WT- 2025	JINDAL SCHOOL, BARBIL	MM- 20
XI	MATHEMATICS (041)	TIME- 1 hr

SECTION-A 1×5

1. If ${}^{n}C_{12} = {}^{n}C_{8}$, then n is equal to
   (a) 20 (b) 12 (c) 6 (d) 30
2. ${}^{n}C_{r} =$
   (a) ${}^{n}C_{n-r+1}$ (b) ${}^{n}C_{n-r}$ (c) ${}^{n}C_{n-r-1}$ (d) ${}^{n+1}C_{r}$
3. The total number of terms in the expansion of $(x+a)^{100}+(x-a)^{100}$ is
   (a) 50 (b) 202 (c) 51 (d) NOT
4. The third term of G.P. is 4. The product of its first 5 terms is
   (a) 4^3 (b) 4^4 (c) 4^5 (d) NOT
5. **Assertion (A):** The number of selections of 20 distinct object taken 8 at a time is same as that taken 12 at a time.
   Reason (R): ${}^{n}C_{r} + {}^{n}C_{r-1} = {}^{n+1}C_{r}$
   Then which of the following is true
   (a) Both Assertion (A) and Reason (R) are true and (R) is the correct explanation of Assertion (A).
   (b) Both Assertion (A) and Reason (R) but (R) is not the correct explanation of Assertion (A).
   (c) Assertion (A) is true but Reason (R) is false.
   (d) Assertion (A) is false but Reason (R) is true.

SECTION-B 2×2

6. Find the number of ways in which two black balls and 3 red balls can be selected from a bag containing 5 black and 6 red balls.
7. Find minimum value of $4^{x} + 4^{1-x}$, where $x \in R$.

SECTION-C 3×2

8. How many chords can be drawn through 21 points on a circle?
9. Which of the following is larger? $99^{50} + 100^{50}$ or 101^{50}

SECTION-D 5×1

10. (A) In how many ways the letters of word "MANREGA" can be arranged in the two cases given below:
    i) When all vowels are never together?
    ii) If no two vowels are together?

    OR

    (B) Permute the letters of word "AASTHA" and if all the words so formed are arranged alphabetically (in dictionary order) then find the Rank of "AASTHA"