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APEEJAY SCHOOL, PANCHSHEEL PARK

Class – X
Subject – Mathematics
UNIT TEST- 1 (2024-25)

Name of the student: Date:
Time Allowed: 1hr M.M.:25

General Instructions:
There are four sections in this paper

i. Section A has 6 questions carrying 1 mark each.
ii. Section B has 3 questions carrying 2 marks each.
iii. Section C has 3 questions carrying 3 marks each.
iv. Section D has 1 question carrying 4 marks.
v. All questions are compulsory.

SECTION A (1x6=6)

1. If two positive integers a and b are written as $a = x^3 y^2$ and $b = xy^3$; x, y are prime numbers, then HCF (a, b) is
   (a) xy (b) xy^2 (c) $x^3 y^3$ (d) x^2y^2
2. The least number which is the perfect square and is divisible by each of 16, 20 and 24 is _____.
   (a) 1600 (b) 3600 (c) 6400 (d) 14400
3. If a pair of linear equations is consistent, then the lines will be_____.
   (a) parallel (b) always coincident
   (c) intersecting or coincident (d) always intersecting
4. Solve for and and $3^{x-y} = 27$, $3^{x+y} = 243$
   (a) $x=1, y=4$ (b) $x=2, y=4$
   (c) $x=4, y=1$ (d) $x=3, y=5$
5. **Assertion:** If the product of two numbers is 5780 and their HCF is 17, then their LCM is 340
   Reason: HCF is always a factor of LCM
   (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
   (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)
   (c) Assertion (A) is true but reason (R) is false.
   (d) Assertion (A) is false but reason (R) is true.
6. **Assertion**: The linear equations $x-2y-3=0$ and $3x+4y-20=0$ have exactly one solution.
   Reason: The linear equations $2x+3y-9=0$ and $4x+6y-18=0$ have a unique solution.
   (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
   (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)
   (c) Assertion (A) is true but reason (R) is false.
   (d) Assertion (A) is false but reason (R) is true.

SECTION B (2x3=6)

7. Check whether 8^n, where n is a natural number, can end with the digit 0 for any natural number n.
8. Given that $\sqrt{3}$ is irrational, prove that $5 + 2\sqrt{3}$ is irrational.
9. The sum of two-digit numbers and the number obtained by reversing the digits is 66, if the digits at the tens place and ones place differ by 2, find the number.

SECTION C (3x3=9)

10. Solve the pair of linear equations $x - y + 2 = 0$ and $4x - y - 4 = 0$ graphically.
11. Students of a class are made to stand in rows. If one student is extra in a row, there would be 2 rows less. If one student is less in a row there would be 3 rows more. Find the number of students in the class.
12. A bookseller purchased 117 books out of which 45 books are of mathematics and the remaining 72 books are of physics. Each book has the same size. Mathematics and physics books are to be packed in separate bundles and each bundle must contain the same number of books. Find the least number of bundles which can be made for these 117 books.

SECTION D (4X1=4)

13. Points A and B representing Chandigarh and Kurukshetra respectively are almost 90 km apart from each other on the highway. A car starts from Chandigarh and another from Kurukshetra at the same time. If these cars go in the same direction, they meet in 9 hours and if these cars go in opposite direction they meet in $\frac{9}{7}$ hours. Let X and Y be two cars starting from points A and B respectively and their speed be x km/h and y km/h respectively.
    (a) When both cars move in the same direction, then represent the situation algebraically. 1
    (b) When both cars move in the opposite direction, then represent the situation algebraically. 1
    (c) Find the speed of car X. 1
    (d) Find the speed of car Y. 1