

Summative Assessment - Model Paper

Mathematics

(English Version)

Time : 15 Min + 2 hr. 30 min.

Paper-II

Max. Marks : 40

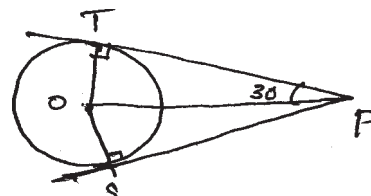
- Instructions :**
1. Read the whole question paper and understand every question thoroughly, without writing any thing and 15 minutes of time is allotted for this.
 2. Answer all the questions.
 3. Write answers to the objective type questions on answer sheet, but at same place.

I. Answer to all the following questions. Each question carries 1 mark. $7 \times 1 = 7$

1. State the formula to find Median for a grouped data and explain the terms. (Comm)
2. The information related to the health tests conducted for students of a class are as follows :

Blood Group	A	AB	B	O
Number of Students	10	13	12	5

- If a student is selected at random from this class, then find the probability for the blood group of that selected boy to be 'B'. (P.S.)
3. When a line segment is drawn with two midpoints of two sides of a triangle. Then relate the line segment with the third side ? Justify your answer. (R & P)
 4. If a cone, hemisphere, cylinder are on the same base and having the same height, then what is the ratio of their volumes. Justify your answer. (R & P)
 5. Write trigonometric identity in $\tan \theta$ and $\sec \theta$. (Comm)
 6. If the length of shadow of a tower is $\sqrt{3}$ times its height, then the angle with which a person standing at the end of the shadow will see the top of the tower. (P.S.)
 7. For a circle with centre 'o', 'p' is an external point. If PS and PT are tangents drawn to the circle, then find $\angle POS$. (P.S.)



II. Answer all questions. Each question carries 2 marks.

6×2 = 12

8. Prepare ascending cumulative frequency table for given below.

In a company the salaries of employees and their number like this. (Comm)

Employees salary	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	4	45	20	13	9	7	2

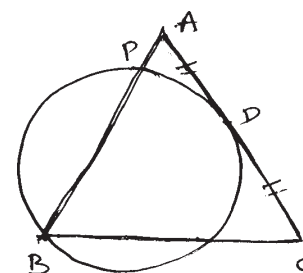
9. If $\tan \theta + \sin \theta = m$, $\tan \theta - \sin \theta = n$, then express the value of $m^2 - n^2$ in terms of m and n . (Comm)

10. In a leap year find the probability of getting 53 Sundays. Similarly find the probability of getting 54 Sundays. Justify your answer. (R & P)

11. A square of side 25 cm is divided into n^2 equal small squares. If circles are drawn in each of these small squares touching all the sides, then find the area of the given square not covered by these circles. (P.S.)

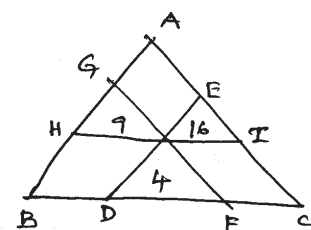
12. If there spheres of radius 3 cm, 4 cm and 5 cm are melted and cast into a large sphere, then find the radius of the large sphere so formed. (P.S.)

13. Triangle ABC is an isosceles triangle in which $AB = AC$. Point D is mid point of AC. If a circle is drawn passing through B, intersecting AB at P and 'D' as point of contact so that AC is a tangent to the circle at D, then prove that $AP = \frac{1}{4} AB$. (R & P)



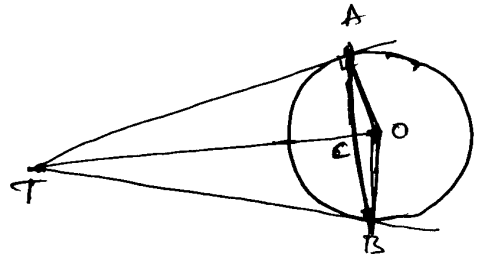
III. Every question is provided with internal choice. Each question carries 4 marks.

14(a) From any point in the interior of the triangle, lines are drawn parallel to the sides of it. If the areas of the three small triangles thus formed are 4, 9 and 16 square units then find the area of the given larger triangle. (P.S.)



(OR)

- (b) For a circle with centre 'o', point 'T' is an external point. TA and TB are tangents drawn to the circle from T. Chord AB intersects \overline{AO} at C. If $\frac{1}{OA^2} + \frac{1}{TA^2} = \frac{1}{36}$ then find the value of AB. (P.S.)



