

Unique Paper Code	:	42353327
Name of the Paper	:	SEC-Mathematical Typesetting System
Name of the Course	:	BSc. (Prog.) CBCS Skill Enhancement Course
Semester	:	III
Duration	:	3 Hours
Maximum Marks	:	38Marks

Instructions for Candidates

Attempt any four questions. All questions carry equal marks.

- 1(i) What is the difference between the commands `\eqnarray` and `\eqnarray*`
- (ii) What is wrong with the following LaTeX input? What is the correct way to do it?

If $m=1$ and $n=2$, then $m+n=3$

- (iii) What is the output of the command `\lim_{x\rightarrow\infty}`?
- (iv) Which command is used to draw a circle with center (x, y) and radius r .
- (v) Which package is used for plotting a function with PSTricks.
- (vi) What is the output of the command

`\frac{d}{dx}\left(\int_0^x f(t)dt\right)=f(x)`

- (vii) Typeset the following in LaTeX: $\lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$

- 2(a) Write a code in LaTeX to get the following: if $x < y - 1$ then $x < y$

- (b) Write the command in LaTeX to obtain the expression: $\left(\frac{a+b}{x+y}\right)^{\frac{2}{3}}$

- (c) Write the command in LaTeX to obtain the expression: $(a + b + a^2b + ab^2)^2$

3. (a) Write a code in LaTeX to get the following:

$$\begin{bmatrix} i & j & k \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{bmatrix}$$

- (b) Write a code in LaTeX to get the following: $|x-2| = \begin{cases} x-2 & x \geq 2 \\ -x+2 & x < 2 \end{cases}$

4. (a) Write the command in PSTricks to plot the function $y = \cos(x)$.

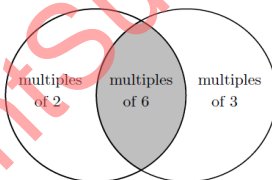
- (b) Write the command in PSTricks to draw the following picture



- 5(a) Write the code to typeset the following:

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} p & q \\ r & s \end{bmatrix} = \begin{bmatrix} ap + br & aq + bs \\ cp + dr & cq + ds \end{bmatrix}$$

- (b) Write the code in PSTricks to draw the following picture



OR

- (b) Write a code in LaTeX to get the following:

The general solution to the differential equation $y'' - 3y' + 2y = 0$ is
 $y = c_1 e^x + c_2 e^{2x}$

6. Using beamer produce a presentation with the following content:

Slide 1: Title of the presentation with authors name and date

Slide 2 : Some trigonometry identities :

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$2 \sin \theta \cos \theta = \sin 2\theta$$

Slide 3: The area of the triangle with the sides a,b,c is given by *Heron's formula* :

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where s is the semiperimeter $(a+b+c)/2$

Slide 4 : Thank you

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