9. For any two complex numbers and and any real numbers a and b; **[IIT 1988]**

(a) (b)

(c) (d) None of these

10. The locus of satisfying the inequality is

(a) (b)

(c) (d) None of these

11. If and are complex numbers such that and then the pair of complex numbers and satisfies **[IIT 1985]**

(a) (b)

(c) (d) All the above

12. Let and be two complex numbers such that and . Then is equal to **[IIT 1995]**

(a) 1 or (b) or

(c) 1 or – 1 (d) or –1

13. The maximum distance from the origin of coordinates to the point satisfying the equation is

(a)

(b)

(c)

(d) None of these

14. Find the complex number z satisfying the equations **[Roorkee 1993]**

(a) 6 (b)

(c) (d) None of these

15. If are complex numbers such that then is **[MP PET 2004; IIT Screening 2000]**

(a) Equal to 1 (b) Less than 1

(c) Greater than 3 (d) Equal to 3

16. If and is a complex number such that then the value of is equal to **[IIT 1990]**

(a) (b)

(c) (d)

17. If be three non-zero complex number, such that and suppose that , then is equal to

(a) (b)

(c) (d)

18. Let and be the two non-zero complex numbers such that and . Then is equal to **[IIT 1995; AIEEE 2002]**

(a) (b)

(c) (d)

19. If , then

(a) (b)

(c) (d)

20. If and are two pairs of conjugate complex numbers, then equals

(a) 0 (b)

(c) (d)

21. Let be complex numbers such that and . Then $arg\ z$ equals **[AIEEE 2004]**

(a) (b)

(c) (d)

22. If then the value of is

(a) (b)

(c) (d)

23. If and , then is equal to

(a)

(b)

(c)

(d)

24. The value of is

(a) (b) 1

(c) (d)

25. If and are complex numbers representing the vertices of two triangles such that and , where r is a complex number, then the two triangles

(a) Have the same area (b) Are similar

(c) Are congruent (d) None of these

26. Suppose are the vertices of an equilateral triangle inscribed in the circle . If then values of and are respectively **[IIT 1994]**

(a) (b)

(c) (d) None of these

27. If the complex number the origin form an equilateral triangle then **[IIT 1983]**

(a) (b)

(c) (d)

28. If at least one value of the complex number satisfy the condition and the inequality , then

(a) (b)

(c) (d) None of these

29. If z, iz and are the vertices of a triangle whose area is 2 units, then the value of is **[RPET 2000]**

(a) – 2 (b) 2

(c) 4 (d) 8

30. If , then the locus of is

(a) A circle (b) A straight line

(c) A pair of straight lines (d) None of these

31. If then equals to **[Karnataka CET 2000]**

(a) 0 (b)

(c) (d)

32. If where $r = 1, 2, 3, \ldots, n$, then is equal to **[UPSEAT 2001]**

(a) (b)

(c) (d)

33. If the cube roots of unity be then the roots of the equation are **[IIT 1979; MNR 1986; DCE 2000; AIEEE 2005]**

(a)

(b)

(c)

(d) None of these

34. If are the roots of unity, then equals **[MNR 1992; IIT 1984; DCE 2001; MP PET 2004]**

(a) 0 (b) 1

(c) (d)

35. The value of the expression

where is an imaginary cube root of unity, is **[IIT 1996]**

(a)

(b)

(c)

(d)

36. If then is equal to **[IIT 1999]**

(a) (b)

(c) (d)

37. If then the quadratic equation whose roots are and is

[RPET 2000]

(a) (b)

(c) (d)

38. Let and be n^{th} roots of unity which are ends of a line segment that subtend a right angle at the origin. Then n must be of the form **[IIT Screening 2001; Karnataka 2002]**

(a) $4k + 1$ (b) $4k + 2$

(c) $4k + 3$ (d) $4k$

39. Let is an imaginary cube roots of unity then the value of

is

[Orissa JEE 2002]

(a) (b)

(c) (d) None of these

40. is an imaginary cube root of unity. If then least positive integral value of m is

[IIT Screening 2004]

