NETTUR TECHNICAL TRAINING FOUNDATION

DIPLOMA IN ELECTRONICS ENGINEERING & EMBEDDED SYSTEM – CP04

II SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JUNE 2023

Subject: Mathematics **Total Time: 2 Hr.**

Subject Code: CP04202T **Total Marks: 50**

PART B

1.0 ANSWER ANY EIGHT OF THE FOLLOWING **2*8=16**

1.1 If $7 : x = 17.5 : 22.5$ find x.

1.2 The radius of a circle is 8 cm. Find its circumference

1.3 Find the distance between the pair of points $(7, -3)$ and $(4,1)$.

1.4 Calculate $\int \frac{1}{x} + 2x^2 + 1 \, dx$

1.5 Find Laplace transform of $f(t) = 1 + 7sin5t$

1.6 Define positive correlation. Give one example.

1.7 Evaluate $\int_4^5 1 \, dx$

1.8 Find the midpoint of the two points (6, 7) and (-8, -9).

1.9 Evaluate $\int \frac{1}{sin^2 x} \, dx$

1.10 Find 5th term in the sequence 5, 15, 45, ...

2.0 ANSWER ANY SIX OF THE FOLLOWING **3*6=18**

2.1 Find x if 5x+15 : 2x+3 =10:3

2.2 The vertices of a triangle are (1,1), (2,-3) and (3,4). Find its centroid.

2.3 Write the general formula for nth term for the sequences 96, 88, 80, 72, 64, …

2.4 Find $\int (2x + 1)(x - 1) \, dx$

2.5 Find Laplace inverse transform of $H(s) = \frac{4s}{s^2+36} - \frac{2}{s^2+81}$

2.6 Find the slope of the line passing through the following points (0, 7) and (-2, -3)

2.7 Write the sequence for the following formula (four terms)

$$a1 = 5; \; a_n = 2a_{n-1} + 3$$

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2.8 The cost price of an item over the years varies as given below:

Year	**Cost**
2001	4
2002	4
2003	6
2004	7
2005	6
2006	5
2007	8
2008	6
2009	7
2010	8
2011	11

Find the simple moving average taking the group of 5years

3.0 ANSWER ANY FOUR OF THE FOLLOWING 4*4=16

3.1 Find the perimeter and area of a triangle whose sides are of length 13cm, 14cm, 15cm.

3.2 Prove that the line passing through the points (9,5) and (−1,1) is parallel to the line passing through the points(3,−5) and (8,−3).

3.3 Find the equation of the line joining (4,6) and (5,8).

3.4 Calculate the area under the curve $y = 8x$ between the coordinates $x = 0$ & $x = 3$

3.5 Find variance and standard deviation of the following data. 10,29,26,28,15,23,17,25,04,1

3.6 Show that the quadrilateral with vertices $A(3,2), B(0,5), C(-3,2)$ and $D(0,-1)$ is a square. Give $A(3,2), B(0,5), C(-3,2)$ and $D(0,-1)$.