7. (a) Explain what is Beamer and and its primary purpose.

(b) Create a sample slide that includes a title, content and a list.

(c) Explain how to include images in a Beamer presentation.

(d) List three key features of Beamer that make it a useful tool for creating presentation.

(e) Describe the structure of a Beamer slide and its main components. (5×3=15)

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Roll No. ..... Total Pages : 4

**323304**

**December 2023**

**B.Sc. (Mathematics)- IIIrd SEMESTER**

LATEX (SEC-301A)

Time : 3 Hours] [Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

## PART–A

**1.** (a) Typeset the following $C(n,r) = n!/(r!(n-r)!)$. (1.5)

(b) Typeset the following $\|x\| = \sqrt{x.x}$. (1.5)

(c) Write the output of \Rightarrow. (15)

(d) Typeset the output of $L \otimes M$. (15)

(e) What does the command \begin {Center} do in Latex? (1.5)

(f) What does the command \footnote{} do in Latex? (1.5)

(g) What is the output of $\alpha_1^2 + \beta_1^2 + \gamma_1^2 = 0$. (1.5)

(h) What is the purpose of the command \maketitle in Latex? (1.5)

(i) What is PS Tricks? (1.5)

(j) What is the syntax for $\sum_i i$ ? (1.5)

## PART–B

**2.** (a) What is Latex? Why should we use Latex? (8)

(b) Typeset the following $\sqrt[3]{10}, \overline{a}, \sqrt{5}, \sqrt{\frac{x-y}{x+y}}, e^{\sqrt{x}}$ as in line and displayed mathematical text.

**3.** (a) Typeset the following : (8)

$\frac{a+b}{c}\frac{a}{b+c}\frac{1}{a+b+c} \neq \frac{1}{a}+\frac{1}{b}+\frac{1}{c}$ as in line and displayed mathematical text.

And typeset $A = \begin{bmatrix} a_1 & a_2 & \ldots a_3 \\ a_4 & a_5 & \ldots a_6 \\ a_7 & a_8 & \ldots a_9 \end{bmatrix}$.

(b) Typeset the following $f(x_i \mid \lambda_i) = \lambda_i\, e^{-\lambda_i x_i}$, $f(y_i\ \psi)\ \lambda_i\ \psi\, e^{-\lambda_i x_i \psi}$, $x_i, y_i \geq 0$. (7)

**4.** (a) Typeset the following :

- What are the points where $\frac{\partial}{\partial x} f(x,y) = \frac{\partial}{\partial x}\ f(x,y) = 0$ ? as in line and displayed mathematical text.
- $\vec{x}, \vec{y} = 0$ if and only if $\vec{x} \perp \vec{y}$.



(b) Give the command using PS Tricks to draw an elliptic arc having vertical radius 2 cm and horizontal radius 5 cm. (8)

**5.** (a) Typeset (10)

1. Generate independents G and $G_1$.
2. Set {X = 1/(4G–1), V = $G_1/X^2$ if U < 0.5.
3. If V < 1–0.5|X| go to 5.
4. If V ≥ (1 + X^(2)/μ)$^{-(\mu+1)^2}$ go to 1.
5. Return X.

(b) Typeset the following (5)

| Footnotes in a minipage are numbered using lower case letters. This text references a footnote at bottom of the page. |
|---|
| [a] Inside minipage. |

**6.** (a) Typeset the following : (8)

A random variable $y$ has density

$$f(y, \theta, \phi) = \exp\left\{\frac{y\theta - b\theta}{a\phi} + C(y; \phi)\right\}.$$

(b) Write the code in Latex to plot the curves $y = \sin 2x$ and $y = \cos x$ on the same co-ordinate system for $x \in [0, 2\pi]$. (7)