QB365 Model Question Paper - 3 10th Standard CBSE

Maths

Reg.No. :							
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Total Marks : 100

1

Time: 02:00:00 Hrs

Section - A	
1) If α and β are the roots of $ax^2 - bx + c = 0$ ($a \neq 0$), then calculate $\alpha + \beta$.	1
2) If sum of the zeroes of the quadatic polynomial $3x^2 - kx + 6$ is 3, then find the value of k.	1
3) If - 1 is a zero of the polynomial $f(x) = x^2 - 7x - 8$, then calculate the other zero.	1
4) If am=bl, then find whether the pair of linear equations ax + by = c and lx + my = n has no solutions, unique solution or infinitely many solutions.	1
5) If ad \neq bc, then find whether the pairs of linear equations ax + by = p and cx + dy = q has no solution, unique	1
solution or infinitely many solutions.	
6) In \triangle ABC, DE BC, find the value of x.	1
7) Are two triangle with equal corresponding sides always similar?	1
Two triangles having corre <mark>spond</mark> ing sides equal are similar.	
8) If tan (3x + 30°) = 1, then find the value of x.	1
9) An observer 1.2 metere tall is 28.2 m away from the tower. The angle of elevation of the top of the tower from	1
his eye is 60°.What is the height of the tower?	
10) The top of two poles of height 16m and 10 mare connected by a wire of length I metre.If wire makes an angle of 30° with the horizontal, then find l.	1
11) Find the length of kite string flying at 100 m above the ground with the elevation of 60 ⁰	1
12) If one zero of the polynomial $(a^2+9)x^2+13x+6a$ is a reciprocal of the other, then find the value of a.	1
13) The sum and the product of a zeroes of the polynomial $f(x)=4x^2-27x+3k^2$ are equal. Find the value of k.	1
14) The sum of remainders obtained when x ³ +(k+8)x+k is divided by x-2 and when is divided by x+1, is 0. Find the value of k.	1
¹⁵⁾ Form a quadratic polynomial p(x) with 3 and $-\frac{2}{5}$ as sum and product of its zeroes, respectively.	1
16) Find the value for k for which $x^4 + 10x^3 + 25x^2 + 15x + k$ is exactly divisible by x + 7.	1
17) Determine the values of a and b, for which the following pairs of linear equations has infinitely many	1
solutions	
3x-(a+1)y=2b-1	

and 5x+(1-2a)y=3b

18) Find whether the following pair of linear equations is consistent or inconsistent:

- 19) For what the value of 'k', the system of equations kx + 3y = 1, 12x + ky = 2 has no solution. 1 20) Solve the following pair of linear equations by substitution method: 1 3x + 2y - 7 = 04x+y - 6 = 0**SEction - B**
- 21) A boy goes 24 m due East and 7 m due South. How far is he from the starting point?
- 22) In the given figure, DE || BC. If AD=1.5 cm, BD=2AD, then find $\frac{ar(\triangle ABC)}{ar(trapeziumBCED)}$.
- If $\tan A = \sqrt{2} 1$, prove that $\frac{\tan A}{1 + \tan^2 A} = \frac{\sqrt{2}}{4}$. 23)
- 24) In the given figure, $\triangle ABC$, is the right angles at B. $\triangle BSC$ is right angles at S and Bc=7.5 cm, RS=5 cm, RB=6 2 $\operatorname{cm} \angle BSR = x^0 \text{ and } \angle SAB = y^0$. Find



25) Find the value of $\cos 2\theta$, if $2\sin 2\theta = \sqrt{3}$

26) If α and β are zeroes of a quadratic polynomial x ² -5, then form a quadratic polynomial whose zeroes are 1+ α	2
and 1+β.	
27) Find the zeroes of the quadratic polynomial $5x^2 + 8x - 4$ and verify the relationship between the zeroes and the	2
coefficients of the polynomial.	
28) When $p(x) = x^2 + 7x + 9$ is divided by $g(x)$, we get $(x + 2)$ and -1 as the quotient and remainder respectively, find	2
g(x).	
29) Use elimination method to find all possible solutions of the following pair of linear equations	2
(i) 2x+3y=8 and 4x+6y=7	
(ii) ax+by-a+b=0 and bx-ay-a-b=0	
30) Determine the values of m and n so that the following system of linear equations have	2
infinite number of solutions:	
(2m - l)x + 3y - 5 = 0	
3x + (n - l)y - 2 = 0	
31) For what value of p will the following system of equations have no solution?	2

(2p-1)x + (p-1)y=2p + 1; Y + 3x-1 = 0.Processing math: 100%

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32) Solve the following pair of equations for x and y: $\frac{a^2}{x} - \frac{b^2}{y} = 0, \frac{a^2b}{x} + \frac{b^2a}{y} = a + b,$

 $x \neq 0$; $y \neq 0$.

