R. C. B. S. E.
FIRST PERIODIC EXAMINATION 2018-19

SET-A

STD. : X **MARKS: 50**

SUB. : MATHS **TIME: HRS.**

GENERAL INSTRUCTIONS:

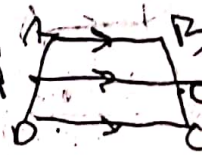
1. *All questions are compulsory.*
2. *The question paper consist of 18 questions divided into 4 sections A, B, C and D. Section A comprises of 3 questions of 1 mark each, Section B comprises of 4 questions of 2 marks each, Section C comprises of 5 questions of 3 marks each and Section D comprise of 6 questions of 4 marks each.*
3. *There is no overall choice.*

SECTION - A

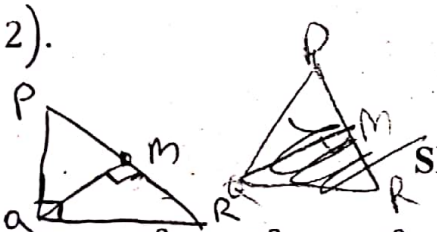
1. Find the least number that is divisible by all the numbers from 1 to 10 (both inclusive).
2. Let $\Delta ABC \sim \Delta DEF$ and their areas be, respectively, $64cm^2$ and $121cm^2$. If EF = 15.4cm, find BC.
3. If $(x + a)$ is a factor of $(2x^2 + 2ax + 5x + 10)$, find a.

SECTION - B

4. ABCD is a trapezium in which AB || DC and P, Q are points on AD and BC respectively, such that PQ || DC, if PD = 18cm and QC = 15cm, find AD.



5. Find the zeroes of the following polynomial and verify the relations between the zeroes and the coefficients of the polynomial $2x^2 + \frac{7}{2}x + \frac{3}{4}$
6. Given that $\sqrt{3}$ is irrational. Prove that $7 - 2\sqrt{3}$ is an irrational number.
7. If $(2x + y = 23)$ and $(4x - y = 19)$, then find the values of $(5y - 2x)$ and $\left(\frac{y}{x} - 2\right)$.



SECTION - C

8. In a ΔPQR, $PR^2 - PQ^2 = QR^2$ and M is a point on side PR such that QM perpendicular to PR. Prove that $QM^2 = PM \times MR$
9. Find k, so that $x^2 + 2x + k$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$. Also, find all the zeroes of the two polynomials.

10. The LCM of 2 numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280, then find the other number.

11. For which value of a and b will the following pair of linear equations have infinitely many solutions?

$(x + 2y = 1)$ and $[(a - b)x + (a + b)y = a + b - 2]$

12. Show that only one of the numbers n, n+2 and n+4 is divisible by 3.

SECTION - D

13. State and prove Thales Theorem.

14. Three measuring rods are 64cm, 80cm and 96cm in length. Find the least length of cloth than can be measured and exact number of times using any of the rods.

15. A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days and a additional charge of each day thereafter. Aarti paid Rs. 22 for a book kept for 6 days, while Ujwal paid Rs. 16 for the book kept for four days. Find the fixed charges and the charge for each extra day.

16. Prove that the area of the quadrilateral triangle drawn on the hypotenuse of a right angled triangle is equal to the sum of the areas of the equilateral triangle drawn on the other two sides of the triangle.

17. A motorboat can travel 30 km upstream and 28km downstream in 7h. It can travel 21km upstream and return in 5h. Find the speed of the boat in still water and the speed of the stream.

18. For which values of a and b, the zeroes of $q(x) = x^3 + 2x^2 + a$ are also the zeroes of the polynomial $p(x) = x^5 - x^4 - 4x^3 + 3x^2 + 3x + b$?

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