

02.07.19

T.T Maths

Time: 45 Mins

Std: XII (D,E)

Marks: 30

I. Choose the correct answer:

5x1=5

1. If α and β are the roots of $x^2+x+1=0$, then $\alpha^{2020} + \beta^{2020}$ is

- a) -2 b) -1 c) 1 d) 2

2. The product of all four values of $\left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}\right)^{\frac{3}{4}}$ is

- a) -2 b) -1 c) 2

3. The principal argument of $(\sin 40^\circ + i \cos 40^\circ)^5$ is

- a) -110° b) -70° c) 70° d) 110°

4. If $\omega \neq 1$ is a cubic root of unity and $(1 + \omega)^7 = A + B\omega$, then (A,B) equals

- a) (1, 0) b) (-1, 1) c) (0, 1) d) (1, 1)

5. $(1+i)(1+2i)(1+3i)\dots\dots(1+ni) = x+iy$ then $2.5.10\dots\dots(1+n^2) = \underline{\hspace{2cm}}$

- a) 1 b) i c) x^2+y^2 d) $1+n^2$

II. Answer for any three of the following:

3x2=6

6. Find the modulus of $\frac{2i}{3+4i}$

7. Which one of the points 10-8i, 11+6i is closest to 1+i.

8. If z_1, z_2 and z_3 are complex numbers such that

$$|z_1| = |z_2| = |z_3| = |z_1 + z_2 + z_3| = 1, \text{ find the value of } \left| \frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3} \right|$$

9. Obtain the cartesian form of the locus of $z=x+iy$ in

$$\text{Im}[(1-i)z+1]=0$$

III. Answer for any three of the following:

3x3=9

10. Show that the given equation represent a circle, and find its centre and radius $|3z - 6 + 12i|=8$.11. If $z=x+iy$ is a complex number such that $\left|\frac{z-4i}{z+4i}\right|=1$, show that the locus of z is real axis.12. Obtain the cartesian equation for the locus of $z=x+iy$ in $|z-4|^2 - |z-1|^2 = 16$.13. Find the square root of $4+3i$.

IV. Answer for any two of the following:

2x5=10

14. If z_1, z_2, z_3 are three complex numbers such that

$$|z_1| = 1, |z_2| = 2, |z_3| = 3 \text{ and } |z_1 + z_2 + z_3| = 1 \text{ show that } |9z_1z_2 + 4z_1z_2 + z_2z_3| = 6.$$

15. If the area of the triangle formed by the vertices, z, iz and $z+iz$ is 50 sq.units, find the value of $|z|$.16. If $z=x+iy$ is a complex number such that $\text{Im}\left(\frac{2z+1}{iz+1}\right) = 0$, show that the locus of z is $2x^2+2y^2+x-2y=0$.

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EVERWIN MATRIC. HR. SEC. SCHOOL

02.07.19 T.T Computer Application Time: 45 Mins

Std: XII (I,J) Marks: 30

I. Answer any 5 of the following: 5x2=10

1. What is meant by DBMS?
2. What are the ACID properties?
3. What are RDBMS Jargons?
4. Write the features of RDBMS.
5. What are the limitations of DBMS?
6. Write a note on Hierarchical database.

II. Answer any 5 of the following: 5x3=15

7. List commonly used databases.
8. Define single and multivalued attributes.
9. Define data model and list the types of data model used.
10. Discuss on cardinality in DBMS.
11. Write any four ER component with notations.
12. What is Relationship and list its types?

III. Expand the following: 5x1=5

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|---------|---------|-----------|
| 13. IMS | 14. IDS | 15. RDBMS |
| 16. SQL | 17. IBM | |