

Q.P. Code :00044**[Time: $2\frac{1}{2}$ Hours]****[Marks:75]**

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory carrying 15 marks each.
 2. Figures to the right indicate marks of sub questions.
 3. Use of the simple calculator is allowed.

Q.1. a) Fill in the blanks by choosing appropriate option. (Any Eight)

(08)

1. Ogive can be used to find _____.
(a) Arithmetic mean (b) median
(c) Mode (d) none of these
2. The mode of 12,34,56,78,12,45 is _____.
(a) 12 (b) 56 (c) 45 (d) none of these
3. The mid-point of a class interval is called the _____.
(a) Class limit (b) class mark
(c) class width (d) None of these
4. If $b_{yx} = \frac{7}{6}$ and $b_{xy} = \frac{8}{15}$ then $r =$ _____.
(a) 0.62 (b) 0.78 (c) -1 (d) None of these
5. At maxima and minima, the first order derivative is _____.
(a) Greater than zero (b) less than zero
(c) zero (d) none of these
6. $f(x) = e^{5x+3}$ is a _____ function.
(a) Linear (b) exponential
(c) quadratic (d) constant.
7. If variable cost per article is Rs.200 and fixed cost is Rs.3,00,000 then total cost function is _____.
(a) $C=200+3,00,000$ (b) $C= 200x+3,00,000$
(c) $C= 200+3,00,000x$ (d) none of these
8. The coefficient of correlation 'r' always lies between.
(a) 0 and 1 (b) -1 and +1 (c) -1 and 0 (d) none of these.
9. If the payments are made at the end of the successive periods, then it is _____ annuity.
(a) Immediate (b) certain
(c) level (d) contingent
10. Simple interest on Rs. 1000/- for 3 years at 8% p.a. interest rate is Rs. _____.
(a) 3000 (b) 24000 (c) 240 (d) none of these

Q.P. Code :00044

b) State whether True or False (Any seven)

1. Median is a positional average.
2. If two variables vary together in opposite direction, the correlation is positive.
3. An annuity is which all payments are equal is called uniform annuity.
4. Mode is capable of further algebraic treatment.
5. In Census method, only some individuals in the population are studied.
6. Range is determined only by two points in the data set.
7. At equilibrium point, revenue is equal to cost.
8. If $f(x)=7^x$, then $f(0) = 1$
9. Another name for future value is discounted value.
10. Both the regression coefficients b_{yx} and b_{xy} always are of same sign.

(07)

Q.2. a) Find the mode for the following data:

Amount in Rs.	200-300	300-400	400-500	500-600	600-700	700-800
No. of customers	3	10	30	34	18	5

b) The total cost function is given by $C=56,000+30x$ and the total revenue function is given by $R=110x$ where x is the quantity produced and sold. Find the break-even point. (07)**OR**

P) Find the regression equation of Y on X.

X	40	30	30	50
Y	50	60	40	60

q) Differentiate the following w. r. t. x .

$$y = \frac{5^x + 1}{x^2 - 3}$$

(07)

Q.3. a) Find the quartile deviation for the following data.

Length of life in hours	500-700	700-900	900-1100	1100-1300	1300-1500
No. of tube lights	5	15	22	10	8

b) Find the maturity amount of a 2 year fixed deposit of Rs. 3,30,000 at 6% p.a. if the interest is compounded quarterly. (07)

OR

P) Find the standard deviation for the following data:

Measurement in cms.	16-18	18-20	20-22	22-24	24-26
No. of units	50	250	350	225	25

(08)

q) A housing society decides to set aside a certain sum at the end of each year to create a sinking fund, which should amount to Rs. 5,00,000 in 4 years at 12% p.a. Find the amount to be set aside each year. (07)

Q.P. Code :00044

Q.4. a) A loan of Rs. 1,00,000 is to be returned in 4 equal monthly installments at 12% p.a. Find the EMI using reducing balance method. (08)

b) Find Spearman's Rank correlation for the following data: (07)

Rank I	1	2	3	4	5	6
Rank II	2	1	3	5	4	6

OR

p) Find Karl Pearson's coefficient of correlation for the following data: (08)

X	15	18	20	19	22
Y	9	10	11	11	12

q) If the demand function is given by (07)

$$p = 4 + 3D - 5D^2, \text{ find}$$

(i) total revenue function

(ii) average revenue function

(iii) marginal revenue function

Also. Find the marginal revenue when $D=2$.

Q.5. a) Explain various methods of collecting primary data. (08)

b) Explain function and its types. (07)

OR

Write short notes on any three of the following : (15)

- 1) Merits and Demerits of Arithmetic mean.
- 2) Annuity and its types.
- 3) Functions of statistics.
- 4) Prerequisites of a good questionnaire.
- 5) Scatter diagram.