

PO Attainment

Faculty Name: Akhilesh Kumar Pandey

Class/Sem: B.Sc. Biotech V

Academic Year: 2022-23

Course Name: Analytical Techniques

Course Code: BST-501

Program Name: B.Sc.

CO-PO MAPPING:


Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2			2	1	2	3			
CO2	2	1	3		3		1	3		1	3	1
CO3	1		2	1	3	1	2		2		1	
CO4	2		3	1			3	1			2	
CO5	3	1		1	2		1	1		2		2
CO6	2	3		3	1	2	1	1			3	1

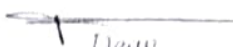
CO ATTAINMENT:

Akhilesh Kumar Pandey	Att. Level
CO1	2.67
CO2	2.67
CO3	3.00
CO4	2.67
CO5	2.67
CO6	3.00

PO ATTAINMENT :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Overall PO Attainment	2.8	2.8	2.7	2.9	2.8	2.9	2.8	2.7	2.8	2.7	2.8	2.8


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Faculty Name: Akhilesh Kumar Pandey

Class/Sem: B.Sc. Biotech V sem Academic Year: 2022-23

Course Name: Analytical Techniques

Course Code: BST-501

Program Name: B.Sc. Biotech

First Unit Test	Second Unit Test	First Class Test	Second Class Test	Best One From Unit Test	Best One From Class Test	Internal Marks Scheme			Total Internal Marks	End Sem Exam Marks	Total Marks
						Unit Test(UT)	Attendance(AT)	Teacher Assessment(TA)			

S. No.	University Reg. No.	Student Name	Theory (30)	Theory (30)	Theory (10)	Theory (10)	Theory (30)	Theory (10)	12	12	6	Theory (30)	Theory (70)	Theory (100)
1	BSBT2020002	ANKIT KUMAR	15	12	3	3	15	3	6	4	2	12	28	40
2	BSBT2020004	TANU	25	20	7	5	25	7	10	8	4	22	62	84
3	BSBT2020005	SUMIT VERMA	15	12	3	3	15	3	6	4	2	12	32	44
4	BSBT2020006	BOBY KASHYAP	15	12	3	3	15	3	6	7	2	15	28	43
5	BSBT2020007	MOHD AYYAN MALIK	20	16	3	3	20	3	8	9	2	19	40	59
6	BSBT2020009	MOHAMMAD AJMAL	20	16	7	5	20	7	8	8	4	20	49	69
7	BSBT2020011	DEVANG PANDEY	15	12	3	3	15	3	6	6	2	14	46	60
8	BSBT2020012	UMRA KHAN	30	24	7	5	30	7	12	12	4	28	59	87
9	BSBT2020013	RAJEEV KUMAR	30	24	7	5	30	7	12	10	4	26	35	61
10	BSBT2020014	SHIKHA SAMANT	30	24	7	5	30	7	12	12	4	28	60	88
11	BSBT2020015	AKSHAT	30	24	7	5	30	7	12	13	4	29	56	85
12	BSBT2020017	SHIVANSH GANGWAR	15	12	3	3	15	3	6	7	2	15	58	73
13	BSBT2020018	DHARAMPAL THAKUR	30	24	7	5	30	7	12	12	4	28	55	83
14	BSBT2020019	NEHA MAURYA	30	24	7	5	30	7	12	12	4	28	47	75
15	BSBT2020020	PRASOON YADAV	15	12	3	3	15	3	6	6	2	14	29	43
16	BSBT2020023	RIDA KHAN	25	20	7	5	25	7	10	10	4	24	52	76
17	BSBT2020024	DEEPANSHI	30	24	7	5	30	7	12	11	4	27	60	87
18	BSBT2020025	ABHAY VARSHNEY	30	24	7	5	30	7	12	10	4	26	45	71
19	BSBT2020026	AVANTIKA SINGH	15	12	3	3	15	3	6	4	2	12	46	58
20	BSBT2020028	DEVANSH PANDEY	30	24	7	5	30	7	12	12	4	28	53	81
21	BSBT2020029	SHRESTHA GUPTA	30	24	7	5	30	7	12	13	4	29	62	91
22	BSBT2020031	KANISHKA GUPTA	20	16	3	3	20	3	8	8	2	18	50	68
23	BSBT2020032	GARGI SINGH	30	24	7	5	30	7	12	11	4	27	42	69
24	BSBT2020033	HIMANSHI BHARTI	30	24	7	5	30	7	12	10	4	26	56	82
25	BSBT2020034	ADITI GOYAL	30	24	10	8	30	10	12	12	6	30	62	92
26	BSBT2020035	AMARJEET SINGH	30	24	7	5	30	7	12	12	4	28	55	83
27	BSBT2020036	AMISHA SAXENA	30	24	7	5	30	7	12	10	4	26	57	83
28	BSBT2020001	ABHISHEK MISHRA	15	12	3	3	15	3	6	7	2	15	35	50
29	BSBT2020022	ABHISHEK SHARMA	15	12	3	3	15	3	6	4	2	12	28	40
30	BSBT2020030	KARISHMA SRIVASTAVA							6	4	2	12	AB	12
Students appeared for the examination			29	29	29	29	29	29	30	30	30	22	29	30
Target / satisfactory mark set as benchmark			2	12	4	4	12	4	5	5	2	12	28	40
Students scored above the target set			29	29	18	18	29	18	30	25	18	12	29	29
% Students scored above the target set			100%	100%	62%	62%	100%	62%	100%	83%	60%	18	100%	97%
Attainment Level			3	3	2	2	3	2	3	3	2	15	3	3

