



Max Marks: 100

Date: 13.11.2022

**ABHIMANYU BATCH**  
**MATHEMATICS : REVISION TEST-2 (SET A)**  
**Topic: Complex Number + PnC + Probability**

1. The conjugate of a complex number  $z$  is  $\frac{1}{i-1}$ . Then, the complex number is
 

(a) $\frac{-1}{i+1}$	(b) $\frac{1}{i-1}$	(c) $\frac{-1}{i-1}$	(d) $\frac{1}{i+1}$
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2. If  $z_1 = 3 + 2i$  and  $z_2 = 2 - 3i$ , then  $z_1 + z_2 =$ 

(a) $7 - i$	(b) $7 + i$	(c) $5 + i$	(d) $5 - i$
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3. If  $z_1 = 1 - 3i$  and  $z_2 = 2 + i$ , then  $\bar{z}_1 + \bar{z}_2 =$ 

(a) $3 - 2i$	(b) $2 + 3i$	(c) $3 + 2i$	(d) $2 - 3i$
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4. If  $z$  is any complex number, then  $\frac{z - \bar{z}}{2i} =$ 

(a) purely real	(b) purely imaginary
(c) either 0 or purely imaginary	(d) none of these
5.  $5 + i^{22} + i^{36} + i^{56} =$ 

(a) $-6$	(b) $8$	(c) $-8$	(d) $6$
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6. If  $z = (3\sqrt{7} + 4i)^2 (3\sqrt{7} - 4i)^3$ , then  $\text{Re}(z) =$ 

(a) $79 \times 3\sqrt{7}$	(b) $(79)^2 3\sqrt{7}$	(c) $-4 (79)^2$	(d) $(79)^2 (3\sqrt{7} - 4i)$
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7. For a positive integer  $n$ , the expression  $(1 - i)^n \left(1 - \frac{1}{i}\right)^n$  equals
 

(a) $0$	(b) $2i^n$	(c) $2^n$	(d) $4^n$
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**Space for Rough Work**



8. The value of the sum  $\sum_{n=1}^{13} (i^n + i^{n+1})$ , where  $i = \sqrt{-1}$ , equals
- (a)  $i$  (b)  $i - 1$  (c)  $-i$  (d)  $0$
9. If  $\left(\frac{1-i}{1+i}\right)^{100} = a + ib$ , then
- (a)  $a = 2, b = -1$  (b)  $a = 1, b = 0$  (c)  $a = 0, b = 1$  (d)  $a = -1, b = 2$
10. If  $i^2 = -1$ , then  $i + i^2 + i^3 + \dots$  to 1000 terms is equal to
- (a)  $1$  (b)  $-1$  (c)  $i$  (d)  $0$
11. If  $z = \frac{4}{1-i}$ , then  $\bar{z}$  is (where  $\bar{z}$  is complex conjugate of  $z$ )
- (a)  $2(1+i)$  (b)  $1+i$  (c)  $\frac{2}{1-i}$  (d)  $\frac{4}{1+i}$
12. If  $z_1 = 1 - 2i, z_2 = 1 + i$  and  $z_3 = 3 + 4i$ , then  $\left(\frac{1}{z_1} + \frac{3}{z_2}\right)\frac{z_3}{z_2} =$
- (a)  $13 - 6i$  (b)  $13 - 3i$  (c)  $6 - \frac{13}{2}i$  (d)  $\frac{13}{2} - 3i$
13.  $(1+i)^{10}$ , where  $i^2 = -1$ , is equal to
- (a)  $32i$  (b)  $64 + i$  (c)  $24i - 32$  (d)  $24i$
14. If  $x + iy = (1+i)^6 - (1-i)^6$ , then which one of the following is true?
- (a)  $x + y = 16$  (b)  $x + y = -16$  (c)  $x + y = -8$  (d)  $x + y = 8$
15. If  $z = \frac{7-i}{3-4i}$ , then  $z^{14} =$
- (a)  $2^7$  (b)  $2^7 i$  (c)  $2^{14} i$  (d)  $-2^7 i$
16. The probability of an impossible event is
- (a)  $1$  (b)  $2$  (c)  $\frac{1}{2}$  (d)  $3$

