Model Paper for Mathematics 10th (Fresh)

Total Time: 3 hrs — Total Marks: 75

SECTION – A

Time: 20 Minutes — **Marks: 15**

Q.1. Write the correct option i.e. A,B,C and D in the empty box provided opposite to each part.

i. The sum of x+1 and the reciprocal of x – 1 is ………..

(a) $\frac{x}{x+1}$ (b) $\frac{x}{x-1}$ (c) $\frac{x^2}{x-1}$ (d) $\frac{2X}{x^2-1}$

ii. The solution set of $2x^2 - 2x + 1 = 0$ is …………

(a) {1} (b) {2} (c) {-1,2} (d) {-1, 1}

iii. The value of discriminant of $x^2 + 9x + 2 = 0$ is……………

(a) 73 (b) 89 (c) 18 (d) 81

iv. If **a** and **b** are the roots of $4x^2 - 3x + 7 = 0$ then the value of ${}^{1}/_{b} + {}^{1}/_{a}$ is………

(a) ${}^{-3}/_{4}$ (b) ${}^{3}/_{7}$ (c) ${}^{-3}/_{7}$ (d) ${}^{4}/_{7}$

v. The product of roots of $2x^2 - 3x - 4 = 0$ is ……….

(a) -2 (b) ${}^{3}/_{2}$ (c) ${}^{1}/_{2}$ (d) ${}^{4}/_{3}$

vi. If 7 : 9 :: x : 27 then x=………

(a) 21 (b)3 (c)7 (d) 81

vii. $\frac{x^2}{x^3-1}$ is ……… fraction

(a) Proper (b) Improper (c) irrational (d) None of them

viii. If $A \cap B = \phi$ then A and B are ………….

(a) Empty set (b) equal set s (c) overlapping sets (d) disjoint sets

ix. If R = {(0,2), (b,3), (c,3)} then range of R = …………..

(a) { 1,2} (b) {2, 3} (c) { a,b,c} (d){ a,c}

x. The average pocket money of 30 students is Rs. 20/- the total amount in the class is ………..

(a) Rs. 20/- (b) Rs. 30/- (c) Rs. 3000/- (d) Rs. 600/-

xi. 45^0 = ……….. radians.

(a) ${}^{\pi}/_{3}$ (b) ${}^{\pi}/_{4}$ (c) ${}^{\pi}/_{6}$ (d) ${}^{\pi}/_{2}$

xii. $1 + \tan^2\varphi$ = ……………

(a) $\sin^2\varphi$ (d) $\cos^2\varphi$ (c) $\operatorname{cosec}^2\varphi$ (d) $\sec^2\varphi$

xiii. The distance of the center from any point on the circle is called …

(a) Secant (b) Diameter (c) Tangent (d) Radius

xiv. For any two sets, A , B, $(A \cap B)'$ = …………..

(a) $A' \cap B'$ (b) $A' \cup B'$ (c) $A' \cup B$ (d) $A \cup B$

xv. The central angle of a minor arc of circle is 40^0, the angle subtended by the corresponding major arc is of measure………

(a) 20^0 (b) 80^0 (c) 60^0 (d) 120^0

Note: Time allowed for Section B and Section C is 2 Hours and 40 Minutes.

SECTION "B" — Marks: 36

Q.2. Attempt any nine parts. Each part carries 4 marks.

i. Solve: $\left(x^2+\frac{1}{x^2}\right)-\left(x-\frac{1}{x}\right)-4=0$

ii. Solve: $\sqrt{2x-3}+\sqrt{2x+4}=\sqrt{6x+13}$

iii. Evaluate: $(1+3\omega-\omega^2)(1+\omega-2\omega^2)$

iv. If α and β are the roots of $6x^2-x+k=0$ find k such that $2\alpha+3\beta=1$.

v. The sum of two numbers is 11 and sum of their squares is 65. Find the numbers.

vi. Solve: $\frac{\sqrt{3x+2}+\sqrt{x}}{\sqrt{3x+2}-\sqrt{x}}=\frac{4}{1}$

vii. Prove that $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{a+c+e}{b+d+f}$

viii. Find partial fractions of $\frac{x}{(x+2)(x-3)}$

ix. If A = {5,6,7,8} and B= {7,8,9,10} then find A -B

x. Calculate the standard deviation of the following data

Weight of apples (g)	105	95	85	75
Frequency (f)	43	72	75	50

xi. Prove: $\frac{1-\sin\theta}{\cos\theta}=\frac{\cos\theta}{1+\sin\theta}$

xii. If $\sin\theta=\frac{1}{2}$ and θ lies in second quadrant, find other trigonometric ratios.

SECTION "C" — Marks: 24

Note: Attempt any three questions. Each question carries equal marks.

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Q.3. A straight line drawn from the centre of a circle to bisect a chord which is not a diameter, is perpendicular to the chord.

Q.4. If two circles touch externally, the distance b/w their centre's is equal to the sum of their radii.

Q.5. Construct a triangle ABC such that m $\overline{AB}$ = 3cm , m$\overline{AC}$ = 4cm and m<A =60^0. Draw circum circle to this triangle.

Q.6. Radii of two circles are 2cm and 2.5cm and their centres are 8cm apart. Draw direct common tangents to the circles.