B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL
TERM 1 EXAMINATION (2026-27)
MARKING KEY MATHEMATICS: SET 1

Class: IX | **Time: 3hrs**
Date: 07-09-26 | **Max Marks: 80**
Admission no: | **Roll no:**

General instructions:
1. The Question paper contains- five sections A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 18 MCQ's and 02 Assertion-Reason based questions of 1 mark each.
3. Section B has 5 very short (VSA)- type questions of 2 marks each.
4. Section C has 6 short (SA)- type questions of 3 marks each.
5. Section D has 4 long (LA)- type questions of 5 marks each.
6. Section E has 3 source based/case-based questions of 4 marks each

SECTION A — MCQs / Assertion–Reason

1. C | 2. D | 3. D | 4. C | 5. A | 6. A | 7. C | 8. D | 9. B | 10. D | 11. B | 12. B | 13. C | 14. B | 15. B | 16. D | 17. B | 18. D | 19. D | 20. A

SECTION B — 2 Marks Each

Q21.
(i) $\sqrt{196} = 14 \rightarrow$ Rational (1M)
(ii) $3\sqrt{18} = 9\sqrt{2} \rightarrow$ Irrational (1M)

Q22.
$p(x) = x^3 - ax^2 + 2x + a - 1$, $x - a$ factor
$\therefore p(a) = 0 \Rightarrow a^3 - a^3 + 2a + a - 1 = 0 \Rightarrow 3a - 1 = 0 \Rightarrow \boxed{a = \frac{1}{3}}$ (2M)

Q23.
$a + b + 90^\circ = 180^\circ \Rightarrow a + b = 90^\circ$ (1M)
$a : b = 2 : 3 \Rightarrow a = 36^\circ,\ b = 54^\circ$; vertically opposite angles $\Rightarrow \boxed{c = 90^\circ}$ (1M)

Q24.
Sides $= 120, 140, 160$ m; $s = 210$ m (1M)
Area $= \sqrt{210(90)(70)(50)} = \boxed{2100\sqrt{15}\ \text{m}^2}$ (1M)

Q25.
$OA^2 = (4-2)^2 + (3-3)^2 = 4 \Rightarrow r = 2$ (1M)
$OB^2 = (x-2)^2 + (5-3)^2 = 4 \Rightarrow (x-2)^2 = 0 \Rightarrow \boxed{x = 2}$ (1M)

SECTION C — 3 Marks Each

Q26.

$0.6 = \frac{3}{5}, \quad 0.\overline{7} = \frac{7}{9}, \quad 0.4\overline{7} = \frac{43}{90}$ **(2M)**

$\frac{3}{5} + \frac{7}{9} + \frac{43}{90} = \frac{54+70+43}{90} = \boxed{\frac{167}{90}}$ **(1M)**

Q27.

$(x-2)^2 - (x+2)^2 = 0$

$(x-2-x-2)(x-2+x+2) = 0$ **(1M)**

$-4(2x) = 0 \Rightarrow \boxed{x = 0}$ **(1M)**

Hence zero $= \boxed{0}$ **(1M)**

OR:

$2x^2 + 10x + 12 = 2(x^2 + 5x + 6) = 2(x+2)(x+3)$ **(2M)**

$\boxed{x = -2, -3}$ **(1M)**

Q28.

$DE \parallel QR \Rightarrow \angle EAB = \angle PBA, \ \angle RBA = \angle PAB$ **(1M)**

Since AP, BP bisect the angles, $\angle PAB + \angle PBA = \frac{1}{2}(180^\circ) = 90^\circ$ **(1M)**

$\boxed{\angle APB = 90^\circ}$ **(1M)**

Q29.

Altitude $= \sqrt{5^2 - 4^2} = 3$ cm **(1M)**

Area $= \frac{1}{2}(8)(3) = 12 \text{ cm}^2$ **(1M)**

$\boxed{12 \text{ cm}^2}$ **(1M)**

Q30.

$x + 2y = 3 \Rightarrow x = 3 - 2y$ **(1M)**

$7(3-2y) - 15y = 2 \Rightarrow 21 - 29y = 2 \Rightarrow y = \frac{19}{29}$ **(1M)**

$x = 3 - \frac{38}{29} = \boxed{\frac{49}{29}}, \quad \boxed{y = \frac{19}{29}}$ **(1M)**

Q31.

