

AP BOARD SSC CLASS 10

MATHEMATICS PAPER II MODEL PAPER SET 2

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.
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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:

4x1=4

- i) Answer ALL the questions.
 - ii) Each question carries ONE mark.
1. Find the coordinates of the point which divides the line segment joining (-1, 3) and (4, -7) internally in the ratio 3:4.
 2. Prove that a line drawn through the mid-point of one side of a triangle parallel to another side bisects the third side.
 3. If $x=30^\circ$, verify that $\sin 3x = 3 \sin x - 4 \sin^3 x$.
 4. Write the principle to find Median for grouped data and explain the terms in it.

SECTION – II

Instructions:

5x2=10

- i) Answer ALL the questions.
 - ii) Each question carries TWO marks.
5. Show that the points (1, -1), (5, 2) and (9,5) are collinear.
 6. The perimeters of two similar triangles are 30 cm. and 20 cm. respectively. If one side of the first triangle is 12 cm. determine the corresponding side of the second triangle.
 7. ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other at point "O". Show that $\frac{AO}{BO} = \frac{CO}{DO}$.

8. If $\cos A = \frac{12}{13}$, then find $\sin A$ and $\tan A$.
9. Prepare tables to draw Less than cumulative frequency curve and Greater than cumulative frequency curve for the following table. (No need to draw graph)

| | | | | | | | | |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Weight (in k.g.s) | <38 | <40 | <42 | <44 | <46 | <48 | <50 | <52 |
| No. of Students | 0 | 3 | 5 | 9 | 14 | 28 | 32 | 35 |

SECTION – III

Instructions:

4x4=16

- Answer ALL the questions.
- Each question carries FOUR marks.
- There is an internal choice to the questions under this Section.

10 A. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are (1, 2), (1, 0) and (0, 1). Find the ratio of area of the triangle formed to the area of the given triangle.

(OR)

10 B. Find the area of the triangle formed by the points (8, -5), (-2, 7) and (5, 1) by using Heron's formula.

11 A. In $\triangle ABC$, $XY \parallel AC$ and XY divides the triangle into two parts of equal area. Find the ratio of $\frac{AX}{XB}$.

(OR)

11 B. If the median of 60 observations, given below is 28.5, find the values of 'x' and 'y'

| | | | | | | |
|----------------|------|-------|-------|-------|-------|-------|
| Class interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
| Frequency | 5 | X | 20 | 15 | Y | 5 |

12 A. If $\operatorname{Cosec} \theta + \cot \theta = k$ then prove that $\cos \theta = \frac{k^2 - 1}{k^2 + 1}$

(OR)

12 B. In a $\triangle ABC$ right angled at C, if $\tan A = \frac{1}{\sqrt{3}}$, find the value of $\sin A \cdot \cos B + \cos A \cdot \sin B$.

13 A. Draw a line segment of length 7.2 cm and divide it in the ratio 5:3. Measure the two parts.

(OR)

13 B. The following distribution gives the daily income of 50 workers of a factory.

| | | | | | |
|--------------------------|-----------|-----------|-----------|-----------|-----------|
| Daily income (in Rupees) | 250 – 300 | 300 – 350 | 350 – 400 | 400 – 450 | 450 – 500 |
| Number of workers | 12 | 14 | 8 | 6 | 10 |

Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive.

Time: 30 Minutes

PART - B

Marks: 10

INSTRUCTIONS:

20 x ½ = 10

- i) Answer ALL the questions.
- ii) Each question carries ½ 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.