(a) 6 (b) 5

(c) 4 (d) 3

Integral power of iota, Algebraic operations and Equality of complex numbers

1	b	2	b	3	c	4	b	5	b
6	d	7	c	8	b	9	d	10	d
11	a	12	c	13	b	14	a	15	c
16	c	17	a	18	c	19	a	20	a
21	d	22	d	23	b	24	b	25	d
26	d	27	c	28	a	29	a	30	c
31	a	32	b	33	c	34	c	35	d
36	b	37	b	38	c	39	c	40	c
41	a	42	a	43	d	44	d	45	b
46	b	47	d	48	a	49	d	50	d
51	c	52	a	53	b	54	c	55	a
56	c	57	b	58	c	59	c	60	d
61	c	62	a	63	b	64	b	65	d
66	b	67	b						

Conjugate, Modulus and Argument of complex numbers

1	d	2	a	3	c	4	a	5	a
6	d	7	c	8	a	9	b	10	c
11	b	12	a	13	c	14	c	15	c
16	b	17	c	18	d	19	b	20	b
21	b	22	c	23	b	24	c	25	c
26	a	27	d	28	a	29	a	30	c
31	b	32	a	33	a	34	a	35	c
36	c	37	b	38	d	39	c	40	a
41	b	42	c	43	a	44	c	45	b
46	d	47	d	48	d	49	d	50	c
51	c	52	b	53	b	54	a	55	c
56	c	57	a	58	b	59	d	60	a
61	c	62	a	63	c	64	c	65	a
66	c	67	d	68	c	69	b	70	b
71	c	72	a	73	a,d	74	a	75	d
76	a	77	d	78	c	79	b	80	c
81	d	82	d	83	b	84	b	85	d
86	a	87	c						

Square root, Representation and Logarithm of complex numbers

1	a	2	b	3	b	4	c	5	a
6	d	7	d	8	a	9	b	10	b
11	c	12	a	13	c,d	14	c	15	a
16	b	17	c	18	d	19	d	20	c
21	a	22	b	23	c	24	d		

Geometry of complex numbers

1	c	2	b	3	b	4	c	5	b
6	b	7	b	8	a	9	c	10	d
11	b	12	b	13	a,b	14	c	15	a
16	b	17	a	18	a	19	d	20	b
21	d	22	a	23	d	24	d	25	d
26	c	27	a	28	d	29	b	30	b
31	a	32	b	33	b	34	a	35	b
36	a	37	d	38	d	39	c	40	a
41	d	42	c	43	b	44	d	45	a
46	a	47	b	48	b	49	c	50	b
51	b	52	a	53	c	54	c	55	c
56	b	57	c	58	b	59	d	60	a

61	a	62	d	63	a	64	d	65	b
66	b	67	a	68	b	69	a	70	b
71	c	72	b	73	a	74	b	75	d

De Moivre's theorem and Roots of unity

1	c	2	c	3	d	4	b	5	a
6	d	7	c	8	a	9	c	10	b
11	d	12	a	13	d	14	b	15	c
16	c	17	b	18	a	19	c	20	b
21	a	22	a	23	c	24	a	25	c
26	a	27	c	28	a	29	b	30	d
31	d	32	c	33	c	34	b	35	a
36	b	37	d	38	b	39	c	40	c
41	b	42	b	43	d	44	b	45	b
46	b	47	a	48	c	49	a	50	a
51	b	52	d	53	a	54	c	55	a
56	b	57	a	58	b	59	a	60	a
61	a	62	d	63	a	64	c	65	a
66	b	67	d	68	c	69	c	70	c
71	a	72	d	73	a	74	a	75	c
76	c	77	d	78	c	79	c	80	d
81	c	82	c	83	a	84	a	85	b
86	d	87	d	88	a	89	c	90	a
91	d	92	a	93	b	94	c	95	a
96	c	97	b	98	a	99	c	100	b
101	a	102	c	103	d	104	c		

Critical Thinking Questions

1	c	2	d	3	d	4	b	5	b
6	d	7	b	8	a	9	b	10	a
11	d	12	c	13	c	14	c	15	a
16	c	17	c	18	d	19	b	20	a
21	c	22	d	23	c	24	d	25	b
26	a	27	a	28	a	29	b	30	c
31	c	32	c	33	b	34	c	35	b
36	c	37	d	38	d	39	a	40	d