This Question Paper contains 3 Printed Pages.

15E(A)

MATHEMATICS, Paper - I

(English version)

(Parts A and B)

Time : 2 hrs. 45 min.] ***[Maximum Marks : 40***

Instructions :

1. *15 minutes of time is allotted exclusively for reading the Question paper and 2.30 hours for writing the answers.*
2. ***Part - A** answers should be written in separate answer book.*
3. *There are **three** sections in **Part- A**.*
4. *Answer **all** questions.*
5. *Every answer should be written visibly and neatly.*
6. *There is an internal choice in **section-III** of **Part- A**.*

Part - A

Time : 2.00 Hours ***Marks : 30***

SECTION - I *(Marks : 4×1=4)*

NOTE : *(i) Answer **all** the questions.*

*(ii) Each question carries **1** mark.*

1. Find the HCF of 60 and 100 by using Euclid division lemma.

2. Write A = {3, 9, 27, 81} in set-builder form.

3. Find the value of k for which the pair of equations $2x + ky + 3 = 0$, $4x + 6y - 5 = 0$ represent parallel lines.

4. Find the volume of right circular cone with radius 3 cm. and height 14 cm.

SECTION - II

(Marks : 5×2=10)

NOTE : *(i)* *Write answers to **all** questions.*

(ii) *Each question carries **2** marks.*

5. Find the zeroes of the polynomial $x^2 - 3$ and verify the relationship between the zeroes and the coefficients.

6. How many three digit numbers are divisible by 3 ?

7. A solid iron rod has a cylinderical shape. Its height is 11 cm and base diameter is 7 cm. Then find the total volume of 50 rods.

8. Find the roots of $x + \frac{6}{x} = 7, \quad x \neq 0.$

9. Length of a rectangle is 2 units greater than its breadth. If the area of the rectangle is 120 sq. units, then find its length.

SECTION - III

(Marks : 4×4=16)

NOTE :

1. *Answer **all** the questions.*
2. *Each question carries **4** marks.*

10. *(a)* Hari went to a bank to withdraw ₹ 2000. He asked the cashier to give the cash in ₹ 50 and ₹ 100 notes only. He got 25 notes in all. Can you tell how many notes, each of ₹ 50 and ₹ 100, he received ?

OR

(b) How many spherical balls can be made out of a solid cube of lead, whose edge measures 66 cm. and each ball being 3 cm. in radius ?

11. *(a)* Show that $\sqrt{3}$ is irrational.

OR

(b) If $A = \{x : x \text{ is a natural number}\}$

$B = \{x : x \text{ is an even number}\}$

$C = \{x : x \text{ is an odd number}\}$

$D = \{x : x \text{ is a prime number}\}$

then find $A \cup B$, $A \cap C$, $B \cap C$ and $B \cap D$. What do you notice ?

12. *(a)* The sum of the reciprocals of Rehman's age, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.

OR

(b) If the sum of first 7 terms and 15 terms of an A.P. are 98 and 390 respectively, then find the sum of first 10 terms.

13. *(a)* Solve the quadratic polynomial $p(x) = x^2 - x - 6$ by graphical method.

OR

(b) The perimeter of a rectangular plot is 32 m. If the length is increased by 2 m. and the breadth is decreased by 1 m., the area of the plot remains the same. Find the length and breadth of the plot. (Use graph)
