

NETTUR TECHNICAL TRAINING FOUNDATION
DIPLOMA IN ELECTRICAL & ELECTRONICS – CP23
II SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JUNE 2023

Subject: Mathematics
Subject Code: CP23202T

Total Time: 2 Hr.
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 $f(t) = 1 + 7\sin 5t$
- 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 n th 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)

$$a_1 = 5; a_n = 2a_{n-1} + 3$$

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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 5 years

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 $D(0, -1)$.

