Techno ACE

Model Question Paper

Mathematics

Class: X going to XI

Time: 22.5 mints **F.M. 15 × 4 = 60**

For every correct answer examinee will be awarded +4 marks and for every wrong answer it will be – 1 mark

1. The product of all real integral solutions of $(x^2 - 3x + 3)^{x^2-16x+48} = 1$ is

(A) 24 (B) 48

(C) 96 (D) 144

2. If $(x + y) + \frac{5}{(x-y)} = 10$ and $(x + y) + 2(x - y) = 7$ such that x and y are distinct natural numbers, then $x^2 + 4y^2$ is

(A) 12 (B) 17

(C) 25 (D) 32

3. $\sqrt{\frac{\cot^2\theta \sec^2\theta - 1}{\operatorname{cosec}^2\theta \tan^2\theta - 1}} + 1$ is equal to

(A) cosec θ (B) $\operatorname{cosec}^2 \theta$

(C) $\sin^2 \theta$ (D) $\sec^2 \theta + 1$

4. **A :** In ΔABC, D and E are points on AC and BC respectively such that $DE \parallel AB$. If $CD = 3$ cm, $EC = 4$ cm and $BE = 8$ cm, then DA is 6 cm.

R : If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

(A) Both (A) and (R) are true and (R) is the correct explanation of (A)

(B) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(C) (A) is true but (R) is false

(D) (A) is false but (R) is true

5. If the HCF of 85 and 153 is expressible in the form 85x – 153, then x equals

(A) 1 (B) 2

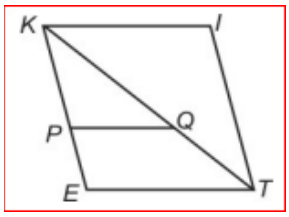
(C) 0 (D) 4

6. If $5\sec\theta - 2\tan\theta = 5$, then the value of $5\tan\theta - 2\sec\theta$ can be

(A) 7 (B) 5

(C) 3 (D) 2

7. *KITE* is a parallelogram in which *P* and *Q* are points on *KE* and *KT* respectively such that *PQ*||*ET*. If *PQ* = 4 cm, *KQ* = (4*x* – 5) cm, *QT* = (5*x* – 4) cm, *KP* = (*x* – 1) cm and *PE* = *x* cm, then *KI* equals



(A) 8 cm (B) 10 cm

(C) 11 cm (D) 12 cm

8. If a and b are primes less than 10 and $x^2 - ax + b = 0$ has distinct positive integral roots, then a^b equals

(A) 16 (B) 27

(C) 9 (D) 64

9. How many different real values of x satisfy the equation $(x^2 - 5)^2 = 16$?

(A) 2 (B) 3

(C) 0 (D) 4

10. The polynomial $x^3 - ax^2 + bx - 1830$ has three positive integral zeroes. The smallest possible value of a is

(A) 78 (B) 81

(C) 72 (D) 82

11. ΔABC is an equilateral triangle such that coordinates of *B* and *C* are (2, – 3) and (8, – 3) respectively and *A* lies in 1st quadrant, then coordinates of *A* are

(A) $(5, (\sqrt{3} - 1))$ (B) $(5, 3(\sqrt{3} - 1))$

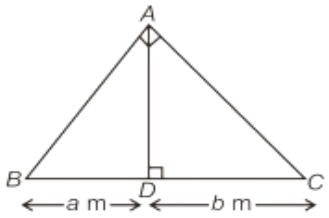
(C) $(5, (\sqrt{3} + 1))$ (D) $(5, 3(\sqrt{3} + 1))$

12. The area of the triangle formed by the lines 4x + 3y – 12 = 0, 4x – 3y + 12 = 0 and y = 0, is

(A) 6 sq units (B) 12 sq units

(C) 18 sq units (D) 24 sq units

13. In the given figure, *AD* is the height of the tower, *BD* and *CD* are the distances of two points *B* and *C* from foot of the tower *D*. If $< BAC = 90°, \sqrt{a} + \sqrt{b} = 7$ and $2\sqrt{a} + 3\sqrt{b} = 17$, then the length of *AD* (in m) is



(A) 12 m (B) 13 m

(C) 14 m (D) 22 m

14. If $\frac{1+\sin^2\theta(\cot^2\theta-1)}{\cos^2\theta} = 2^n$ (where $0° < \theta < 90°$), then *n* equals

(A) 1 (B) 0

(C) – 1 (D) $\frac{1}{2}$

15. *AD* is median of Δ*ABC* and *E* is mid-point of *AD*. If coordinates of *B, E* and *C* are (0, 4), $(\frac{35}{2}, \frac{13}{2})$ and (4, 0) respectively, then coordinates of *A* are

(A) (3, 1) (B) (33, 11)

(C) (– 33, – 11) (D) (22, 11)