This Question Paper contains 4 Printed Pages.

1065 **16E (A)**

SUMMATIVE ASSESSMENT – I (2018-19)

MATHEMATICS, Paper-II

(English Version)

Part - A and B

Time : 2 Hours 45 Min.] **[Maximum Marks : 40**

Instructions :

1. *Question paper contains 2 parts (i.e. Part A & B).*
2. *15 minutes are allotted for reading the question paper in addition to 2.30 hours for writing answers.*
3. *Part-A answers should be written in a separate answer book. Write the answers to the questions under Part-B on the question paper itself.*
4. *There are three sections in Part-A and there is an internal choice in Section-III.*
5. *Every answer should be visible and legible.*
6. *Answer all the questions.*
7. *Part-A and Part-B should be issued at the beginning of the exam.*

PART – A

Time : **2** Hours Maximum : **30** Marks

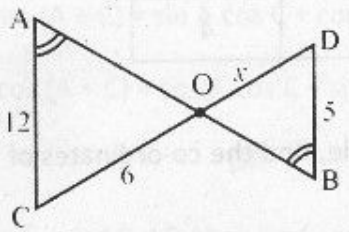
Section – I

$4 \times 1 = 4$

Note : *(1) Answer **all** the questions.*

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

1. Find 'x' from the given figure.



2. Show that sec A (1 – sin A) (sec A + tan A) = 1.

3. Find the median of first ten prime numbers.

4. Explain the terms of the formula for area of triangle :

$A = \sqrt{s\,(s-a)(s-b)(s-c)}$

Section – II

$5 \times 2 = 10$

Note : *(1) Answer **all** the questions.*

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

5. In ΔABC, XY || AC and XY divides the triangle into two parts of equal area. Find the ratio of $\frac{AX}{XB}$.

6. AC and BD are diagonals of ABCD rhombus. Prove that $AB^2 + BC^2 + CD^2 + AD^2 = AC^2 + BD^2$.

7. Express $\sqrt{\frac{1-\sin A}{1+\sin A}}$ as sec A – tan A.

8. Construct a greater than cumulative frequency distribution table for the data given below :

Marks	1 – 10	11 – 20	21 – 30	31 – 40	41 – 50
No. of students	4	4	13	5	4

9. If (–4, 3) and (4, 3) are two vertices of an equilateral triangle, find the co-ordinates of the third vertex.

Section – III

$4 \times 4 = 16$

Note : *(1) Answer **all** the questions.*

(2) Each question has internal choice.

*(3) Each question carries **4** marks.*

10. In an equilateral triangle ABC, D is a point on the side BC such that $BD = \frac{1}{3}BC$. Prove that $9AD^2 = 7AB^2$.

OR

Prove that the points (–7, –3), (5, 10), (15, 8) and (3, –5) taken in order are the vertices of the parallelogram.

Find mean of the following data by using step-deviation method

Class	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
Frequency	15	110	135	115	25

OR

Find the ratio of the triangle formed by joining the points (0, –1), (2, 1) and (0, 3) and the area of the triangle formed by joining the midpoints of sides of triangle.

12. In a right angled triangle ABC, $\angle B = 90°$. If $\sin A = \frac{\sqrt{3}}{2}$ then verify the following results :

(i) $\sin (A + C) = \sin A.\cos C + \cos A.\sin C$

(ii) $\cos (A + C) = \cos A.\cos C - \sin A.\sin C$

OR

If $\operatorname{cosec} \theta + \cot \theta = P$, then find $\cos \theta$ in terms of P.

13. Construct a triangle with sides 6 cm, 8 cm and 10 cm. Construct a triangle similar to the triangle, whose sides are $\frac{3^{th}}{5}$ of its corresponding sides.

OR

The table is showing the salaries of 200 workers in a factory. Draw a 'less than ogive' for the given data :

Salary (in thousands)	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30
No. of workers	16	20	28	10	6

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1066 **16E (B)**

SUMMATIVE ASSESSMENT-I (2018-19)

MATHEMATICS, Paper-II

(English Version)

Part – A and B

Academic standard	AS_1						AS_2				AS_3			AS_4			AS_5		TOTAL	GRADE
Q. No.	1	5	8	11	12	14-19	2	6	10	20-21	4	7	22-23	3	9	24-29	13	30-33		
Marks																				
Total																				

Name of the student : ..... **Roll No. :** .....

PART – B

Time : **30** Minutes Maximum : **10** Marks

Note : *(1) Answer **all** the questions.* **$20 \times \frac{1}{2} = 10$**

(2) Each question has 4 options. Write capital letter indicating the answer in the brackets.

(3) Marks are not awarded for overwriting answers.

