

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**.
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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 : $5 \times 2 = 10$)**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 cylindrical 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 $x + \frac{6}{x} = 7$, $x \neq 0$.
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 : $4 \times 4 = 16$)**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)

This Question Paper contains 4 Printed Pages.

15E(B)

MATHEMATICS, Paper - I

(English version)

(Parts A and B)

Time : 2 hrs. 45 min.]

[Maximum Marks : 40

Instruction : Write the answers to the questions in this **Part-B** on the Question paper itself and attach it to the answer book of **Part-A**.

Part - B

Time : 30 minutes

Marks : 10

- Note :** (i) Each question has four options Write the CAPITAL LETTERS (A, B, C, D) showing the correct answer for the following questions in the brackets provided against them.
- (ii) Marks are ~~not~~ awarded for overwritten answers.
- (iii) All questions carry equal marks.

SECTION - IV

(Marks : $20 \times \frac{1}{2} = 10$)

- NOTE :** (i) Answer **all** the questions.
- (ii) Each question carries $\frac{1}{2}$ mark.

14. Which of the following is a terminating decimal ?

[]

(A) $\frac{10}{81}$

(B) $\frac{41}{75}$

(C) $\frac{8}{125}$

(D) $\frac{3}{14}$

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V

[1]

15. The value of $\log_2 32 = \dots\dots$ []
- (A) 2
 (B) 32
 (C) $\frac{1}{5}$
 (D) 5
16. If '3' is one of the zeroes of $p(x) = x^2 + kx - 9$,
 then the value of $k = \dots\dots$ []
- (A) 0
 (B) 1
 (C) 2
 (D) 3
17. The pair of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$
 are consistent, then []
- (A) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$
 (B) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
 (C) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$
 (D) A and C
18. If α, β, γ are the zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d$
 and ($a \neq 0$), then $\alpha\beta\gamma = \dots\dots$ []
- (A) $\frac{d}{a}$
 (B) $-\frac{d}{a}$
 (C) $-\frac{b}{a}$
 (D) $\frac{c}{a}$

19. Which term of A.P. 18, 15, 12, equals to '0' ? []
 (A) 4 (B) 5
 (C) 6 (D) 7
20. If $A \subset B$, $n(A) = 4$ and $n(B) = 6$, then $n(A \cup B) = \dots\dots\dots$ []
 (A) 10 (B) 6
 (C) 4 (D) 2
21. If $k, 2k + 1, 2k + 3$ are three consecutive terms in A.P., then find the value of k . []
 (A) 1 (B) 0
 (C) 2 (D) 3
22. A quadratic polynomial, whose zeroes are $\sqrt{2}$ and $-\sqrt{2}$ is []
 (A) $x^2 - 4$ (B) $x^2 + 4$
 (C) $x^2 - 2$ (D) $x^2 + 2$
23. If $a_n = \frac{n}{n+1}$, then $a_{2017} = \dots\dots\dots$ []
 (A) $\frac{2017}{2016}$ (B) $\frac{2017}{2018}$
 (C) $\frac{2017}{2019}$ (D) $\frac{2018}{2017}$
24. A cylinder and cone have bases of equal radii and are of equal heights, then their volumes are in the ratio []
 (A) 1 : 1 (B) 1 : 3
 (C) 3 : 1 (D) 1 : 9
25. Total surface area of a solid hemisphere of radius 7 cm. is cm^2 . []
 (A) 21π (B) 49π
 (C) 147π (D) 98π
26. A quadratic equation $ax^2 + bx + c = 0$ has two distinct real roots, if ... []
 (A) $b^2 - 4ac > 0$ (B) $b^2 - 4ac < 0$
 (C) $b^2 - 4ac = 0$ (D) None of the given

