

BOARD OF SECONDARY EDUCATION (AP)
SUMMATIVE ASSESSMENT – I
TENTH CLASS MATHEMATICS MODEL PAPER
PAPER – II (ENGLISH VERSION)

Time: 2 hrs. 45 mins.

PART – A & B

Maximum Marks: 40

INSTRUCTIONS:

- i) In the time duration of 2 hrs. 45 mins., 15 minutes of time is allotted to read and understand the question paper.
- ii) Answer the questions under PART – A in a separate answer book.
- iii) Write the answers to the questions under PART – B on the question paper itself and attach it to the answer book of PART – A.

Time: 2 hrs.

PART – A

Marks: 30

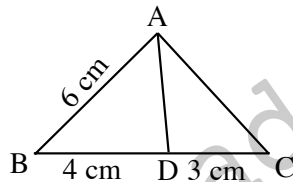
INSTRUCTIONS:

- i) PART – A comprises of three Sections I, II, III.
- ii) All the questions are compulsory.
- iii) There is no overall choice. However, there is an internal choice to the questions under Section – III.

SECTION – I

INSTRUCTIONS:

- i) Answer ALL the questions.
- ii) Each question carries ONE mark. $4 \times 1 = 4$
1. In the given figure, AD is the angle bisector of $\angle A$. If $BD = 4$ cm, $DC = 3$ cm and $AB = 6$ cm then find AC.



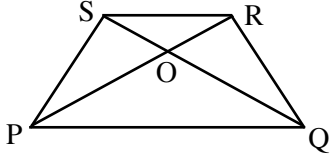
2. If $\cos x = \cos 60^\circ \cdot \cos 30^\circ + \sin 60^\circ \cdot \sin 30^\circ$ then find the value of x.
3. ABC is a right angled isosceles triangle. If $\angle B = 90^\circ$ then show that $AC^2 = 2AB^2$.
4. Write the principle to find mean by deviation method.

SECTION – II

INSTRUCTIONS:

- i) Answer ALL the questions.
- ii) Each question carries TWO marks. $5 \times 2 = 10$
5. If $\triangle ABC \sim \triangle DEF$, $AB = 4$ cm, $DE = 6$ cm, $EF = 9$ cm and $FD = 12$ cm then find the perimeter of $\triangle ABC$.

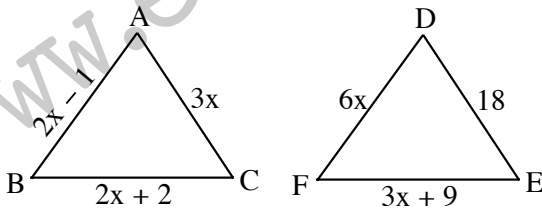
6. If the frequencies of 4, 6, 5, 8, 9 are 2, 4, 5, 2, 3 respectively then find mean.
7. In ΔABC $\angle A, \angle B, \angle C$ are internal angles. Then show that $\tan\left(\frac{B+C}{2}\right) = \cot\frac{A}{2}$.
8. Express $\sin A$ in terms of $\cos A, \tan A, \cot A, \sec A$.
9. In trapezium PQRS, $PQ \parallel RS$. Diagonals PQ, RS intersect at 'O'. If $PQ = 2RS$ then $\Delta POQ : \Delta ROS = ?$



SECTION - III

INSTRUCTIONS:

- i) Answer ALL the questions.
- ii) Each question carries FOUR marks.
- iii) Each question has Internal Choice. $4 \times 4 = 16$
10. a) In the given figure $\Delta ABC \sim \Delta DEF$ measurements are denoted against each side. Find the values of sides.



(OR)

- b) Find the median of the following data.

Marks	30-35	35-40	40-45	45-50	50-55	55-60	60-65
Frequency	14	16	18	23	18	8	3

11. a) Find the mean of the following data.

Marks	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80
Frequency	4	4	13	5	6	5	2	1

(OR)

- b) The hypotenuse of right triangle is 6 m. more than twice of the shortest side. If the third side is 2 m. Less than the hypotenuse, find the sides of the triangle.

12. a) Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A - \sec A)^2 = 3 + \tan^2 A + \cot^2 A$

(OR)

- b) Prove the following.

i) $\tan^2 \theta + \tan^4 \theta = \sec^4 \theta - \sec^2 \theta$

ii) $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$

13. a) Construct a triangle of sides BC = 6 cm, CA = 5 cm and AB = 4 cm. Then construct a triangle similar to it, whose sides are $\frac{5}{3}$ of the corresponding sides of the first triangle.

(OR)

- b) Draw ogive curves of the following data.

Class Interval	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	60	42	55	70	53	20

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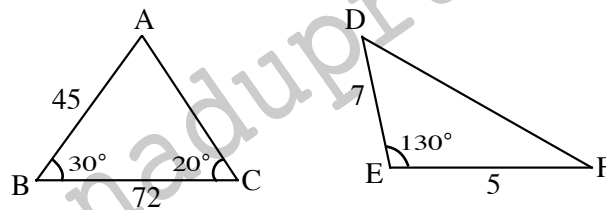
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INSTRUCTIONS:

- i) Answer ALL the questions.
- ii) Each question carries $\frac{1}{2}$ Mark.
- iii) Answers are to be written in question paper only.
- iv) Marks will not be awarded in any case of over writing and rewriting or erased answers.
- v) Write the CAPITAL LETTER (A, B, C, D) showing the correct answer for the following questions in the brackets provided against them.

