

NETTUR TECHNICAL TRAINING FOUNDATION
DIPLOMA IN TOOL ENGINEERING & DIGITAL MANUFACTURING – CP01
II SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JUNE 2023

Subject: Mathematics
Subject Code: CP01202T

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 What are the possible number of letter arrangements in the word **MATH**?

1.3 Find the area and perimeter of a parallelogram with sides 19cm and 17 cm. The distance between the parallel sides is 16 cm.

1.4 Find the distance between the pair of points $(-4,6)$ and $(-2, -5)$.

1.5 Find the area of the cardboard needed to make a box of size 24 cm x 12 cm x 5 cm.

1.6 Calculate $\int 2x^3 - 5x + 3 dx$

1.7 Calculate $10! \times 3! \div 5!$

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

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

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

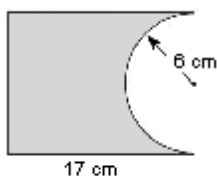
2.0 ANSWER ANY SIX OF THE FOLLOWING

3*6=18

2.1 5 men can complete a job in 32 days. In how many days will 8 men finish the same job?

2.2 In how many ways can 6 people be arranged in a row?

2.3 Find the total area of the shaded figure given below



2.4 Prove that the points $(4, -5)$, $(1, 1)$ and $(-2, 7)$ are collinear.

2.5 Two vertices of a triangle are $(1, 3)$ and $(2, -4)$. If the origin is the centroid of the triangle, find the third vertex

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2.6 The height of a cylinder is 14cm and its curved surface area 704cm^2 . Find its volume and total surface area.

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

2.8 Evaluate $\int x \sin x dx$

3.0 ANSWER ANY FOUR OF THE FOLLOWING

4*4=16

3.1 Find x if $(5x+1) : (2x+3) = 1:2$

3.2 Find the area of a triangle, in which two sides are 18cm and 10cm and the perimeter is 42cm .

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 ordinates $x = 0$ & $x = 3$

3.5 Find the standard deviation of the following data : $16,12,4,17,16,0,24,12,4,18,21,11$

3.6 Find $\int_2^6 3x^2 + 2x dx$