

13/12/17 (E)

[This question paper contains 2 printed pages]

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Sl. No. of Q.P. : 8020A

Unique Paper Code : 62353326

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Name of the Paper : **Mathematical Typesetting System: LaTeX**

Name of the Course : **B.A. Programme – CBCS: Skill Enhancement**

Semester : **III**

Duration: **2 Hours**

Maximum Marks: 38

(Write your Roll No. on the top immediately on receipt of this question paper.)

All questions are compulsory.

1. Fill in the blanks, any four parts from the following

4 x 0.5 = 2

- (i) LaTeX is an easy-to-use version of TeX designed by -----.
- (ii) In LaTeX, commands are preceded by ----- symbol.
- (iii) ----- command is used to give double quotes in LaTeX.
- (iv) ----- command puts a frame of a specified size around an object.
- (v) To include graphics in LaTeX document put ----- package in the preamble.

2. Answer any *eight* parts from the following:

8 x 2 = 16

- (i) Write the code in LaTeX to produce the matrix: $\begin{pmatrix} a & b & c \\ \alpha & \beta & \gamma \end{pmatrix}$.
- (ii) Give the command in LaTeX to obtain *Él está aquí*.
- (iii) Write the output of the command $\int_0^{\infty} \frac{\sin x}{x} dx$.
- (iv) Write the difference between eqnarray and eqnarray* environment.
- (v) Explain the command $\begin{picture}(100, 200)(10, 20)$

(vi) Write a command to draw a circle with center (2, 2) and radius 1 in PSTricks.

(vii) Write a code in LaTeX to produce the output $\lim_{x \rightarrow \infty} \left(\frac{\sin x}{x} \right) = 0$.

(viii) Explain `\overline` and `\underline` commands in LaTeX.

(ix) Write the following postfix expression in standard form:

`t sin t cos mul 1 t sin 2 exp add div`

(x) Give a command to produce an oval of length 8 and breath 3.1 and the reference point (1.1, -4).

3. Answer any *three* parts from the following:

$$4 + 4 + 4 = 12$$

(a) Write a code in LaTeX to plot the cardioid given by the parametric equations:

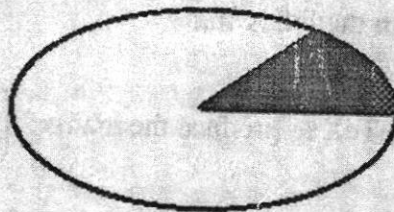
$$x = \cos t (t - \cos t), \quad y = \sin t (1 - \cos t), \quad 0 \leq t \leq 2\pi.$$

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

$$\begin{pmatrix} a+b+c & a_{12} & 13 \\ a+b & x^2+y^2 & 23 \\ a & \sqrt[3]{x} & -345 \end{pmatrix}$$

(c) Use LaTeX picture environment to make pictures of a square of length 50 units and a circle of radius 20 units.

(d) Write a code in LaTeX to draw an ellipse with a shaded sector:



4. Write a presentation containing in beamer with the following content:

Slide-1: Title of the presentation with author and date.

Slide-2: Statement of the Pythagorean theorem.

Slide-3: The picture of the Pythagorean triangle.

Slide-4: Thank You.