

Subject Incharge :___

PARSHVANATH CHARITABLE TRUST'S

A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering

Data Science

Semester:Subject:SGT	Academic Year: 2012 2023
* Group:-	19464 - 94-1 101
dennels are better the means to me an	This room is the second
A system consisting of a non-e	mpty set G of
element a, b, c etc with the or	peration is swa
to be group provided the follow	ing properties
are satisfied.	<u> </u>
- Closure	t C Mr College
- Associativity	das en Telefon
- Identity	
- Inverse.	- 1-11 mg
Let q be a non-void set with	a binary
operation * that assigns to each	ordered pair
(a,b) of elements of G an elem	nent of u
denoted by a * b. G is a gre	
the binary aperation * if the	following
properties are satisfied.	
/!! 0	* . \
/ it clasure: A binary operation	is closure 1.e
if a ∈ X, b ∈ X then	1 1 5 2
$a * b \in X$.	
ii > associativity:	· b
A binary operation *	15 associative.
1.e. ax(bxc) = (axb)*(
+ a,b,c ∈ X.	

Page No.__

Department of CSE-Data Science | APSIT



PARSHVANATH CHARITABLE TRUST'S

A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering
Data Science

Semester: DSGT Academic Year: 2022-2023
iii/ Identity:
There is an element e, called the identi
such that axe=e*a=a, +a ex.
Exercise the second sec
iv) Inverse:
For each element a in X, there is an
element b in x, called an inverse of a such
that a * b = b * a = e , ta, b e x.
LAND AND SOME SOME SOME SOME SOME SOME SOME SOME
A monoid (S, *) with identity element 'e'
is called a group if to each element a ES
there exist on b Es such that
(0 + b) = (b + a) = e
here b is an inverse of a and
denoted as a-1, and b-1=q.
ex.
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
$Z = \{-00,, -2, -1, 0, 1, 2,, 00\}$
* is a binary operation +.
$a \star b \in Z$
a+b ∈ Z Closure property
$2+3=5 \in Z$.
hence it is algebraic structure.

Department of CSE-Data Science | APSIT

Page No.

Subject Incharge:



Subject Incharge :__

PARSHVANATH CHARITABLE TRUST'S

A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering Data Science

Semester :	Ш	Subj	ect: DSGT		Academic Y	rear: 2022: 2023
	a * C	bxc)	= (a x b)	* ()	Condition	7112
	a+((p+c)	= (a+b)+C	1 associa	wing
	2+(3+5)	= (2+3)+5	associa	ben't
	10	=	10	a) El	7	
	hence	it is	s semi	dromb	SAYD	
L MARIA	a	*e =	e * a :	a	(m)	- Lagrita
	0	is an	identit	y elem	ient for	+ (identity
	3+	0 = 0	+3 = 3	# 1 3	A R E	
	hence	e it i	s mono	id.	(A) (B) (A)	7
		a * b	= b * a	= 6 .		2
1	- I FI FI	a+b	= b + a =	e	, e=0	pinverse.
DOM: USAN	MARKET	2 + (-	-2) = -2	+ 2 = 0		
O MASS	So	here	$\alpha = 2$, b =	a-1=-1	2
THE PARTY	0 85		e=0	inven	rse ésem	nent is prese
DIR HALLIS		+ 15	a group			1
2)(8)	* .)	R	is set	of rea	1 00.	A THE REAL PROPERTY.
	R = {	-2, -	1, 1/2,	6.2,3.	5,1,3	, 6,24
1)		* 6				
paratra	a	. b	Muley		45 518	M.
ISS. WITH	2	. 3 =	6			
	9	3 E	Ra	nd 6	€ R	
	It is	ana	gebraic	struch	ine	
- II - II-sharm	e :		age No			Science APSIT



ubject Incharge :___

PARSHVANATH CHARITABLE TRUST'S

A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering

Data Science

Semester: Subject: DS GT	Academic Year: 2022- 2023
ii) a.(b.c) = (a.b).c	813 7 75
2.(3.1) = (2.3).1	0 4 6
6 = 6	(1) 4 (0)
it is a semigroup	
iii b	69390
a * e = e * a = a	
for . multiplication, identi-	ty element=1
$\alpha = 5$	0
<u> 5 * 1 = 1 * 5 = 5</u>	+ 30
a e R and e e R	
hence it is monoid	
iv>	Note: -
a * b = b * a = e	Note: - R*=
b = a-1	all real no.
$\alpha = 5$	except o
5-1-1-5-1	ex. 0 · 1 = 00
5 5	0
1 is identity element	so not group
Q=5	00 is not
b=1 = a-1	real number
5	if (R,.)
hence it is group.	then not group
and the second of the second o	MA AND THE STATE OF THE STATE O