SFS

Series.	K I	R II	M III	GIV

Roll No.			

Code No.-1/1/1

Candidate must write the Code No. on the title page of the answer book.

- Please check that this question paper contains 2 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 30 questions.
- Please write down the Serial Number of the question before attempting it.

FIRST TERM EXAMINATION 2017-2018
CLASS X
MATHEMATICS

Time allowed: **3 Hours** Maximum Marks: **80**

i) All questions are compulsory

ii) The question paper consists of 30 questions divided into four sections A, B, C and D. Section A comprises of 5 questions of 1 mark each, Section B comprises of 8 questions of 2 marks each, Section C comprises of 9 questions of 3 marks each and Section D comprises of 8 questions of 4 marks each.

iii) There is no overall choice.

iv) Use of calculator is not permitted.

v) An additional 15 minutes time has been allotted to read this question paper only.

Section A

Q1. P and Q are points on the sides AB and AC respectively of ΔABC such that AP = 3.5cm, PB =7cm, AQ = 3cm and QC = 6cm. If PQ = 4.5cm, find BC.

Q2. Find the common difference of the AP: $\frac{1}{2r}, \frac{1-2r}{2r}, \frac{1-6r}{2r}, \ldots$

Q3. State whether $\frac{48}{455}$ will have a terminating decimal expansion or a non-terminating repeating decimal expansion.

Q4. If one of the zeros of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3, then find the value of k.

Q5. On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$, find out whether the lines representing the equations $6x - 3y + 10 = 0, 2x - y + 9 = 0$ intersect at a point, are parallel or coincident.

Section B

Q6. Which term of sequence $23, 22\frac{1}{2}, 22, 21\frac{1}{2}, \ldots$ is the first negative term?

Q7. Solve $2x+3y=11$ and $2x-4y=-24$ and hence find the value of 'm' for which $y=mx+3$.

Q8. Prove that in a ΔABC, if AD is perpendicular to BC, then $AB^2+CD^2=AC^2+BD^2$

Q9. Given the linear equation $2x+3y-8=0$, write another linear equation in two variables, such that the geometrical representation of the pair so formed is parallel lines.

Q10. Find the zeroes of the polynomial $6x^2-3-7x$.

Q11. Use Euclid's division algorithm to find the HCF of 135 and 225

Q12. Which term of the AP: 3,15,27,39,... will be 132 more than its 54th term?

Q13. ABCD is a trapezium in which $AB \parallel CD$. Its diagonals AC and BD intersect at O. Then prove that $\frac{OA}{OC}=\frac{OB}{OD}$.

Section C

Q14. For which value of a and b does the following pair of linear equations have an infinite number of solutions?

$2x+3y=7, \quad (a-b)x+(a+b)y=3a+b-2$

Q15. Check whether polynomial x^2+3x+1 is a factor of $3x^4+5x^3-7x^2+2x+2$.

Q16. Find the sum of all multiples of 7 lying between 500 and 900.

Q17. If the areas of two similar triangles are equal then prove that they are congruent.

Q18. Mallica has two flowerbeds in her garden. One bed has 18 rows of plants and the other has 24 rows of plants. Each of the beds has the same number of plants. What is the least number of plants in each flowerbed?

Q19. Two coins are tossed simultaneously. Find the probability of getting

a. Two heads b. At least one head c. One head

Q20. Sohan travels 300 km to her home partly by train and partly by bus. She takes 4 hours if she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she takes 10 mins longer. Find the speed of the train and the bus separately.

Q21. Determine the AP whose 5th term is 15 and the sum of its 3rd and 8th term is 34.

Q22. The perpendicular from A on side BC of ΔABC intersects BC at D such that $DB=3CD$. Prove that $2AB^2=2AC^2+BC^2$.

Section D

Q23. Draw the graphs of the equations $x=3$, $x=5$ and $2x-y-4=0$. Also find the area of quadrilateral formed by the lines and the x-axis.

Q24. The sum of n terms of an AP is $3n^2+5n$. Find the AP. Hence find its 16th term.

Q25. Obtain all other zeros of $3x^4+6x^3-2x^2-10x-5$ if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

Q26. Prove that $3+2\sqrt{5}$ is an irrational number.

Q27. In an equilateral triangle, prove that three times the square of one side is equal to four times the square of its altitude.

Q28. 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 drawn card is

a. A King b. Of red colour c. A face card d. A queen

Q29. In an AP, the sum of first ten terms is –150 and the sum of its next ten terms is -550. Find the AP.

Q30. State and prove Basic Proportionality Theorem.