: _____

INTERMEDIATE PART-II (12th CLASS)

STATISTICS PAPER-II (OLD SCHEME) TIME ALLOWED: 2.40 Hours

SUBJECIVE MAXIMUM MARKS: 68

NOTE: - Write same question number and its part number in answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i) Explain reproductive property of Normal Distribution.

(ii) Give importance of Normal Distribution.

(iii) What is role of σ in Normal Distribution?

(iv) If Second Moment about mean is 4 for $X \sim N\left(\mu,\ \delta^2\right)$ find μ_3 and μ_4.

(v) Write down the equation of normal curve also give its maximum ordinate.

(vi) Differentiate between Estimator and Estimation.

(vii) Differentiate between Point Estimator and Interval Estimator.

(viii) Differentiate between Acceptance Region and Rejection Region.

(ix) Differentiate between $z-$test and $t-$test.

(x) Define RAM.

(xi) Differentiate between Hardware and Software.

(xii) What is meant by Estimate?

3. Attempt any eight parts. **8 × 2 = 16**

(i) Differentiate between Probability and Non-probability Sampling.

(ii) Differentiate between Simple Random Sampling and Stratified Random Sampling.

(iii) Differentiate between Sampling Unit and Population Unit.

(iv) Differentiate between Sampling Design and Sampling Frame.

(v) Given $N = 7,\ \ n = 3$ and $\mu_{\hat{P}} = 3/7$. If sampling is done without replacement, find $\delta^2_{\hat{P}}$.

(vi) Given $\mu = 140,\ \ \delta = 20$ and $S.E\left(\overline{X}\right) = 5$. Find $'n'$.

(vii) Define Regression.

(viii) Explain Scatter Diagram.

(ix) What is meant by Residual?

(x) Differentiate between Positive and Negative Correlation.

(xi) Given $S_{xy} = 72,\ \ S_x = 4$ and $S_y = 18$. Find r_{xy}.

(xii) If $b_{yx} = -1.6$ and $b_{xy} = -0.4$, find r_{xy}.

4. Attempt any six parts. **6 × 2 = 12**

(i) What is the difference between Attribute and Variable?

(ii) What is meant by Association?

(iii) Whether the two attributes are Independent or Associated for the given data
$N = 1024\ \ \left(A\right) = 1024,\ \ \left(B\right) = 384\ \ \left(AB\right) = 54$

(iv) Define a Time Series.

(v) Enlist the components of Time Series.

(vi) What do you understand by Analysis of Time Series?

(vii) Write down the normal equation of second degree parabola: $y = a + bx + cx^2$

(viii) Describe the Seasonal Variations.

(ix) Differentiate between Signal and Noise.

P.T.O

SECTION-II

NOTE: - Attempt any three questions.

5.(a) If the random variable 'X' follows Normal Distribution $N(56, 100)$, then find
(i) $P(X \geq 68)$ (ii) $P(56 \leq \times \leq 65) = ?$ 4

(b) In Normal Distribution $Q_3 = 17$ and $Q_1 = 8$ find Mean and Standard Deviation of Normal Distribution. 4

6.(a) A population consists of five numbers 2, 4, 6, 8, 10. Take all possible sample of size 2 with replacement from this population. Find the mean and standard deviation of sampling distribution of mean. 4

(b) Two random samples each of size two are taken with replacement from two population given as
Population I 2 and 4
Population II 1 and 3
Form a sampling distribution of $(\overline{X}_1 - \overline{X}_2)$ and show that $4_{\overline{X}_1 - \overline{X}_2} = \mu_1 - \mu_2$ 4

7.(a) A random sample of 500 workers of the labour force in a certain region showed that 40 were unemployed. Construct the 95% confidence interval for the employed people in the region. 4

(b) Test the hypothesis $U = 86$ at 0.05 level of significance.
Given $n = 25,\ \overline{X} = 82,\ S = 16,\ 0$ Assuming normal distribution. 4

8.(a) Given that $\overline{X} = 54,\ \overline{Y} = 2.8,\ b_{xy} = -0.2,\ b_{yx} = -1.5$ Estimate both regression lines. 4

(b) $n = 23,\ \sum x = 2433,\ \sum y = 4245,\ \sum x^2 = 281019,\ \sum y^2 = 841786,\ \sum xy = 482788$
Compute coefficient of correlation. 4

9.(a) Calculate the value of χ^2 from the following data and test the association between general ability and mathematical ability. Use $\alpha = 0.05$ 4

	Mathematical ability		
General ability	Good	Fair	Poor
Good	91	52	19
Fair	230	214	222
Poor	82	122	188

(b) Fit a parabola to the following time series data taking years as independent variables. Use your results to estimate the value for the year 2000. 4

Year	1990	1993	1996	1999	2002	2005	2008
Values	87	42	33	29	36	69	79