



विद्या सर्वार्थ साधिका

ANANDALAYA
PERIODIC TEST – 1
Class : X

Subject: Mathematics
Date : 19/07/2019

M.M: 40
Time: 2 Hours

General Instructions:

- i) All questions are compulsory.
- ii) This question paper contains 19 questions.
- iii) Question 1- 8 in Section A are very short-answer type questions carrying 1 mark each.
- iv) Questions 9 - 12 in Section B are short-answer type questions carrying 2 marks each.
- v) Questions 13 - 16 in Section C are long-answer-I type questions carrying 3 marks each.
- vi) Questions 17 - 19 in Section D is long-answer-II type questions carrying 4 marks.

SECTION-A

1. If a fair die is rolled once, then the probability of getting an even number or a number greater than 4 is _____. (1)
(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{5}{6}$ (d) $\frac{2}{3}$
2. The largest number which divides 70 and 125, leaving remainder 5 and 8 respectively, is _____. (1)
(a) 13 (b) 65 (c) 875 (d) 1750
3. If the lines represented by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is _____. (1)
(a) $-\frac{5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
4. The zeros of the quadratic polynomial $x^2 + 99x + 127$ are _____. (1)
(a) both positive (b) both negative
(c) one positive and one negative (d) both equal
5. Find the probability of having 53 Sundays in a non – leap year. (1)
6. Without using long division, show that the rational number $\frac{21}{1120}$ has a terminating decimal expansion. (1)
Also find its decimal expansion.

OR

Using Euclid's division algorithm, find HCF of 231 and 396.

7. If $x + 2$ is a factor of the polynomial $5x^3 + (k + 2)x^2 - 3kx + 2$, then find the value of k . (1)
8. A fraction becomes $\frac{9}{11}$, if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator, it becomes $\frac{5}{6}$, form the pair of linear equation of the given data. (1)

OR

Solve the given pair of linear equation by elimination method only;

$$3x + 4y = 11 ; 2x - 2y = - 2.$$

SECTION-B

9. Find HCF of 96 and 404 by prime factorization method. Hence, find their LCM. (2)

OR

A sweetseller has 420 kaju barfis and 130 badam barfis. She wants to stack them in such a way that each stack has the same number and they take up the least area of the tray. What is the number of barfis that can be placed in each stack for the purpose?

10. If the zeros of the polynomial $ax^2 + bx + c$ are in the ratio 4 : 5, prove that $20b^2 = 81ac$. (2)

11. In a triangle ABC, $\angle C = 3\angle B = 2(\angle A + \angle B)$. Find all the angles in degrees. (2)

OR

The sum of the digits of a two digit number is 11. The number obtained by interchanging the digits of the given number exceeds that number by 63. Find the number.

12. A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue marbles in the jar. (2)

SECTION-C

13. Solve the pair of linear equation graphically: $2x + 3y - 6 = 0$ and $4x + 6y - 24 = 0$. (3)

14. If α and β are zeroes of $2x^2 - 5x + 3$, then find the value of : (3)

$$(i) \alpha^2 + \beta^2, \quad (ii) \frac{1}{2\alpha} + \frac{1}{2\beta} \quad (iii) \frac{\alpha}{\beta} + \frac{\beta}{\alpha}$$

OR

What must be added to the polynomial $f(x) = x^4 + 2x^3 - 2x^2 + x - 1$ so that the resulting polynomial is exactly divisible by $x^2 + 2x - 3$?

15. Use Euclid's lemma to show that the cube of any positive integer is of the form $9m$, $9m + 1$ or $9m + 8$ for some integer m . (3)

16. Red queens and black jacks are removed from a pack of 52 playing cards. A card is drawn at random from the remaining cards, after reshuffling them. Find the probability that the card drawn is (3)

(i) a king (ii) of red colour (iii) a face card

OR

Three coins are tossed simultaneously. Find the probability of getting:

(i) three heads (ii) two heads (iii) at least one head

SECTION-D

17. Find all the zeroes of the polynomial $2x^4 - 5x^3 - 12x^2 + 11x - 2$, if two of its zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$. (4)

18. Susan invested certain amount of money in two schemes A and B, which offer interest at the rate of 8% per annum and 9 % per annum respectively. She received ` 1860 as annual interest. However, had she interchanged the amount invested in the two schemes, she could have received ` 20 more as annual interest. How much did she invest in each scheme? (4)

OR

Place A and B are 100 km apart on a highway. One car starts from A and another at B at the same time. If the cars travel in the same direction at different speeds, they meet in 5 hours, if they travel towards each other, they meet in one hour. What are the speeds of the two cars?

19. Prove that $\sqrt{10}$ is an irrational number. (4)