- 15(a) The Crop yielding for a hectar of 100 farmers of a village is given as follows :

Crop yielding (in quintols)	30-35	35-40	40-45	45-50	50-55	55-60
No. of farmers	4	6	12	24	32	22

Represented the above data in the form of a less than cumulative frequency curve.

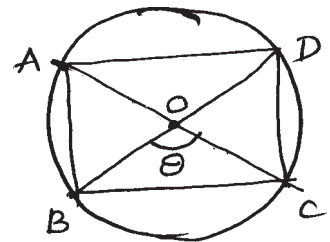
(Rep & V)

(OR)

- (b) Draw a line segment AB of length 10 cm. With 'A' as centre and 5 cm radius draw a circle. With 'B' as centre and 3 cm radius draw another circle. Draw tangents from centre of each circle to the other circle. (Rep & V)
- 16(a) The perpendicular sides of a right triangle are 6 cm and 8 cm. If it is rotated about its hypotenure, then find the volume of the double cone so formed. (Comm)

(OR)

- (b) A rectangle ABCD is discribed in a circle of radius 6 cm. Diagonals of that rectangle interscit at 'o' and one of the angles thus B formed is 'θ' then find the area of the rectangle ABCD in terms of 'θ'. (Comm)



- 17(a) A tree was broken by a wind and top of the tree is touching the ground making an angle of 30°. If the point where top touches the ground to the bottom of the tree is 20m, then find the height of the tree before it was broken. (P.S.)

(OR)

(b) Find Arithmetic mean for the following data. (P.S.)

Marks	0-9	10-19	20-29	30-39	40-49	50-59
Number of students	3	8	14	21	9	5

IV. Answer all questions. Each question carries $\frac{1}{2}$ mark. $10 \times \frac{1}{2} = 5$

18. In $\triangle ABP$, if 'c' is a point on BP such that $\angle PAC = \angle ABC$, then PC.PB is equal to (Comm) []
- A) AP^2 B) AC^2 C) AB^2 D) BC^2
19. The average of 13 scores is 8. If one of the scores 20 is deleted from them, then the average of the remaining scores is (P.S.) []
- A) 7 B) 5 C) 21 D) 12
20. If the base radius of a right circular cylinder is 14 cm and its height is 21 cm, then its curved surface area is (P.S.) []
- A) 616 cm^2 B) 1848 cm^2 C) 3080 cm^2 D) 12936 cm^2
21. Which value among the following is not possible for $\sin \theta$ (R & P) []
- A) $\frac{3}{4}$ B) $\frac{-3}{4}$ C) $\frac{4}{3}$ D) $\frac{1}{2}$
22. which one of the following is equal to $\sin x$ is (Comm) []
- A) $\frac{\sqrt{1-\cos^2 x}}{\cos x}$ B) $\frac{\tan x}{\sqrt{1-\tan^2 x}}$ C) $\frac{\sin x}{\sqrt{1-\sin^2 x}}$ D) $\frac{\sqrt{1+\cos^2 x}}{\cos x}$
23. Which one of the following is true (R & P) []
- A) When two coins are tossed there are three possible outcomes, two heads, two tails, one head and one tail so its probability is $\frac{1}{3}$
- B) When a dice is rolled the possible outcome is an even number or odd number so its probability is $\frac{1}{2}$

C) A deck of 52 cards contain 4 suits. So the probability of a selected card to become ace is $\frac{1}{4}$

D) Out of three students, the probability for two students to have the same date of birth in a year is 3.65

24. ABCD is a quadrilateral and a circle touches the sides of it at points P, Q, R and S respectively then which one of the following is true. (R & P)

A) $AB + CD = BC + DA$

B) $AB + AD = BC + CD$

C) $AD + DC = AD + BC$

D) $AB + BC + CD < AD$ []

25. In ΔPQR , E and F are points on sides PQ and PR respectively. In which of the following situations we set $EF \parallel QR$ (R & P) []

A) $\frac{PQ}{PE} = \frac{PR}{PF}$

B) $\frac{PE}{EQ} = \frac{PF}{FR}$

C) $\frac{PE}{EQ} = \frac{PF}{FR}$

D) $\frac{PE}{EF} = \frac{QE}{QR}$

26. If $P(E) = 0.05$ then express the probability of "Not E" in percentage is (Comm) []

A) 5%

B) 95%

C) 0.95%

D) 0.05%

27. In the formula of mode

$$\text{mode} = l = \left[\frac{f_1 - f_0}{2f - f_0 - f_2} \right] \cdot h, f_0 \text{ represents (Comm)} \quad [\quad]$$

A) frequency of preceding model class

B) frequency of succeeding model class

C) frequency of model class

D) frequency of zero model class.