**Space for Rough Work**



17. If in a lottery there are 5 prizes and 20 blanks, then the probability of getting a prize is
- (a)  $\frac{1}{5}$  (b)  $\frac{2}{5}$  (c)  $\frac{4}{5}$  (d) None of these
18. If  $P(A) = \frac{1}{4}$ ,  $P(B) = \frac{1}{2}$ ,  $P(A \cup B) = \frac{5}{8}$ , then  $P(A \cap B)$  is equal to
- (a)  $\frac{3}{8}$  (b)  $\frac{1}{8}$  (c)  $\frac{2}{8}$  (d)  $\frac{5}{8}$
19. The probabilities of a student getting first class or second class or third class in an examination are  $\frac{2}{7}$ ,  $\frac{3}{5}$ ,  $\frac{1}{10}$  respectively. The probability that the student fails is
- (a)  $\frac{6}{70}$  (b)  $\frac{11}{70}$  (c)  $\frac{3}{35}$  (d)  $\frac{1}{70}$
20. A bag X contains 2 white and 3 black balls and another bag Y contains 4 white and 2 black balls. One bag is selected at random and a ball is drawn from it. Then the probability for the balls chosen to be white is
- (a)  $\frac{2}{15}$  (b)  $\frac{7}{15}$  (c)  $\frac{8}{15}$  (d)  $\frac{14}{15}$
21. Two coins are tossed. What is the probability of getting 2 heads or 2 tails?
- (a)  $\frac{1}{2}$  (b)  $\frac{1}{3}$  (c)  $\frac{1}{4}$  (d)  $\frac{3}{4}$
22. If two balanced dice are tossed once, the probability of the event, that the sum of the integers coming on the upper sides of the two dice is 9, is
- (a)  $\frac{7}{18}$  (b)  $\frac{5}{36}$  (c)  $\frac{1}{9}$  (d)  $\frac{1}{6}$
23. If  $P(A) = 0.4$ ,  $P(B) = x$ ,  $P(A \cup B) = 0.7$  and the events A and B are independent, then  $x =$
- (a)  $\frac{1}{3}$  (b)  $\frac{1}{2}$  (c)  $\frac{2}{3}$  (d) None of these

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**Space for Rough Work**



24. If A and B are two events such that  $P(A \cup B) + P(A \cap B) = \frac{7}{8}$  and  $P(A) = 2P(B)$ , then  $P(A) =$

- (a)  $\frac{7}{12}$  (b)  $\frac{7}{24}$  (c)  $\frac{5}{12}$  (d)  $\frac{17}{24}$

25. For a biased die the probabilities for different faces to turn up are given below:

Face:	1	2	3	4	5	6
Probability:	0.1	0.32	0.21	0.15	0.05	0.17

The die is thrown and you are told that either face 1 or 2 has turned up. Then the probability that it is face 1, is

- (a)  $\frac{5}{21}$  (b)  $\frac{5}{22}$  (c)  $\frac{4}{22}$  (d) None of these

26. Two dice are thrown simultaneously. The probability of obtaining a total score of 5 is

- (a)  $\frac{1}{9}$  (b)  $\frac{1}{18}$  (c)  $\frac{1}{36}$  (d)  $\frac{1}{12}$

27. If two dice are thrown simultaneously, then the probability that the sum of the numbers which come up on the dice to be more than 5 is

- (a)  $\frac{5}{18}$  (b)  $\frac{5}{36}$  (c)  $\frac{13}{18}$  (d)  $\frac{1}{6}$

28. Let A and B be two events such that  $P(A) = 0.3$  and  $P(A \cup B) = 0.8$ . If A and B are independent events, then  $P(B) =$

- (a)  $\frac{5}{6}$  (b)  $\frac{5}{7}$  (c)  $\frac{3}{5}$  (d)  $\frac{2}{5}$

29. If two unbiased dice are rolled simultaneously until a sum of the number appeared on these dice is either 7 or 11, then the probability that 7 comes before 11, is

- (a)  $\frac{3}{8}$  (b)  $\frac{3}{4}$  (c)  $\frac{5}{6}$  (d)  $\frac{2}{9}$

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**Space for Rough Work**



30. The probability that A speaks truth is  $\frac{4}{5}$ , while this probability for B is  $\frac{3}{5}$ . The probability of atleast one of them is true when asked to speak on an event is
- (a)  $\frac{4}{25}$  (b)  $\frac{2}{25}$  (c)  $\frac{3}{25}$  (d)  $\frac{23}{25}$
31.  $\frac{8!}{2(6!)} =$
- (a) 28 (b) 56 (c) 42 (d) 38
32.  $\frac{1}{5!} + \frac{1}{6!} =$
- (a)  $\frac{7!}{720}$  (b)  $\frac{7}{720}$  (c)  $\frac{7}{120}$  (d)  $\frac{7!}{120}$
33. In a class there are 10 boys and 8 girls. The teacher wants to select either a boy or a girl to represent the class in a function. In how many ways the teacher can make this selection?
- (a) 18 (b) 80 (c)  $8^{10}$  (d)  $10^8$
34. How many committees of 5 members can be formed from 6 gentlemen and 4 ladies?
- (a) 4950 (b) 4590 (c) 3950 (d) 3590
35. There are 15 persons in a party and each person shakes hand with another, then total number of hand shakes is
- (a)  $^{15}P_2$  (b)  $^{15}C_2$  (c)  $15!$  (d)  $2(15!)$
36. A person has 15 friends of whom 10 are relatives. In how many ways can he invite 12 guests such that 8 of them are relative?
- (a) 225 (b) 150 (c) 175 (d) 250
37. In how many ways can 10 balls be divided between two boys, one receiving two and the other eight balls
- (a) 45 (b) 75 (c) 90 (d) None of these