SECTION – IV

14. The distance between the points $(\cos \theta, \sin \theta)$ and $(\sin \theta, -\cos \theta)$ is []
1. $\sqrt{3}$ 2. $\sqrt{2}$ 3. 2 4. 1
15. If the centroid of the triangle formed by the points (a, b) , (b, c) and (c, a) is at the origin, then $a^3 + b^3 + c^3 =$ []
1. abc 2. 0 3. $a+b+c$ 4. $3abc$
16. The distance of the point $(4, 7)$ from the X-axis is []
1. 4 2. 7 3. 11 4. 18
17. The coordinates of the fourth vertex of the rectangle formed by the points $(0, 0)$, $(2, 0)$, $(0, 3)$ are []
1. $(3, 0)$ 2. $(0, 2)$ 3. $(2, 3)$ 4. $(3, 2)$
18. If $A(x, 2)$, $B(-3, -4)$ and $C(7, -5)$ are collinear, then the value of 'x' is []
1. -63 2. 63 3. 60 4. -60
19. A vertical stick 20 m. long casts a shadow 10 m. long on the ground. At the same time, a tower casts a shadow 50 m. long on the ground. The height of the tower is []
1. 100 m. 2. 120 m. 3. 25 m. 4. 200 m.
20. If $\triangle ABC$ and $\triangle DEF$ are two triangles such that $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD} = \frac{2}{5}$, then $Ar.(\triangle ABC) : Ar.(\triangle DEF) =$ []
1. 2 : 5 2. 4 : 25 3. 4 : 15 4. 8 : 125
21. In triangles ABC and DEF , $\angle A = \angle E = 40^\circ$, $AB:ED = AC:EF$ and $\angle F = 65^\circ$, then $\angle B =$ []
1. 35° 2. 65° 3. 75° 4. 85°
22. If ABC is an isosceles triangle and D is a point on BC such that $AD \perp BC$, then []
1. $AB^2 - AD^2 = BD \cdot DC$ 2. $AB^2 - AD^2 = BD^2 - DC^2$
3. $AB^2 + AD^2 = BD \cdot DC$ 4. $AB^2 + AD^2 = BD^2 - DC^2$
23. A man goes 24 m. due west and then 7 m. due north. How far is he from the starting point? []
1. 31 m. 2. 17 m. 3. 25 m. 4. 26 m.
24. If $5 \tan \theta - 4 = 0$, then the value of $\frac{5 \sin \theta - 4 \cos \theta}{5 \sin \theta + 4 \cos \theta}$ is []
1. $\frac{5}{3}$ 2. $\frac{5}{6}$ 3. 0 4. $\frac{1}{6}$
25. The value of $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \dots \tan 89^\circ$ is []
1. 1 2. -1 3. 0 4. ∞
26. $\frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ} =$ []
1. $\tan 90^\circ$ 2. 1 3. $\sin 45^\circ$ 4. $\sin 0^\circ$

27. $\text{Sec}^4 A - \text{Sec}^2 A =$ []
 1. $\text{Tan}^2 A - \text{Tan}^4 A$ 2. $\text{Tan}^4 A - \text{Tan}^2 A$ 3. $\text{Tan}^4 A + \text{Tan}^2 A$ 4. $\text{Tan}^2 A + \text{Tan}^4 A$
28. The value of $(1 + \cot \theta - \text{Cosec } \theta)(1 + \tan \theta + \text{Sec } \theta)$ is []
 1. 1 2. 2 3. 4 4. 0
29. Which of the following is not a measure of central tendency? []
 1. Mean 2. Median 3. Mode 4. Range
30. Which of the following cannot be determined graphically? []
 1. Mean 2. Median 3. Mode 4. Range
31. The mean of 'n' observations is \bar{X} . If the first item is increased by 1, second by 2 and so on, then the new mean is []
 1. $\bar{X} + n$ 2. $\bar{X} + \frac{n}{2}$ 3. $\bar{X} + \frac{n+1}{2}$ 4. $\bar{X} + \frac{n-1}{2}$
32. If the median of the data : 24, 25, 26, x+2, x+3, 30, 31, 34 is 27.5, then x= []
 1. 27 2. 25 3. 28 4. 30
33. If the mode of the data : 64, 60, 48, x, 43, 48, 43, 34, is 43, then x+3 = []
 1. 44 2. 45 3. 46 4. 48

Part – B : Answers

| | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 2 | 4 | 2 | 3 | 1 | 1 | 2 | 3 | 1 | 3 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
| 3 | 1 | 4 | 3 | 2 | 4 | 1 | 3 | 2 | 3 |