

Test Booklet Number

Subject Code : 1901

Roll Number

00652

**MATHEMATICS AND  
SCIENCE**

Time : 2 Hours ]

[ Maximum Marks : 300

**INSTRUCTIONS TO CANDIDATES**

Read the following instructions carefully before you answer the questions given in this Test Booklet :

1. Answers to questions in this Test Booklet are to be given on an **OMR Answer Sheet** provided to the candidate **separately**.
2. Candidate must fill up Name, Category, Test Booklet Number, Subject Code and Roll Number in the Answer Sheet carefully as per instructions given.
3. This Test Booklet consists of 75 questions. All questions are compulsory and carry equal marks.
4. Each question in this Test Booklet has four possible alternative answers namely, (A), (B), (C) and (D), one of which is correct. Candidate should choose the correct answer against each question out of four alternative answers.
5. Candidate is instructed to answer the questions by **darkening (●)** with **Ballpoint Pen** only in the circle bearing the correct answer.
6. Candidate should not attempt more than one answer in each question. More than one attempt in any form against a question shall be treated as incorrect.
7. Marking of answer other than darkening shall be cancelled and darkening should remain within the circle otherwise computer shall not accept during evaluation of Answer Sheet.
8. Rough work must not be done on the Answer Sheet. Use the blank spaces given in the Test Booklet for rough work.
9. Candidate is to hand over the Answer Sheet to the Invigilator before leaving the Examination Hall.
10. **NEGATIVE MARKING** : Each question carries 4 (four) marks for correct response. For each incorrect response, 1 (one) mark will be deducted from the total score. More than one answer indicated against a question will be deemed as incorrect response and will be negatively marked.



## MATHEMATICS

1. A number when divided by 143 leaves 31 as remainder. What will be the remainder when the same number is divided by 13?

(A) 0                      (B) 1  
(C) 3                      (D) 5

2. If one factor of  $y^4 + y^2 - 20$  is  $y^2 + 5$ , then the other factor is

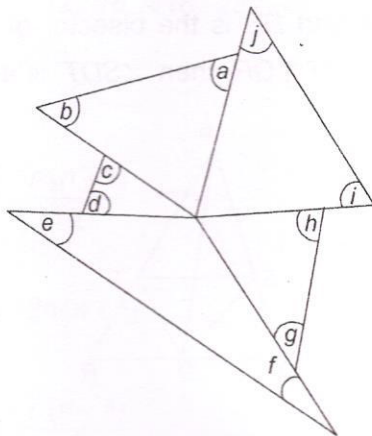
(A)  $y^2 - 2$               (B)  $y^2 - 4$   
(C)  $y^2 + 4$               (D)  $y - 4$

3. It is given that the difference between zeroes of  $4x^2 - 8kx + 9$  is 4 and  $k > 0$ , then the value of  $k$  is

(A)  $\frac{1}{2}$                       (B)  $\frac{3}{2}$   
(C)  $\frac{5}{2}$                       (D)  $\frac{7}{2}$

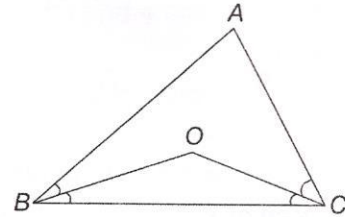
4. In the given figure, the measure of

$a + b + c + d + e + f + g + h + i + j$   
is



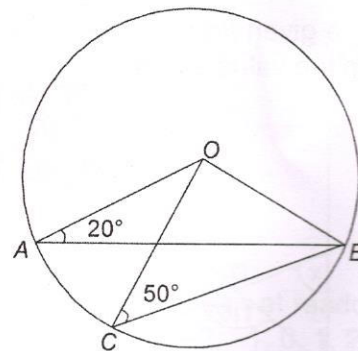
(A)  $900^\circ$                   (B)  $720^\circ$   
(C)  $540^\circ$                   (D)  $360^\circ$

5. In the given figure,  $AB > AC$ . If  $BO$  and  $CO$  are bisectors of  $\angle B$  and  $\angle C$  respectively, then



(A)  $OB = OC$               (B)  $OB > OC$   
(C)  $OB < OC$               (D)  $OB < 2OC$

6. In the given figure,  $O$  is center of a circle in which  $\angle OAB = 20^\circ$  and  $\angle OCB = 50^\circ$ , then  $\angle AOC$  is



(A)  $50^\circ$                       (B)  $70^\circ$   
(C)  $60^\circ$                       (D)  $20^\circ$

7. The adjacent sides of a parallelogram are 8 cm and 9 cm. The diagonal joining the ends of these sides is of length 13 cm. The area of parallelogram is

(A)  $72 \text{ cm}^2$               (B)  $12\sqrt{35} \text{ cm}^2$   
(C)  $6\sqrt{35} \text{ cm}^2$               (D)  $24\sqrt{35} \text{ cm}^2$



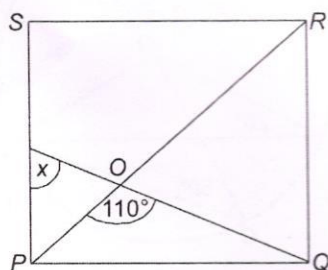
8. A rectangular paper of length 8 cm and breadth 5 cm is rolled to form a cylinder of height equal to the breadth of the paper. Its base radius is

- (A)  $\frac{8}{\pi}$  cm      (B)  $\frac{3}{4} \pi$  cm  
 (C)  $\frac{4}{\pi}$  cm      (D)  $\frac{9}{2\pi}$  cm

9. The mean of  $x$ ,  $x+3$ ,  $x+5$ ,  $x+7$  and  $x+10$  is 9. The mean of the last three observations is

- (A)  $10\frac{1}{3}$       (B)  $10\frac{2}{3}$   
 (C)  $11\frac{1}{3}$       (D)  $11\frac{2}{3}$

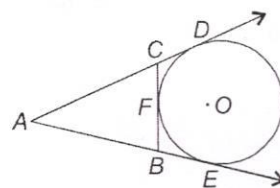
10. In the given figure,  $PQRS$  is a square, then the value of  $x$  is



- (A)  $60^\circ$       (B)  $110^\circ$   
 (C)  $70^\circ$       (D)  $65^\circ$
11. In what ratio does  $x$ -axis divide the join of  $A(2, -3)$  and  $B(5, 6)$ ?

- (A) 2 : 3      (B) 3 : 5  
 (C) 1 : 2      (D) 2 : 1

12. In the given figure  $AD$ ,  $AE$  and  $BC$  are tangents to the circle with center  $O$ , touching it at  $D$ ,  $E$  and  $F$  respectively then

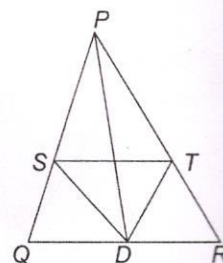


- (A)  $AD = AB + BC + CA$   
 (B)  $2AD = AB + BC + CA$   
 (C)  $3AD = AB + BC + CA$   
 (D)  $\frac{1}{2}AD = AB + BC + CA$

13. The sum of the digits of a two-digit number is 9. If 27 is added to it, the digits are reversed. The number is

- (A) 25      (B) 72  
 (C) 63      (D) 36

14. In the given figure,  $D$  is the mid-point of  $QR$  and  $DS$  is the bisector of  $\angle PDQ$  and  $ST \parallel QR$ , then  $\angle SDT$  is equal to



- (A)  $45^\circ$       (B)  $90^\circ$   
 (C)  $60^\circ$       (D)  $30^\circ$