	CO1	CO2	CO3	CO4	CO5	CO6	Overall						
CO1	3		2		3	2	3	3	2	15	3	3	2.67
CO2	3		2		3	2	3	3	2	15	3	3	2.67
CO3	3				3		3	3		15	3	3	3.00
CO4		3		2	3	2	3	3	2	15	3	3	2.67
CO5		3		2	3	2	3	3	2	15	3	3	2.67
CO6		3			3		3	3		15	3	3	3.00

Rubric:

% Students	Level
<50%	1
50-75%	2
>75%	3

Overall attainment 2.78

Pandey
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Even Semester Examination 2022-23



B.Sc. Biotech - V Semester

Course/Code: Analytical Techniques (BST-501)

Maximum Marks :70; Duration: 3 Hours

Q.No	Questions	Marks (70)	CO	BL
	Explain the following:			
1-I	Define microscope.	01	CO1	L2
1-II	Staining specimen can be visualized by.....	01	CO2	L1
1-III	Write a name of anionic detergent.	01	CO2	L2
1-IV	Explain role of SDS in sample preparation	01	CO2	L1
1-V	Define electrophoresis	01	CO2	L1
1-VI	Native electrophoresis is used to separate.....	01	CO1	L1
1-VII	Define retention factor	01	CO1	L1
	Explain the following:			
2-I	Fluorescence microscopy is based onof light.	01	CO1	L1
2-II	Glycerol increase theof protein sample	01	CO1	L1
2-III	Write the name of reducing agent.	01	CO1	L1
2-IV	Define stationary phase	01	CO1	L2
2-V	Define limit of resolution.	01	CO1	L1
2-VI	Write source of electron emission in Electron microscopy.	01	CO1	L1
2-VIIof protein estimated by gel filtration chromatography.	01	CO1	L1
3-I	Explain the dark field microscopy or Discuss confocal microscopy	7	CO2	L2
3-II	Discuss paper chromatography or Explain application of microscopy	7	CO3	L3
4-I	Write a long notes on Agarose electrophoresis or Explain isoelectric focusing in detail	7	CO3	L5
4-II	Discuss Chromatography and their types or Explain image formation in electron mi	7	CO4	L3
5	Explain the protein separation methods with sketch diagrams or Describe the Affinity chromatograp	14	CO5	L4
6	Explain the western blotting in detail or Discuss application of ion exchange chromatography	14	CO6	L6

BL – Bloom's Taxonomy Levels

(1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

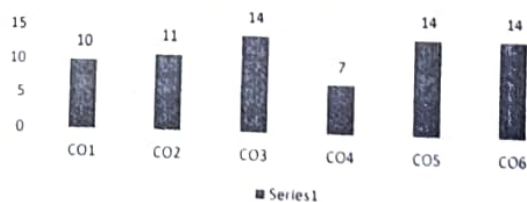
CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

Level	Marks	CO	Marks
Level1	11	CO1	10
Level2	10	CO2	11
Level3	14	CO3	14
Level4	14	CO4	7
Level5	7	CO5	14
Level6	14	CO6	14
Total	70	Total	70

Bloom's Level wise Marks Distribution



Course Outcome wise Marks Distribution



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APR 2023

First Unit Test 2022-23

B.Sc. Biotech - V Semester

Course/Code: Analytical Techniques (BST-501)

