KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD

FIRST SUMMATIVE ASSESSMENT (SA-1) / HALF-YEARLY EXAMINATION — 2026-27

Class: X (SSLC) Subject: Mathematics

Time: 3 Hours 15 Minutes (including 15 minutes for reading the question paper)
Max. Marks: 80

General Instructions:

- This question paper has five parts: A, B, C, D and E. All parts are compulsory.
- Figures in square brackets [ ] indicate the marks allotted to that question.
- Write the answers with relevant steps/working; answers without steps may lose marks in Parts C, D and E.
- Draw neat labelled diagrams wherever necessary.
- Use of calculators is not permitted.
- SA-1 syllabus covered in this paper: Real Numbers; Polynomials; Pair of Linear Equations in Two Variables; Quadratic Equations; Arithmetic Progressions; Triangles.

PART – A

Answer ALL the questions. Each question carries 1 mark.

1. The HCF of 12 and 18 is: *[1]*

(a) 2
(b) 6
(c) 36
(d) 1

2. The degree of the polynomial $p(x) = 4x^3 - x^2 + 5$ is: *[1]*

(a) 0
(b) 1
(c) 2
(d) 3

3. The pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has a unique solution if: *[1]*

(a) $a_1/a_2 = b_1/b_2$
(b) $a_1/a_2 \neq b_1/b_2$
(c) $a_1/a_2 = b_1/b_2 = c_1/c_2$
(d) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

4. The roots of the quadratic equation $x^2 - 5x + 6 = 0$ are: *[1]*

(a) 1, 6
(b) 2, 3
(c) −2, −3
(d) 5, 6

5. The common difference of the AP 3, 7, 11, 15, … is: *[1]*

(a) 3
(b) 4
(c) 7
(d) 11

6. In two similar triangles, the corresponding sides are: *[1]*

(a) equal
(b) proportional
(c) parallel
(d) perpendicular

7. Every rational number can be expressed as a terminating decimal or a: *[1]*

(a) terminating decimal only
(b) non-terminating repeating decimal
(c) non-terminating non-repeating decimal
(d) none of these

8. If the discriminant $b^2 - 4ac = 0$, the quadratic equation has: *[1]*

(a) two distinct real roots
(b) two equal real roots
(c) no real roots
(d) none of these

PART – B

Answer ALL the questions. Each question carries 2 marks.

1. Find the HCF and LCM of 6 and 20 by the prime factorisation method. *[2]*

2. Find the zeroes of the polynomial $p(x) = x^2 - 3x - 4$. *[2]*

3. Check whether the pair of equations $x + 2y = 5$ and $2x + 4y = 10$ is consistent or inconsistent. *[2]*

4. Solve the quadratic equation $x^2 + 2x - 8 = 0$ by factorisation. *[2]*

5. Find the 10th term of the AP 2, 7, 12, 17, … *[2]*

6. State the Basic Proportionality Theorem (Thales' Theorem). *[2]*

7. Express 0.375 in the form p/q, where p and q are integers and $q \neq 0$. *[2]*

8. If the sum and product of the zeroes of a quadratic polynomial are 4 and 1 respectively, find the polynomial. *[2]*

PART – C

Answer ALL the questions. Each question carries 3 marks.

1. Prove that $\sqrt{5}$ is an irrational number. *[3]*

2. Find a quadratic polynomial whose sum and product of zeroes are -3 and 2 respectively, and verify the relationship between the zeroes and the coefficients. *[3]*

3. Solve the pair of linear equations $x + 2y = 8$ and $2x - 3y = 2$ by the elimination method. *[3]*

4. Find the roots of the quadratic equation $3x^2 - 2x - 1 = 0$ using the quadratic formula. *[3]*

5. Which term of the AP 3, 8, 13, 18, … is 78? *[3]*

6. Find the sum of the first 15 terms of the AP 7, 13, 19, … *[3]*

7. In triangle ABC, $DE \parallel BC$, D and E lie on AB and AC respectively. If AD = 2 cm, DB = 3 cm and AC = 10 cm, find AE and EC using the Basic Proportionality Theorem. *[3]*

8. Use Euclid's Division Algorithm to find the HCF of 210 and 55. *[3]*

PART – D

Answer ALL the questions. Each question carries 4 marks.

1. State and prove the Basic Proportionality Theorem (Thales' Theorem). *[4]*

2. Solve the pair of linear equations $x + y = 7$ and $x - y = 1$ graphically. *[4]*

3. The sum of the first 14 terms of an AP is 1050 and its first term is 10. Find the 20th term of the AP. *[4]*

4. The sum of the squares of two consecutive positive integers is 313. Find the integers. *[4]*

5. Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides (Pythagoras Theorem). *[4]*

6. A sum of ₹700 is to be paid in 7 instalments such that each instalment is ₹20 more than the preceding one, the first instalment being ₹40. Find all seven instalments. *[4]*

PART – E

Answer the following question. It carries 8 marks.

1. A motorboat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream. *[8]*

***** END OF QUESTION PAPER *****