*(4) **All** questions carry equal marks.*

14. $\Delta ABC \sim \Delta DEF$. If BC = 3 cm, EF = 4 cm and ar(ΔABC) = 144 cm^2, then ar(ΔDEF) = [ ]

(A) 81 cm^2 (B) 108 cm^2

(C) 192 cm^2 (D) 256 cm^2

15. In the classes 0 – 9, 10 – 19, 20 – 29, ... the upper boundary of the class 10 – 19 is [ ]

(A) 10.5 (B) 19

(C) 19.5 (D) 20

16. A man goes 12 m due East and then 5 m due South. How far is he from the starting point ? [ ]

(A) 7 m (B) 12 m

(C) 13 m (D) 17 m

17. If $\sin\theta = \cos\theta$, then $2\tan^2\theta + \sin^2\theta =$ [ ]

(A) $\frac{11}{12}$ (B) $\frac{5}{2}$

(C) $\frac{27}{4}$ (D) ∞

18. The value of $\frac{\sin^2 15^\circ + \sin^2 75^\circ}{\cos^2 36^\circ + \cos^2 54^\circ} =$ [ ]

(A) $\frac{1}{2}$ (B) 1

(C) 2 (D) ∞

19. The distance of the point P(3, –2) from Y-axis [ ]

(A) 5 units (B) 3 units

(C) 2 units (D) 1 unit

20. ABC is a right angled triangle with $\angle A = 90^\circ$ and $AD \perp BC$, then $\frac{BD}{DC} =$ [ ]

(A) $\left(\frac{AB}{AC}\right)^2$ (B) $\frac{AB}{AC}$

(C) $\left(\frac{AB}{AD}\right)^2$ (D) $\frac{AB}{AD}$

21. $\sin^2 A$ is expressed in terms of $\tan^2 A$ as [ ]

(A) $\frac{\tan^2 A}{1+\tan^2 A}$ (B) $\frac{1+\tan^2 A}{\tan^2 A}$

(C) $\frac{\tan^2 A}{1-\tan^2 A}$ (D) $\frac{1-\tan^2 A}{\tan^2 A}$

22. The statement "If a line divides two sides of a triangle in the same ratio, then the line is parallel to the third side" is [ ]

(A) Basic proportionality theorem

(B) Converse of Basic proportionality theorem

(C) Pythagoras theorem

(D) Converse of Pythagoras theorem

23. In the formula $z = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$, 'l' represents [ ]

(A) Lower boundary of median class

(B) Lower boundary of modal class

(C) Lower limit of median class

(D) Lower limit of modal class

24. If the ratio of areas of two similar triangles is 1 : 2, then the ratio of their corresponding altitudes [ ]

(A) 2 : 1 (B) 1 : 2

(C) $1 : \sqrt{2}$ (D) 1 : 4

25. The mean of first 10 natural numbers is [ ]

(A) 4.5 (B) 5.5

(C) 10 (D) 20

26. Parallelogram circumscribing a circle is a [ ]

(A) Rectangle (B) Rhombus

(C) Square (D) Kite

27. The distance between (a sin θ, 0) and (0, a cos θ) is [ ]

(A) a^2 units (B) 1 unit

(C) a units (D) 0 units

28. Which measure of the following is used to find popular TV programme ratings ? [ ]

(A) Mean (B) Median

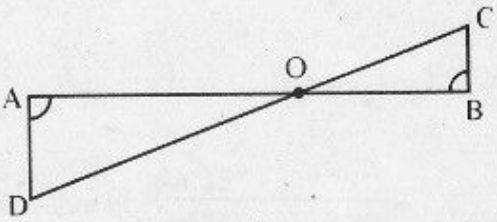
(C) Mode (D) Range

29. The figure formed by joining the midpoints of a rectangle is [ ]

(A) Rhombus (B) Rectangle

(C) Kite (D) Square

30. Two lines AB and CD intersect at 'O'. The similarity criterion related to prove $\Delta OAD \sim \Delta OBC$ from the figure. [ ]



(A) A.A.A (B) S.S.S

(C) S.A.S. (D) R.H.S

31. Which of the following item is to be represented on X-axis in drawing less than ogive ? [ ]

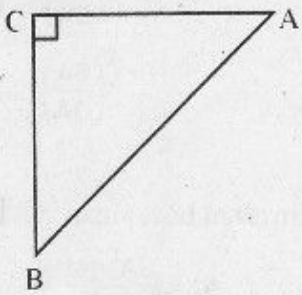
(A) Lower limits of classes

(B) Upper limits of classes

(C) Lower boundaries of classes

(D) Upper boundaries of classes

32. Which of the following trigonometric ratio 'sec A' is equal from the figure ? [ ]



(A) $\frac{AB}{AC}$ (B) $\frac{BC}{AC}$

(C) $\frac{AB}{BC}$ (D) $\frac{AC}{BC}$

33. In which Quadrants is the triangle formed by the points (0, 3), (–3, 0) and (3, 0) ? [ ]

(A) Q_1 and Q_2 (B) Q_2 and Q_3

(C) Q_3 and Q_4 (D) Q_1 and Q_4