$AB^2 = (-9)^2 + (-5)^2 = 106, \ AC^2 = (-4)^2 + (-14)^2 = 212, \ BC^2 = 5^2 + (-9)^2 = 106$ **(2M)**

$AB = BC$ and $AB^2 + BC^2 = AC^2 \Rightarrow \boxed{\text{isosceles right triangle}}$ **(1M)**

SECTION D — 5 Marks Each

Q32. First option:

$0.6 = \frac{3}{5}, \quad 0.\overline{7} = \frac{7}{9}, \quad 0.4\overline{7} = \frac{43}{90}$ **(2M)**

$\frac{3}{5} + \frac{7}{9} + \frac{43}{90} = \frac{167}{90}$ **(2M)**

$\boxed{\frac{167}{90}}$ **(1M)**

OR — (a), (b), (c):

(a) $\frac{3^{-2} \times 9^2}{27^{-1}} = 3^{-2+4+3} = \boxed{243}$ **(2M)**

(b) $\frac{a^{-5}b^4}{a^{-2}b^{-3}} = a^{-3}b^7 = \boxed{\frac{b^7}{a^3}}$ **(2M)**

(c) $\left(\frac{4}{7}\right)^{-2} = \boxed{\frac{49}{16}}$ **(1M)**

Q33.

Let $a = x - 2y, \ b = 2y - 3z, \ c = 3z - x$. Then $a + b + c = 0$ **(1M)**

Using $a^3 + b^3 + c^3 = 3abc$ when $a + b + c = 0$ **(2M)**

$\boxed{3(x-2y)(2y-3z)(3z-x)}$ **(2M)**

Q34.

Using corresponding angles, angle between PQ and vertical $= 35^\circ$, and angle between QR and vertical $= 55^\circ$ **(2M)**

$\angle PQR = 35^\circ + 55^\circ = \boxed{90^\circ}$ **(3M)**

OR:

$\angle AOF + \angle FOG = 180^\circ \Rightarrow \angle AOF = 150^\circ$ **(1M)**

Given $\angle FOC = 90^\circ$, $\angle DOC = 30^\circ \Rightarrow \angle FOE = 30^\circ$ **(2M)**

$\angle EOB = 90^\circ$, $\angle DOC = 30^\circ \Rightarrow \angle COB = 30^\circ$ **(1M)**

$\boxed{\angle DOE = 30^\circ}$ **(1M)**

Q35.

Wheat: $s = \frac{240+200+360}{2} = 400$ m;

$\text{Area} = \sqrt{400(160)(200)(40)} = 16000\sqrt{2}\ \text{m}^2 = \boxed{1.6\sqrt{2}\ \text{ha}}$ **(2M)**

Second field: $s = 480$ m; $\text{Area} = \sqrt{480(240)(160)(80)} = 38400\ \text{m}^2 = 3.84$ ha **(2M)**

Bisecting by median gives equal areas: $\boxed{\text{Potatoes} = 1.92\ \text{ha},\ \text{Onions} = 1.92\ \text{ha}}$ **(1M)**

SECTION E — 4 Marks Each

Q36.

(i) $s = \frac{a+b+c}{2}$ **(1M)**

(ii) $s = \frac{13+14+15}{2} = \boxed{21\ \text{m}}$ **(1M)**

(iii) Area $= \sqrt{21(8)(7)(6)} = \boxed{84\ \text{m}^2}$ **(1M)**

(iv) $84 \div 4 = \boxed{21\ \text{plants}}$ **(1M)**

Q37.

(a) Corresponding angle $= \boxed{72^\circ}$ — corresponding angles are equal **(1M)**

(b) Linear-pair angle $= 180^\circ - 72^\circ = \boxed{108^\circ}$ **(1M)**

(c) Alternate interior angle $= \boxed{72^\circ}$ — alternate interior angles are equal **(1M)**

(d) $75^\circ \neq 72^\circ \Rightarrow$ roads **not parallel**; corresponding-angle property is violated **(1M)**

Q38.

(a) $\Delta x = 8 - 2 = \boxed{6}$, $\Delta y = 11 - 3 = \boxed{8}$ **(1M)**

(b) $AB = \sqrt{(8-2)^2 + (11-3)^2}$ **(1M)**

(c) $AB = \sqrt{36 + 64} = \boxed{10}$ units **(1M)**

(d) $AC = 8,\ CB = 6;\ 8^2 + 6^2 = 10^2 \Rightarrow \boxed{\triangle ACB \text{ is right-angled}}$ **(1M)**

**********ALL THE BEST**********