

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

T. B. C. : AS – 2

Test Booklet Series

Serial No.

05189

TEST BOOKLET

SPECIAL RECRUITMENT OF A. S. O.
MATHEMATICS



Time Allowed : 1 Hour

Maximum Marks : 100

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C OR D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACES IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. This Test Booklet contains **50** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
5. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided, by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.

SEAL

- (D) None of the above
3. Let p be a prime number. If p divides m^2 , where m is a positive integer then :
- (A) p does not divide m
 (B) mp is always an even number
 (C) p divides m
 (D) None of the above
4. $8\sqrt{15} \div 2\sqrt{3} =$
- (A) $3\sqrt{5}$
 (B) $4\sqrt{5}$
 (C) $4\sqrt{3}$
 (D) $4\sqrt{15}$
5. The value of $4725-2879$ by rounding each number to the nearest hundred is
- (A) 1900
 (B) 1846
7. If the HCF of 210 and 55 is expressible in the form $210 \times 5 + 55y$ then $y =$
- (A) 19
 (B) 5
 (C) 55
 (D) -19
8. In a school there are two sections — Section G and Section H of class X. There are 90 students in Section G and 144 students in section H. Determine the minimum number of books required for their class library so that they can be distributed equally among the students of Section G or Section H.
- (A) 18
 (B) 720
 (C) 90
 (D) 144

9. The product of two 2 digit numbers is 1938. If the product of their unit's digits is 28 and that of ten's digits is 15, then find the numbers :
- (A) 37, 54
(B) 36, 54
(C) 19, 38
(D) 34, 57
10. 280% of a number is 560. What is the number ?
- (A) 200
(B) 280
(C) 1568
(D) None of the above
11. How many two digit numbers are divisible by 3 ?
- (A) 30
(B) 20
(C) 40
(D) 45
12. The sum of two numbers is 10 and the sum of their reciprocals is $\frac{1}{2}$. Find the numbers.
- (A) 2, 8
(B) 4, 6
(C) 3, 7
(D) 5, 5
13. The sum of the first 10 terms of an A.P. is 100 and its first term is 10 then the 20th term is :
- (A) 200
(B) 100
(C) 1050
(D) None of the above
14. Whether 301 is a term in the list of numbers 5, 11, 17, 23,
- (A) Yes
(B) Yes if we have total number of terms as 51
(C) No
(D) None of the above
15. A quadratic equation $ax^2 + bx + c = 0$ has no real root if :
- (A) $b^2 - 4ac > 0$
(B) $b^2 - 4ac = 0$
(C) $b - 4ac < 0$
(D) $b^2 - 4ac < 0$
16. A motor boat has speed 10 km/hr in still water and the speed of the stream is 2 km/hr. It takes 1 hour to go to a place and come back. The distance of the place is :
- (A) 12 km
(B) 10 km
(C) 8 km
(D) 6 km

17. Roots of the quadratic equation $2x^2 - 2\sqrt{2}x + 1 = 0$ are :
- (A) $\left(\frac{1}{\sqrt{2}}, 2\right)$
- (B) $\left(\frac{1}{\sqrt{2}}, 3\right)$
- (C) $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$
- (D) None of the above
18. For what values of p does the pair of equations given below has unique solution :
- $4x + py + 8 = 0$; $2x + 2y + 2 = 0$
- (A) $p = 4$
- (B) $p \neq 8$
- (C) For all values of p except 4
- (D) None of the above
19. 4 chairs and 3 tables cost Rs. 2100 and 5 chairs and 2 tables cost Rs. 1,750, then the cost of a chair is :
- (A) Rs. 150
- (B) Rs. 500
- (C) Rs. 15
21. $g(y) = 2y^3 + 5y - 7$ is a :
- (A) Cubic polynomial
- (B) Quadratic polynomial
- (C) Linear polynomial
- (D) None of the above
22. The sum of the squares of zeroes of the quadratic polynomial $f(x) = x^2 - 8x + k$ is 40 then value of k is :
- (A) 14
- (B) 3
- (C) 8
- (D) 12
23. Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2x$:
- (A) Yes
- (B) No
- (C) Yes if $x^2 = 3$
- (D) None of the above
24. The remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $(x - 1)$ is :
- (A) 1
- (B) 3

26. A fort had provisions of food for 300 men for 90 days. After 20 days, 50 men left the fort. How long would the food last at the same rate ?
(A) 108 days
(B) 70 days
(C) 84 days
(D) 48 days
27. A and B together can do a piece of work in 12 days. While B alone can finish it in 30 days. In how many days can A alone finish the work ?
(A) 18 days
(B) 20 days
(C) 30 days
(D) 12 days
28. At what rate percent per annum will a sum of Rs. 2,000 amount to Rs. 2,205 in 2 years, compounded annually ?
(A) 6
(B) 20
(C) 2
30. Area of a regular hexagon each of whose sides measures 6 cm is :
(A) 92.528 cm^2
(B) 93.528 cm^2
(C) 36 cm^2
(D) None of the above
31. The lengths of tangents drawn from an external point to a circle are :
(A) Parallel
(B) Not equal
(C) Equal
(D) None of the above
32. The area of the sector of a circle with radius 4 cm and of angle 30° is (use $\pi = 3.14$) approximately :
(A) 4.19 cm^2
(B) 16 cm^2
(C) 120 cm^2
(D) None of the above

34. Two sides of a triangle are 8 cm and 11 cm respectively and its perimeter is 32 cm then the area of the triangle is :
- (A) $11\sqrt{2} \text{ cm}^2$
 (B) $30\sqrt{2} \text{ cm}^2$
 (C) $11\sqrt{30} \text{ cm}^2$
 (D) $8\sqrt{30} \text{ cm}^2$
35. If the sum of a pair of opposite angles of a quadrilateral is 180° , then the quadrilateral is :
- (A) Asymptote
 (B) Cyclic
 (C) Cubic
 (D) None of the above
36. Surface area of a cuboid whose length, breadth and height are 15 cm, 10 cm and 20 cm respectively is :
- (A) 6000 cm^2
 (B) 1300 cm^2
 (C) 3000 cm^2
 (D) None of the above
37. Find the curved surface area of a right respectively, then the volume of the cone is (take $\pi = 22/7$) :
- (A) 154 cm^3
 (B) 1848 cm^3
 (C) 84 cm^3
 (D) 7546 cm^3
39. A hemispherical bowl has a radius 3.5 cm. What would be the volume of water it would contain ? (take $\pi = 22/7$) :
- (A) 84.8 cm^3
 (B) 89 cm^3
 (C) 89.8 cm^3
 (D) None of the above
40. A cone of height 24 cm and radius of base 6 cm is made up of modeling clay. A child reshapes it in the form of a sphere. Then the radius of the sphere will be :
- (A) 2 cm
 (B) 4 cm
 (C) 12 cm