

## Chapter 5. Groups

1) The set  $\mathbb{N}$  of natural numbers is closed with respect to

- A) Addition
- B) Multiplication
- C) Both A & B
- D) Subtraction

Answer: C

2) The set  $\mathbb{Z}$  of integers is closed with respect to

- A) Addition
- B) Multiplication
- C) Subtraction
- D) A, B and C are correct

Answer: D

3) The set  $\mathbb{R} - \{0\}$  of real numbers is closed with respect to

- A) Addition
- B) Multiplication
- C) Division
- D) A, B & C are correct

Answer: D

4) In the set  $S = \{0, 1\}$  the binary operation defined is

- A)  $-$
- B)  $+$
- C)  $\times$
- D)  $\div$

Answer: C

5) The set  $S = \{-1, 1, -i, i\}$  is a group with respect to the binary operation

- A)  $\div$
- B)  $\times$
- C)  $+$
- D)  $-$

Answer: B

6) The set  $S = \{1, \omega, \omega^2\}$  is a group with respect to the binary operation

- A)  $\times$
- B)  $\div$
- C)  $+$
- D)  $-$

Answer: A

7) If set is a group with respect to addition then the number of identity elements in  $S$  is

- A) Unique
- B) Two
- C) Three
- D) None

Answer: A

8) If set  $S$  is a group with respect to addition then each element of  $S$  has \_\_\_\_\_ inverse.

- A) Unique
- B) Two
- C) Three
- D) None

Answer: A

9)  $\mathbb{R} - \{0\}$  is a group w.r.t the binary operation

- A)  $+$
- B)  $\times$
- C)  $\div$
- D)  $-$

Answer: B

10)  $\mathbb{Q} - \{0\}$  is a group w.r.t the binary operation

- A)  $+$
- B)  $\times$
- C)  $\div$
- D)  $-$

Answer: B

11)  $\mathbb{R}$  is a group w.r.t the binary operation.

- A)  $+$
- B)  $\times$
- C)  $\div$
- D)  $-$

Answer: A

12)  $\mathbb{Q}$  is a group w.r.t the binary operation.

- A)  $+$
- B)  $\times$
- C)  $\div$
- D)  $-$

Answer: A

13)  $S = \{1, -1\}$  is a group w.r.t the binary operation.

- A)  $+$
- B)  $\times$
- C)  $-$
- D) none of these

Answer: B

14)  $S = \{0\}$  is a trivial group under

- A)  $+$
- B)  $\times$
- C)  $\div$
- D)  $-$

Answer: A

15)  $S = \{1\}$  is trivial group under

- A)  $+$
- B)  $\times$
- C)  $-$
- D) division

Answer: B

16) A non empty set S which is closed with a binary operation '\*' is called group if D) None  
Answer: A

- A) The binary operation is associative
- B) There exists identity element with respect to the binary operation.
- C) There exist a unique inverse of each element of S with respect to the binary operation.
- D) All A, B & C hold.

Answer: D

17) In a proposition if  $p \rightarrow q$  then  $q \rightarrow p$  is called

- A) inverse of  $p \rightarrow q$
- B) converse of  $p \rightarrow q$
- C) contrapositive  $p \rightarrow q$
- D) none

Answer: B

18) Truth table containing all false values is called

- A) Tautology
- B) Self-contradiction
- C) Equivalent
- D) None

Answer: B

19) Truth table containing all true values is called

- A) Tautology
- B) Self-contradiction
- C) Equivalent
- D) None

Answer: A

20) In a proposition if  $p \rightarrow q$  then contrapositive of this proposition is denoted by

- A)  $q \rightarrow p$
- B)  $\sim q \rightarrow p$
- C)  $\sim q \rightarrow \sim p$
- D) None

Answer: C

21) In a proposition if  $p \rightarrow q$  then inverse of this proposition is denoted by

- A)  $q \rightarrow p$
- B)  $\sim q \rightarrow p$
- C)  $\sim p \rightarrow \sim q$
- D) None

Answer: C

22) In a proposition if  $p \rightarrow q$  then converse of this proposition is denoted by

- A)  $q \rightarrow p$
- B)  $\sim q \rightarrow p$
- C)  $\sim q \rightarrow \sim p$