33) In the given figure, ABC is a right angled triangle, right angled at C and $DE \perp AB$. Prove that $\triangle ABC \sim \triangle ADE$ and hence find the lengths of AE and DE.



- 34) From an airport, two aeroplanes start at the same time. If speed of first aeroplane due North is 500 km/h and that of other due East is 650 km/h then find the distance between the two aeroplanes after 2 hours.
- 35) ABC is an isosceles triangle in which AB = AC = 10 cm. BC =l2cm. PQRS is a rectangle inside the isosceles triangle. Given PQ = SR = y em, PS = QR =2x. Prove that $x = 6 \frac{3y}{4}$.
- 36) A boy, flying a kite with a string of 90 m long, whi<mark>ch is makin</mark>g an angle <mark>El w</mark>ith the ground. Find the height of

the kite. $\left(Given \quad tan\theta = \frac{15}{8} \right)$

- 37) The horizontal distance between two towers is 60 m. The angle of elevation of the top of the taller tower as seen from the top of the shorter one is 30°. If the height of the taller tower is 150 m, them find the height of the shorter tower.
- 38) Two poles of equal heights are standing opposite to each other on either side of a road, which is 80 m wide. From a point between them on the road, angles of elevation of their top are 30° and 60°. Find the height of the poles and distance of point from poles.
- 39) Find the mean of the following distribution

Height (in cm)	Less than 75	Less than 100	Less than 125	Less than150	Less than 175	Less than 200
No of students	5	11	14	18	21	28
Height (in cm)	Less than 225	Less than 250	Less than 275	Less than 300		
No of students	33	37	45	50		

40) Find He mean of the following data:

Classes	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	6	8	10	12	8	4

Section - C

41) Identify the type of the polynomials given below:

(i)
$$f(p) = 3 - p^2 + \sqrt{7}p$$

(ii) $p(v) = \sqrt{3v^4} - \frac{2}{3}v + 7$
(iii) $q(x) = \frac{\sqrt{2}}{5}x^3 + 1$

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42) Reduce the following pair of equations into a pair of linear equations and solve them

(i)
$$\frac{2xy}{x+y} = \frac{3}{2}, \quad \frac{xy}{2x-y} = \frac{-3}{10}; \quad x+y \neq 0, \quad 2x-y \neq 0$$

(ii) $\frac{2}{2x+3y} + \frac{3}{3x-2y} = \frac{17}{15}, \quad \frac{5}{3x+2y} + \frac{1}{3x-2y} = 2$

43) D, E and F are respectively the mid-points of sides AB, BC and CA of $\triangle ABC$. Find the ratio of the areas of $\triangle DEF$ and $\triangle ABC$.

44) In ABC, AD \perp BC and point D lies on BC such that 2 DB = 3 CD. Prove that $5AB^2 = 5AC^2 + BC^2$.

45) Prove that:
$$\frac{\tan \theta + \sin \theta}{\tan \theta - \sin \theta} = \frac{\sec \theta + 1}{\sec \theta - 1}$$

46)

$$\text{Evaluate}: \frac{\cot\left(90^\circ - \theta\right)\sin\left(90^\circ - \theta\right)}{\sin\theta} + \frac{\cot 40^\circ}{\tan 50^\circ} - \left(\cos^2 20^\circ + \tan^2 70^\circ\right)$$

47) Evaluate:
$$\frac{\csc^{2}(90^{\circ}-\theta) - \tan^{2}\theta}{4(\cos^{2}40^{\circ} + \cos^{2}50^{\circ})} - \frac{2\tan^{2}30^{\circ}\sec^{2}52^{\circ}\sin^{2}38^{\circ}}{3(\csc^{2}70^{\circ} - \tan^{2}20^{\circ})}$$

48) A health officer took an initiative of organising a medical camp in a remote village. The medical checkup of 35 **s** students of the age group of 10 yr and their weights were recorded as follows:

Weight (in kg)	Number of stud
38-40	3
40-42	2
42-44	4
44-46	5
46-48	14
48-50	4
50-52	3

(i) Find the mean weight of students using step deviation method.

(ii) Which value of health officer was depicted in this situation?

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