Q.21 Calculate the arithmetic mean of the marks scored by the students of a class in a class test

Marks	0-10	10-20	20-30	30-40	40-50	50-60	Total
No of students	12	18	27	20	17	6	100

Q.22 Find the center and radius of the circle $X^2+y^2-4X-8Y-45 = 0$

Section-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Calculate by Simpon's Rule an approximate value of the integral $\int_0^1 \frac{1}{1+x}dx$

Q.24 Find all the points of maxima and minima and corresponding maximum and minimum values of the function $f(x) = 2x^2-21x^2+36x-20$

Q.25 If $A=\begin{Bmatrix}2 & 4\\ 3 & 2\end{Bmatrix}, B=\begin{bmatrix}1 & 3\\ -2 & 5\end{bmatrix}, C=\begin{bmatrix}-2 & 5\\ 3 & 4\end{bmatrix}$

Evaluate

i) AB and (ii) BC

Roll No. .....

1st Year / Advance Diploma in Tool and Die Making
Subject : Applied Mathematics

Time : 3 Hrs. M.M. : 60

Section-A

Note: Multiple Choice questions. All questions are compulsory. (6x1=6)

Q.1 Value of $(64)^{\frac{1}{3}}$ is

(a) 8 (b) 3
(c) 4 (d) 2

Q.2 Logarithmic form of $(81)^{\frac{1}{4}}=3$ is

(a) 4 log 3 = 81 (b) $1/4=\log_{81} 3$
(c) 4 = 8 log 3 (d) None of these

Q.3 In which quadrant 60^o lies

(a) Ist (b) IInd
(c) IIIrd (d) IVth

Q.4 $\underset{x\to 0}{Lim}\ \frac{Sin\ 4x}{7x}$

(a) 4 (b) 7
(c) $\frac{7}{4}$ (d) $\frac{4}{7}$

Q.5 $\frac{d}{dx}$ (Cos X) =

(a) Sec x (b) Tan x

(c) -Sin x (d) Cos x

Q.6 The centre of circle $x^2+y^2+2gx+2fy+c$ is

(a) (-g,-f) (b) (-g,f)

(c) (g,f) (d) (g,-f)

Section-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Factory of $16y^3-4y$ are_____

Q.8 The number of terms of binomial $\left(2x^2+\frac{5}{x}\right)^6$ are_____

Q.9 The order of matrix $\begin{bmatrix} -1 & 6 & 4 \\ 2 & 1 & 3 \\ -2 & 8 & 9 \end{bmatrix}$ is_____

Q.10 If slope of line AB is 4, then the slope of line CD parallel to AB is_____

Q.11 The following are the marks of 9 students in the class,

34,32,48,24,30,27,21,35 the median is_____

Q.12 Cos (A+B) = _____

Section-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Prove that $\frac{3+2i}{2-3i}+\frac{3-2i}{2+3i}$ is purely Real

Q.14 What is the difference between MATLAB and SCILAB software

Q.15 Prove that $\frac{Cos\ 17°+Sin\ 17°}{Cos\ 17°-Sin\ 17°}=$ tan 62°

Q.16 Find the equation of the line passing through (-3,5) and perpendicular to the line through points (2,5) & (-3,6)

Q.17 Expand the binomial $\left(\frac{4x}{5}-\frac{5}{2x}\right)^5$

Q.18 Differentiate w.r.t x, $y=\frac{1-\cos x}{1+\cos x}$

Q.19 If the law of motion in a straight line is given by formula $S=\frac{1}{2}vt$, Show that acceleration is constant

Q.20 Evaluate $\int 2\sin 4x \cos 3x\, dx$