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ONLINE TEST-07, (28-04-2020)  **MATHEMATICS TOPIC: QUADRATIC EQUATION: SOLUTION**

1. (a) Equation 

⇒

⇒ ⇒ .

1. (b) ****

Cubing both sides, we get



⇒ .

1. (d) Given 

Here we consider two cases and 

**Case I :**  This gives 

⇒ 

Also satisfy so , – 2 is solution in this case.

**Case II :** . This gives 

⇒ , so , 1 is solution in this case. Hence the number of solutions are four i.*e*. 

**Aliter :** 

⇒ 

⇒ and ⇒ .

1. (a) If one root of a quadratic equation with rational coefficients is irrational and of the form , then the other root must also be irrational and of the form .
2. (c) Given equation is 



⇒ 

1. (d) If , multiplying each term by , the given equation reduces to or or , which is not possible as considering . Thus given equation has no roots.
2. (b) Let 

⇒  (on simplification)

⇒ 

But the value of the given expression cannot be negative or less than 2, therefore  is required answer.

1. (d) Given 

∴ 

But and 

Hence the equation will be same.

1. (d) Since quadratic equation has three distinct roots so it must be an identity.

So .

1. (a) We have 

∴ 



∴

.

1. (c) **** ⇒ ****

⇒ **** ⇒ 

But , so it is equal to 2.

1. (b) Equations  and

 have real roots, then from first ⇒  .....(i)

and from second (for real root )

⇒  .....(ii)

From (i) and (ii), we get result .

1. (b) If  is the coincident root, then

and 

⇒ 

⇒⇒ .

1. (d) Equation  has equal and real roots, then .

⇒ ⇒ 

⇒ .

1. (b) Let 



Hence roots are (Rational).

1. (c) Roots of  are real. So

⇒ ⇒ 

⇒ ⇒ 

Now we have two cases:

**Case I :** and 

⇒ and 

**Case II :** and 

⇒ and but it is impossible

Therefore, we get 

**Aliter :** Students should note that the expression  will be less than or equal to zero if  or otherwise .

Therefore

*i.e.*, .

1. (b) ****⇒⇒.
2. (b) Roots are equal so 

⇒ 

⇒ 

⇒ 

⇒ 

⇒  ⇒ 

⇒ *l*, *m*, *n* are in A.P.

1. (b) Let first root  and second root =

Then .

1. (a) Given equation , therefore

 and 

Now .

1. (c) are roots of 

⇒ and 

Let the roots of be , then

and 

but ⇒

Hence  and .

1. (a) Since  is a root, therefore  will be other root. Now sum of the roots  and product of roots . Hence .
2. (c) Given equation 

⇒ ⇒ 

Now 

= 

1. (c) As given, , or .

Then the required equation is

, whose roots are *a*, *b*.

1. (a) Let, then its conjugate , so required equation is given by 

⇒ ⇒ 

1. (c) Let  are roots of 

So and 

Given that ⇒

Now 

⇒ or .

1. (d) Let roots are  and 

and 

∴ 

⇒ 

⇒ 

Thus equation is .

1. (b) ****So 
2. (a) Let the roots are and ,

then, sum of roots

product of roots 

Now, 



.

**30.** (b)

,