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**Space for Rough Work**



38.  $\frac{4(45!) + 46!}{150(44!)} =$   
 (a) 15 (b) 25 (c) 18 (d) 28
39. If  ${}^nP_5 = 60 \times {}^{n-1}P_3$ , then n is =  
 (a) 6 (b) 15 (c) 10 (d) 12
40. There are four bus routes between A and B and three bus routes between B and C. In how many ways can a man travel by bus from A to C via B?  
 (a) 12 (b) 7 (c) 9 (d) 16
41. In how many ways can a cricket team of eleven select a captain and a vice-captain amongst themselves?  
 (a) 21 (b) 121 (c) 110 (d) 22
42.  ${}^nC_r \div {}^nC_{r-1} =$   
 (a)  $\frac{n-r}{r}$  (b)  $\frac{n+r-1}{r}$  (c)  $\frac{n-r+1}{r}$  (d)  $\frac{n-r-1}{r}$
43. If  ${}^{2n}C_3 : {}^nC_2 = 44 : 3$ , then for which of the following values of r, the value of  ${}^nC_r$  will be 15  
 (a)  $r = 3$  (b)  $r = 4$  (c)  $r = 6$  (d)  $r = 5$
44. In how many different ways can four cards be drawn from a well shuffled pack of 52 playing cards so as to contain 2 club cards and 2 spade cards?  
 (a) 6084 (b) 6048 (c) 4086 (d) 4068
45. The number of all numbers having 5 digits, with distinct digits is  
 (a) 99999 (b)  $9 \times {}^9P_4$  (c)  ${}^{10}P_5$  (d)  ${}^9P_4$
46. In how many ways can the letters of the word 'CABLE' be arranged so that the vowels should always occupy odd places?  
 (a) 24 (b) 36 (c) 12 (d) 18

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**Space for Rough Work**



47. Let  $x$  denote the number of ways of arranging  $m$  boys and  $m$  girls in a row so that no two boys sit together. If  $y$  and  $z$  give the number of ways of arranging  $m$  boys and  $m$  girls in a row and around a circular table respectively so that boys and girls sit alternately, then  $x : y : z =$
- (a)  $m + 1 : m : m - 1$  (b)  $3 : 2 : 1$  (c)  $m - 1 : m : 2$  (d)  $(m + 1)m : 2m : 1$
48. Everybody in a room shakes hands with everybody else. The total number of handshakes is 45. The total number of persons in the room is
- (a) 9 (b) 10 (c) 5 (d) 15
49. A village has 10 players. A team of 6 players is to be formed. 5 members are chosen first out of these 10 players and then the captain is chosen from the remaining players. Then the total number of ways of choosing such team is
- (a) 1260 (b) 210 (c)  $(^{10}C_6)5!$  (d)  $(^{10}C_5)6$
50. A candidate is required to answer 6 out of 12 questions which are divided into two parts A and B each containing 6 questions and he/she is not permitted to attempt more than 4 questions from any part. In how many different ways can he/she make up his/her choice of 6 questions?
- (a) 850 (b) 800 (c) 750 (d) 700

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**Date: 13.11.2022**

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**MATHEMATICS : REVISION TEST-2 (SET A)**  
**Topic: Complex Number + PnC + Probability**

1.	(a)	2.	(d)	3.	(c)	4.	(a)	5.	(d)
6.	(b)	7.	(c)	8.	(b)	9.	(b)	10.	(d)
11.	(d)	12.	(d)	13.	(a)	14.	(b)	15.	(d)
16.	(d)	17.	(a)	18.	(b)	19.	(d)	20.	(c)
21.	(a)	22.	(c)	23.	(b)	24.	(a)	25.	(a)
26.	(a)	27.	(c)	28.	(b)	29.	(b)	30.	(d)
31.	(a)	32.	(b)	33.	(a)	34.	(c)	35.	(b)
36.	(a)	37.	(c)	38.	(a)	39.	(c)	40.	(a)
41.	(c)	42.	(c)	43.	(b)	44.	(a)	45.	(b)
46.	(b)	47.	(d)	48.	(b)	49.	(a)	50.	(a)