

16E (B)

MATHEMATICS, Paper-II

(English Version)

Parts A and B

Time : 2½ Hours

Maximum Marks : 50

Part B

This Question Paper contains 4 printed pages.

Attach **Part 'B'** question paper to the main answer book of **Part 'A'**.

Time : 30 Minutes

Marks : 15

Instructions :

1. Answer **all** questions.
2. Each question carries ½ mark.
3. Answers are to be written in the question paper only.
4. Marks will not be awarded in case of any overwriting and rewriting or erased answers.

I. Write the 'CAPITAL LETTER' showing the correct answer for the following questions in the brackets provided against them.

10 x ½ = 5

1. In $\triangle ABC$, D and E are midpoints of AB and AC .

Then $DE : BC = \dots\dots\dots$

[]

(A) 4 : 1

(B) 1 : 1

(C) 1 : 2

(D) 2 : 1

2. In a $\triangle ABC$, if a circle drawn on $\overline{BC}$ as diameter passes through A , then $\triangle ABC$ is $\dots\dots\dots$

[]

(A) Acute

(B) Obtuse

(C) Right angled

(D) Equilateral

3. The point where the line $y = mx + c$ cuts the Y -axis is $\dots\dots\dots$

[]

(A) (0, 0)

(B) (c, 0)

(C) (0, c)

(D) (m, c)

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4. The slope of the line joining the points $(-a, a)$ and $(0, a + a\sqrt{3})$ is []
- (A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$
 (C) $2a$ (D) 0
5. The arithmetic mean of $a + 2, a, a - 2$ is []
- (A) $a + 2$ (B) a
 (C) $a - 2$ (D) $3a$
6. If $\sec \theta = \operatorname{cosec} \theta$, then θ is []
- (A) 30° (B) 45°
 (C) 60° (D) 90°
7. $\tan 2A = \dots\dots\dots$ if $A = 22^\circ 30'$. []
- (A) 1 (B) 2
 (C) $\sqrt{3}$ (D) ∞
8. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$, then $AB = \dots\dots\dots$ []
- (A) $\begin{bmatrix} 2 & 0 \\ 0 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
 (C) $\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$ (D) $\begin{bmatrix} 3 & 3 \\ 4 & 6 \end{bmatrix}$
9. Which one of the following is a scalar matrix? []
- (A) $\begin{bmatrix} 1 & 2 \\ 3 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$
 (C) $\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$
10. The Father of the computer is []
- (A) Pascal (B) Bill Gates
 (C) Charles Babbage (D) Newm

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II. Fill in the blanks with suitable answers.

10 x ½ = 5

11. In $\triangle ABC$, if $\angle B = 90^\circ$ and $BD \perp AC$, then $BD^2 =$
12. A line which touches a circle at only one point is called
.....
13. The angle between the lines $x - 2 = 0$ and $y + 3 = 0$ is
.....
14. Arithmetic mean of the first 'n' odd numbers is
.....
15. Mode of the first 'n' natural numbers is
.....
16. $\cos(A + B) =$
17. $\sin^2 47^\circ + \sin^2 43^\circ =$
18. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and $ad = bc$, then A is matrix.
19. Transistors are used in generation computers.
20. The expanded form of C.P.U. is
.....

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III. For the following questions under Group A, choose the correct answer from Group B and write the letter of the correct answer in the brackets provided against each question.

- | Group 'A' | Group 'B' | $5 \times \frac{1}{2} = 2\frac{1}{2}$ |
|--|------------------|---------------------------------------|
| 21. The number of tangents in which two circles intersect each other | [] (A) 0 | |
| 22. The slope of the X-axis is | [] (B) 23 | |
| 23. The y-intercept of the line $3x + 5y = 20$ is | [] (C) 3 | |
| 24. If mean is 32, median is 29 of a data, then mode is | [] (D) 4 | |
| 25. Range of 3, 5, 9, 11, 14, 18 is | [] (E) 32 | |
| | (F) 8 | |
| | (G) 15 | |
| | (H) 2 | |
| | (I) undefined | |

- | Group 'A' | Group 'B' | $5 \times \frac{1}{2} = 2\frac{1}{2}$ |
|--|---|---------------------------------------|
| 26. $\frac{\sin 18^\circ}{\cos 72^\circ}$ | [] (A) $(7x + 3y)$ | |
| 27. If $A = \begin{bmatrix} 4 & 3 \\ -2 & 1 \end{bmatrix}$, then $ A = \dots$ | [] (B) 10 | |
| 28. If $A = \begin{bmatrix} 7 & 3 \end{bmatrix}$, $B = \begin{bmatrix} x \\ y \end{bmatrix}$, then $A \cdot B = \dots$ | [] (C) $\begin{bmatrix} 7x & 3y \end{bmatrix}$ | |
| 29. All parts of a computer are controlled by the | [] (D) Control unit | |
| 30. Example for an input device is | [] (E) 1 | |
| | (F) 0 | |
| | (G) printer | |
| | (H) mouse | |