MATHEMATICS
XI

MAX TIME: 45 MIN.
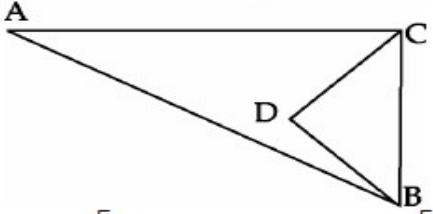MAX. MARKS: 30

SECTION A   10 x 1 = 10

Q.1 If α and β are the zeroes of the polynomial $2x^2 + 5x + 1$, then the value of $\alpha + \beta + \alpha\beta$ is :

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

Q.2 The next term of the A.P. $\sqrt{27}$, $\sqrt{48}$, $\sqrt{75}$, ... is :

(A) $\sqrt{105}$ (B) $\sqrt{107}$ (C) $\sqrt{108}$ (D) $\sqrt{147}$

Q.3 In the figure given below, $\angle ACB = 90°$, $\angle BDC = 90°$, $CD = 4$ cm, $BD = 3$ cm, $AC = 12$ cm. $\cos A - \sin A$ is equal to :

(A) $\dfrac{5}{12}$ (B) $\dfrac{5}{13}$ (C) $\dfrac{7}{12}$ (D) $\dfrac{7}{13}$

Q.4 The decimal expansion of number $\dfrac{441}{2^2 \times 5^3 \times 7}$ has :

(A) a terminating decimal   (B) non-terminating but repeating

(C) non-terminating non repeating   (D) terminating after two places of decimal

Q.5 The pair of linear equations $(3k+1)x + 3y - 5 = 0$ and $2x - 3y + 5 = 0$ have infinite solutions. Then the value of k is :

(A) 1 (B) 0 (C) 2 (D) -1

Q.6 The area of the triangle formed by the lines y=x, x=6 and y=0 is ___ sq units.

(A) 36	(B) 18	(C) 9	(D) 72

Q.7 The volumes of two spheres are in the ratio 64:27. The ratio of their surface areas is

(A) 1:2	(B) 2:3	(C) 9:16	(D) 16:9

Q.8 The hour hand of the clock is 6 cm long. The area swept by it between 11.20 am and 11.55am is

(A) 2.75 cm²	(B) 5.5 cm²	(C) 11 cm²	(D) 10 cm²

Q.9 If the sum of first 'n' even natural numbers is equal to 'k' times the sum of first 'n' odd natural numbers, then k=_____.

(A) $\dfrac{1}{n}$	(B) $\dfrac{n-1}{n}$	(C) $\dfrac{n+1}{2n}$	(D) $\dfrac{n+1}{n}$

1

Q.10	A bag contains 14 balls of which x are white. If 6 more white balls are added to the bag, the probability of drawing a white ball is ½. Find the value of x.			
	(A) 10	(B) 4	(C) 6	(D) 7

Q.11	If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by $(x^2 - 2x + k)$ the remainder comes out to be $x + a$, find k and a.
Q.12	A right triangle, whose sides are 6 cm and 8 cm (other than hypotenuse) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed.
Q.13	If $a\cos\theta - b\sin\theta = c$, prove that $$(a\sin\theta + b\cos\theta) = \pm\sqrt{a^2 + b^2 - c^2}.$$
Q.14	In $\triangle ABC$, $\angle B$ is an acute angle and $AD \perp BC$, prove that $$AC^2 = AB^2 + BC^2 - 2BC \times BD$$
Q.15	A person standing between two posts finds that the angle subtended at his eyes by the tops of the posts is right angle. If the height of two posts are two times and four times the height of the person and the distance between the two posts is equal to the length of longer posts, find the ratio of the distance of the person from the shorter to the longer post.

----------All the best------------

Yes, I can……

2