

RAN-2508000603033001
B.Com. (Data Analytics) (Sem.–III) Examination March - 2026
MDC-Econometrics For Data Analytics
[Total Marks: 50
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book

Seat No.:

Student's Signature

Q.1. Answer the following questions: (Any Five)
10

- If $r_{12} = r_{13} = r_{23} = 0.5$ then find The Values of $r_{12.3}$.
- Convert the yearly trend equation $Y = 600 + 72x$ into a quarterly trend equation.
- If the price of a commodity reduces by 8% and its demand increases by 10%, then find elasticity of demand.
- The total cost function of a commodity is $C = 100 + 3x + 0.015x^2$. How many units should be produced to minimize the total cost?
- Find the period of moving average for the following data.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenues	24	23	22	20	24	25	29	31	26

- In a certain trivariate distribution: $s_1 = 3, s_2 = s_3 = 5, r_{12} = 0.6, r_{31} = r_{23} = 0.8$ then find The Values of $b_{12.3}$.
- Given that $r_{12} = 0.7, r_{13} = r_{23} = 0.6$ calculate the $R_{1.23}$.

Q.2. A. Fit a straight line $y = a + bx$ to the following data. Hence, find the trend and short-term variations.
09

YEAR	1976	1977	1978	1979	1980
SALES	98	92	100	112	128

B. Find the three-yearly moving averages and short-term variations.
05

YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993
SALES	110	115	120	111	120	130	131	135	137

OR

- Q.2. A.** Obtain the seasonal variations and irregular variations for the following time series data: (use moving average method) **08**

Year	Summer	Monsoon	Autumn	Winter
1970	50	52	53	57
1971	52	55	56	60
1972	56	57	60	62
1973	58	59	63	67
1974	65	66	67	72

- B.** Obtain trend and short-term variations using five-yearly moving averages: **06**

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Price	110	125	135	140	150	195	210	225	245	255	260
Year	1971										
Price	280										

- Q.3. A.** The total cost function to produce x units of a commodity is $C = 500 + 13x + 5\frac{1}{5}x^2$ and the demand function is $5x = 375 - 3p$. Then how many units should be produced to get the maximum profit? And also find the maximum profit. **05**

- B.** If the demand function of a commodity is $x = 16 - \sqrt{p}$. If the price of commodity $P = 64$ then find the elasticity of demand. **04**

- C.** Given $r_{12} = 0.8, r_{23} = 0.6, r_{31} = 0.5, S_1 = 10, S_2 = 8, S_3 = 5$ find the regression equation of x_2 on x_1 and x_3 . **06**

OR

- Q.3. A.** The Demand function of a commodity is $P = 40 - x$ and total cost function $C = 10 + 5x + 0.25x^2$ then find how many units are produced to maximise profit? And also find the maximum profit. **04**

- B.** Supply function of a commodity is $x = 6P - 40$, find elasticity of supply when price is 12. **04**

- C.** If $s_1 = 2, s_2 = 3 = s_3, r_{12} = 0.6, r_{31} = r_{23} = 0.5$, then find the Values of $b_{12.3}, r_{12.3}, R_{1.23}$. **06**

- Q.4. Write Short Notes (Any Three):** **12**

1. Explain Market Equilibrium.
2. Derive the normal equation to fit a parabola.
3. Explain Short term movements component. .
4. Explain the Moving Average Method.
5. Write the multiple regression equations of (I) x_3 on x_1 and x_2 . (II) x_2 on x_1 and x_3 .