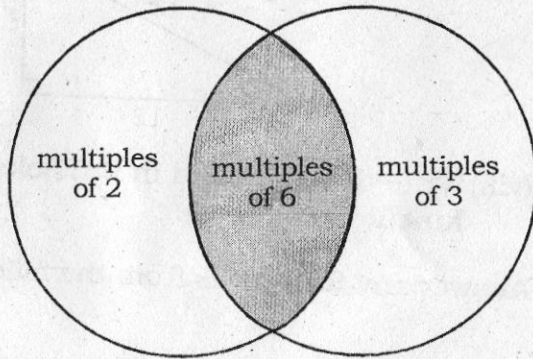


7200

(iii) Write the code in PSTricks to draw the following picture



(iv) Write the code in PSTricks to plot the cardioid given by the parametric equations :

$$x = \cos t (1 - \cos t)$$

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

(v) Write a code to make a beamer presentation of 5 pages (including title and thank you page) on any topic with diagram/picture.

29/11/19 (E)

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **7200** **J**

Unique Paper Code : 62353326

Name of the Course : **B.A. (Prog.) Math : SEC**

Name of the Paper : Mathematical
Typesetting System

Semester : III

Time : 2 Hours **Maximum Marks : 38**

Instructions for Candidates :

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

(b) **All** questions are compulsory.

1. Fill in the blanks : 1×5=5

(i) The symbols may be used instead of a pair of \$ signs.

(ii) The output of $\sqrt[3]{x+y}$ is

(iii) The command `\psset{unit=1.5}` changes units from

(iv) The commands is used to create a sector of a circle.

- (v) In beamer, the command is used to show the elements of a list one point at a time.

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

$$2.5 \times 6 = 15$$

- (i) Write the command in LaTeX to obtain the

$$\text{expression } \lim_{x \rightarrow \infty} \frac{\pi(x)}{x/\log x} = 1.$$

- (ii) Explain the command `\psellipse(2,2)(1.5,1)`.

- (iii) Write the output of the command :

$$\det V_n = \prod_{1 \leq i < j \leq n} (x_j - x_i)$$

- (iv) Typeset the following in LaTeX :

$$R_\theta = \begin{pmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{pmatrix}$$

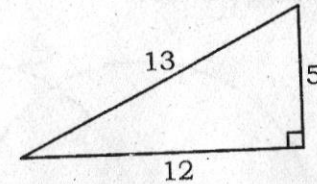
- (v) Write the output for the following commands :

(a) `\ast`, (b) `\notin`, (c) `\Leftarrow`,

(d) `\pm`, (e) `\cap`.

- (vi) Explain the command `\pscircle(-2,1){2.5}`.

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



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

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

$$4.5 \times 4 = 18$$

- (i) Write the code to make the following multi-line equations

$$\begin{aligned} (a+b)^2 &= (a+b)(a+b) \\ &= (a+b)a + (a+b)b \\ &= a(a+b) + b(a+b) \\ &= a^2 + ab + ba + b^2 \\ &= a^2 + ab + ab + b^2 \\ &= a^2 + 2ab + b^2 \end{aligned}$$

- (ii) Write the code to typeset the following :

$$f(x) \begin{cases} -x^2, & x < 0 \\ x^2, & 0 \leq x \leq 2 \\ 4, & x > 2 \end{cases}$$