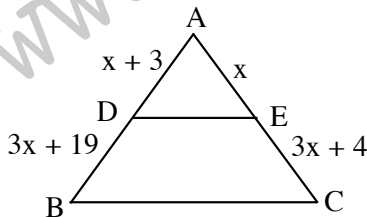
$20 \times \frac{1}{2} = 10$

14. The values of $\angle A$ and $\angle D$ respectively from the adjacent figures is are ()



- A) $50^\circ, 40^\circ$ B) $20^\circ, 30^\circ$ C) $40^\circ, 50^\circ$ D) $30^\circ, 20^\circ$

15. In ΔABC , $DE \parallel BC$ then the value of 'x' is ()



- A) 1 B) 2 C) 3 D) 4

16. A person travels 24 km towards west and then 7 km towards North, Now the distance between starting point and ending point is ()

- A) 31 km B) 17 km C) 25 km D) 26 km

17. If the areas of two similar triangles are $9 \text{ cm}^2, 16 \text{ cm}^2$ respectively, then the ratio of corresponding sides is..... ()

- A) 3 : 4 B) 4 : 3 C) 16 : 9 D) 9 : 16

18. ABC is an equilateral triangle. If $AD \perp BC$ then express AB in terms of AD. ()

- A) $AB^2 = \frac{3}{2} AD^2$ B) $AB^2 = \frac{3}{4} AD^2$ C) $AB^2 = \frac{4}{3} AD^2$ D) $AB^2 = \frac{2}{3} AD^2$

19. $\Delta ABC \sim \Delta DEF$ and if $BC = 3 \text{ cm}$, $EF = 4 \text{ cm}$ and area of $\Delta ABC = 54 \text{ cm}^2$ then area of ΔDEF is..... ()

- A) 108 cm^2 B) 96 cm^2 C) 48 cm^2 D) 100 cm^2

20. In ΔABC and ΔDEF , $\angle A = \angle E = 40^\circ$, $AB : ED = AC : EF$ and $\angle F = 65^\circ$ then $\angle B = \dots$ ()

- A) 35° B) 65° C) 75° D) 85°

21. If $\tan \theta = \frac{3}{4}$ then $\cos^2 \theta - \sin^2 \theta = \dots\dots\dots$ ()
 A) $\frac{7}{25}$ B) 1 C) $\frac{-7}{25}$ D) $\frac{4}{25}$
22. $\cos^2 17^\circ - \sin^2 73^\circ = \dots\dots\dots$ ()
 A) 1 B) -1 C) 0 D) Can't find
23. $x \cdot \tan 45^\circ \cdot \cos 60^\circ = \sin 60^\circ \cdot \cot 60^\circ$ then $x = \dots\dots\dots$ ()
 A) $\frac{1}{2}$ B) $\frac{1}{\sqrt{2}}$ C) $\sqrt{3}$ D) 1
24. $\tan 10^\circ \cdot \tan 15^\circ \cdot \tan 75^\circ \cdot \tan 80^\circ = \dots\dots\dots$ ()
 A) -1 B) +1 C) 0 D) ± 1
25. $\frac{\sin \theta}{1 - \cot \theta} + \frac{\cos \theta}{1 - \tan \theta} = \dots\dots\dots$ ()
 A) 0 B) 1 C) $\sin \theta + \cos \theta$ D) $\sin \theta - \cos \theta$
26. If $\sin \theta + \sin^2 \theta = 1$ then $\cos^2 \theta + \cos^4 \theta = \dots\dots\dots$ ()
 A) -1 B) 1 C) 0 D) 2
27. $\frac{1 + \tan^2 A}{1 + \cot^2 A} = \dots\dots\dots$ ()
 A) $\sec^2 A$ B) $\operatorname{cosec}^2 A$ C) $\cot^2 A$ D) $\tan^2 A$
28. Which of the following is not a measure of central tendency? ()
 A) Range B) Mean C) Median D) Mode
29. Which of the following measure of central tendency cannot find through graph? ()
 A) Range B) Mean C) Median D) Mode
30. Median of first 'n' odd natural numbers is.... ()
 A) $\frac{n(n+1)}{2}$ B) $\frac{n+1}{2}$ C) n D) $\frac{n}{2+1}$
31. If mean of 1st 'n' odd natural numbers be $\frac{n^2}{81}$ then 'n' ()
 A) 9 B) 81 C) 27 D) 18
32. Mode of 16, 15, 17, 16, 15, x, 19, 17, 14 is 15 then $x = \dots\dots\dots$ ()
 A) 16 B) 17 C) 14 D) 15
33. Median of first 10 prime numbers is ()
 A) 11 B) 12 C) 17 D) 7

PART - B

ANSWERS

14-B; 15-B; 16-C; 17-A; 18-C; 19-B; 20-C; 21-A; 22-C; 23-D; 24-B; 25-C; 26-B; 27-D; 28-A; 29-B; 30-C; 31-B; 32-D; 33-B.

Writer: T.S.V.S. Suryanarayana Murthy