



BALVANTRAY MEHTA VIDYA BHAWAN (ASMA),
PERIODIC TEST II (2017-18)
CLASS-X
SUBJECT- MATHS

DURATION: 3 HOURS

M.M.80

General Instructions:

- (i) All questions are compulsory.
- (ii) This question paper consists of 29 questions divided in four sections – A,B,C,D.
- (iii) Question 1- 6 in Section A are of 1 mark each, 7 - 12 in Section B are of 2 marks each, 13 - 22 in Section C are of 3 marks each and 23-30 in Section D are of 4 marks each.
- (iv) There is no overall choice.
- (iv) Use of calculator is not permitted

Section A

Questions from 1 to 6 are of 1 mark each.

- Q1. The length of the tangent from point A at a distance 5 cm from the centre is 4cm. Find the radius of the circle.
- Q2. 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:
- (i) intersecting lines (ii) parallel lines
- Q3. Find $\sin 75^\circ$ by using the formula : $\sin (A + B) = \sin A \cos B + \cos A \sin B$
- Q4. Express 156 as a product of prime factors.
- Q5. Solve using quadratic/ discriminant method: $\frac{1}{x} + x = 3$
- Q6. If HCF and LCM of two numbers are 5 and 200, and one of the number is 125. Find the other number.

10. Prove that

$$\frac{1 - \sin \alpha}{1 + \sin \alpha} = (\sec \alpha - \tan \alpha)^2$$

Section B

Questions from 7 to 12 are of 2 marks each.

Q7. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre.

Q8. If $\triangle ABC$ is right angled at B, what is the value of $\sin(A+C)$.

Q9. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find the other two sides.

~~Q10. From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre is 25 cm. Find the radius of the circle.~~

Q11. State and give reason for which of the following real no is rational and irrational number:

- i) 0.367367736777.... ii) 2.98725738 iii) $5/17$ iv) $\frac{35}{2^2 \times 5^2}$

Q12. Show that:

- i) $\tan 48^\circ \tan 23^\circ \tan 57^\circ \tan 42^\circ = 1$
 ii) $\sin 40^\circ \sin 50^\circ - \cos 40^\circ \cos 50^\circ = 0$

Section C

Questions from 13 to 22 are of 3 marks each.

Q13. Use Euclid's division lemma to find the HCF of 135 and 225

Q14. A fraction become $\frac{1}{3}$ when 1 is subtracted from the numerator and it becomes $\frac{1}{4}$ when 8 is added to its denominator. Find the fraction.

Q15. The weekly pocket money of the students of class X of a school are given in the following table:

Pocket Money (in rupees)	0-40	40-80	80-120	120-160	160-200	200-240
Number of Students	5	7	15	10	5	8

Find the median for the following data.

Q16. Find the roots of the quadratic equations by the method of completing the square:
 $2x^2 - 7x + 3 = 0$.

Q17. Prove that : $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

Q18. If $\tan \theta = 7/8$, then find the value of : $\frac{(1 + \cos \theta)(1 - \cos \theta)}{(1 + \sin \theta)(1 - \sin \theta)}$

Q19. Ramesh can row downstream 20Km in 2 hours and upstream in 3 hours. find her speed of rowing in still water and the speed of the current.

Q20. Find all the zeros of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if two of its zeros are $\sqrt{2}$ and $-\sqrt{2}$.

Q21. Draw a triangle ABC in which AB = 5cm, BC = 6cm and angle ABC = 60° . Construct a triangle whose sides are $5/7$ times the corresponding sides of triangle ABC.

Q22. Find the zeroes, α and β , of the quadratic polynomial ~~$x^2 - 2x + 3$~~ . Hence find the polynomial whose zeroes are $\alpha + 2$ and $\beta + 2$.

$$2x^2 + x - 21 = 0$$

Section D

Questions from 23 to 30 are of 4 marks each.

Q23. Find the mean and mode of the following data :

Class Interval	0-20	20-40	40-60	60-80	80-100	100-120	120-140
Frequency	6	8	10	12	6	5	3

Q24. Draw a circle of radius 3 cm. From a point P, 7 cm away from its centre draw two tangents to the circle. Measure the length of the tangents.

Q25. Show that $3\sqrt{2}$ is an irrational number.

Q26. Use Euclid division lemma to show that the cube of any positive integer is of the form $9m, 9m+1, 9m+8$.

Q27. Solve the following pair of equation graphically:

$$3x - y = 7$$

$$2x + 5y + 1 = 0$$

Also state the nature of the solution, whether it is consistent, dependent or inconsistent.

Q28. A statue 1.46 m tall, stands on the top of the pedestal. from a point on the ground, the angle of elevation on the top of the statue is 60° and from the same point , the angle of elevation of the top of the pedestal is 45° . find the height of the pedestal. [Use $\sqrt{3} = 1.73$]

Q29. Two concentric circles are of radii 3cm and 5cm. Find the length of the chord of the larger circle which touches the smaller circle.

Q30. The area of a rectangle get reduced by 9 square units , if it's length is reduced by 5 units and breadth by 3 units. if we increase the length by 3 units and the breadth by 2 units, the area increases by 67 square units. find the dimension of the rectangle.
