

Dear student following is an Easy level [● O O] test paper. Score of 24 Marks in 15 Minutes would be a satisfactory performance. Questions 1-10(+3, -1) (All questions have only one option correct)

- Q.1** How many words can be formed from the letters of the word "COMMITTEE" ?
- (A) $\frac{9!}{(2!)^2}$ (B) $\frac{9!}{(2!)^3}$
- (C) $\frac{9!}{2!}$ (D) 9!
- Q.2** How many nine digit numbers can be formed by using the digits 2, 2, 3, 3, 5, 5, 8, 8, 8 so that the odd digits occupy even positions ?
- (A) 7560 (B) 180
- (C) 16 (D) 60
- Q.3** Total number of four digit odd numbers that can be formed by using 0, 1, 2, 3, 5, 7 are-
- (A) 216 (B) 375
- (C) 400 (D) 720
- Q.4** The sum of the digits in the unit place of all numbers formed with the help of 3, 4, 5, 6 taken all at a time is-
- (A) 18 (B) 108
- (C) 432 (D) 144
- Q.5** The number of diagonals that can be drawn by joining the vertices of an octagon is-
- (A) 20 (B) 28 (C) 8 (D) 16
- Q.6** The possible outcomes when a coin is tossed five times-
- (A) 2^5 (B) 5^2 (C) 10 (D) $\frac{5}{2}$
- Q.7** The number of ways in which a student can choose 5 courses out of 9 courses, when 2 courses are compulsory is-
- (A) 35 (B) 25 (C) 45 (D) 95
- Q.8** The number of selections of 2 candidate for a post out of 5 equally qualified candidates -
- (A) $P(5, 2)$ (B) 5!
- (C) $(5 - 2) !$ (D) 10
- Q.9** The total number of combinations of n different things taken 1, 2, 3, n at a time is-
- (A) $2^n + 1$ (B) 2^{n+1}
- (C) $2^n - 1$ (D) 2^{n-1}
- Q.10** The value of n, when ${}^n P_2 = 20$ is-
- (A) 3 (B) 4 (C) 6 (D) 5



MATHEMATICS IIT JEE (SEPT. 2nd WEEK CLASS TEST 1) (PERMUTATION & COMBINATION) ANSWER KEY

Name : Roll No. :

	A	B	C	D		A	B	C	D		A	B	C	D
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
										10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	D	D	B	A	A	A	D	C	D

SOLUTIONS
Sol.1 (B)

Total number of letters = 9

Number of M's = 2

Number of T's = 2

Number of E's = 2

$$\therefore \text{reqd. number of words} = \frac{9!}{2! 2! 2!} = \frac{9!}{(2!)^3}$$

Sol.2 (D)

4 odd digits 3, 3, 5, 5 can occupy 4 even

positions in $\frac{4!}{2! 2!}$ ways and 5 even digits 2,

2, 8, 8, 8 can occupy 5 odd positions in

$\frac{5!}{3! 2!}$ ways.

$$\therefore \text{required number of ways} = 6 \times 10 = 60$$

Sol.3 (D)

Unit's place can be filled up in 4 ways.

[\therefore there are 4 odd digits] and extreme left place can be filled in 5 ways.

[\therefore 0 cannot be placed there]

Either of the remaining two places can be filled in 6 ways.

\therefore Required number of numbers

$$= 4 \times 5 \times 6 \times 6 = 720$$

Sol.4 (B)

Required sum = $3! (3 + 4 + 5 + 6)$

$$= 6 \times 18 = 108$$

[\therefore if we fix 3 at the unit place, other three digits can be arranged in $3! = 6$ ways similarly for 4, 5, 6].

Sol.5 (A)

Number of diagonals

$$= {}^8C_2 - 8 = \frac{8 \times 7}{1 \times 2} - 8 = 28 - 8 = 20$$

Sol.6 (A)

Possible outcomes = $2 \times 2 \times 2 \times 2 \times 2 = 2^5$

[\therefore outcome is Head or Tail in each toss]

Sol.7 (A)

Since 2 courses are compulsory.

\therefore The remaining 3 courses out of 7 can be

selected 7C_3 ways = $\frac{7 \times 6 \times 5}{1 \times 2 \times 3} = 35$ ways.

Sol.8 (D)

The number of selections of 2 candidates out of 5 equally qualified candidates

$$= {}^5C_2 = \frac{5 \times 4}{1 \times 2} = 10$$

Sol.9 (C)

Total number of combinations

$$= {}^nC_1 + {}^nC_2 + \dots + {}^nC_n = 2^n - 1.$$

Sol.10 (D)

$${}^nP_2 = 20$$

$$\Rightarrow n(n-1) = 20$$

$$\Rightarrow n = 5$$