Maximum Marks :30; Duration: 90 Minutes



Q.No	Questions	Marks (30)	CO	BL
	Explain the following in very short -			
1-I	Define Proteins.	01	CO1	L1
1-II	Write full form of SDS.	01	CO1	L1
1-III	Agarose is consist of.....	01	CO2	L2
1-IV	The 2 D indicates.....	01	CO1	L2
1-V	Electrophoresis term was coined by	01	CO1	L1
2-I	What is the role of SDS in sample preparation	01	CO2	L2
2-II	Write the factors which affects electrophoresis	01	CO2	L1
2-III	Define Microscope and their components	01	CO2	L2
2-IV	Define limit of resolution and resolving power	01	CO2	L2
2-V	Define 2D.	01	CO2	L1
3	Discuss the Agarose electrophoresis in detail	08	CO2	L3
4-A	Explain SDS PAGE with suitable diagrams	06	CO3	L4
4-B	Define Western blotting and its stepwise procedure in detail	06	CO3	L4

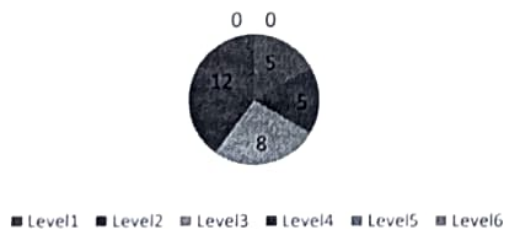
BL – Bloom's Taxonomy Levels

(1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

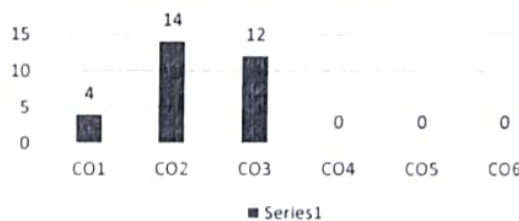
CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

Level	Marks	CO	Marks
Level1	5	CO1	4
Level2	5	CO2	14
Level3	8	CO3	12
Level4	12	CO4	0
Level5	0	CO5	0
Level6	0	CO6	0
Total	30	Total	30

Bloom's Level wise Marks Distribution



Course Outcome wise Marks Distribution



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Arka

Q.No	Questions	Marks (30)	CO	BL
	Explain the following in very short -			
1-I	Protein	01	CO4	L1
1-II	Electrophoresis	01	CO4	L1
1-III	IEF	01	CO4	L2
1-IV	Centrifugation	01	CO4	L1
1-V	RF Value	01	CO4	L1
	Explain the following function -			
2-I	SDS	01	CO4	L2
2-II	Buffers	01	CO5	L2
2-III	Mercaptoethanol	01	CO5	L2
2-IV	Affinity	01	CO5	L2
2-V	Gel permeation	01	CO5	L2
3	Explains microscopy and their types	08	CO5	L3
4-A	Write the principle of 2D electrophoresis?	12	CO6	L4

BL – Bloom's Taxonomy Levels

(1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

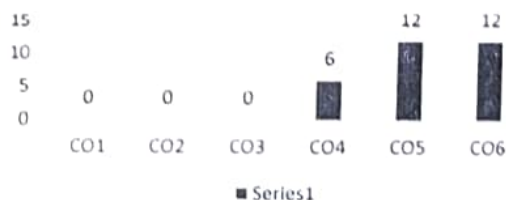
Level	Marks	CO	Marks
Level1	4	CO1	0
Level2	6	CO2	0
Level3	8	CO3	0
Level4	12	CO4	6
Level5	0	CO5	12
Level6	0	CO6	12
Total	30	Total	30

Bloom's Level wise Marks Distribution



Legend: Level1, Level2, Level3, Level4, Level5, Level6

Course Outcome wise Marks Distribution



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Q.No	Questions	Marks (10)	CO	BL
1	Chromatography and their types.	05	CO1	L3
2	Discuss the IEF with the help of suitable diagram.	05	CO2	L1

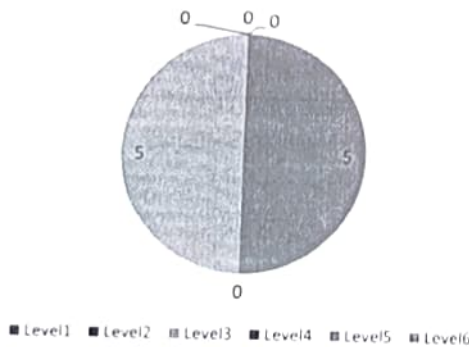
BL – Bloom's Taxonomy Levels

(1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

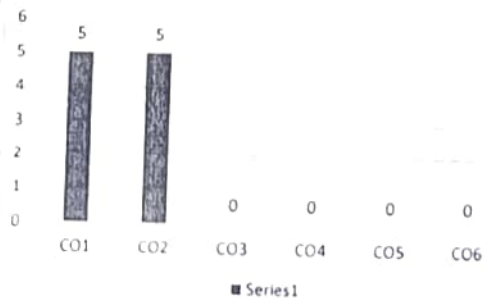
CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

Level	Marks	CO	Marks
Level1	5	CO1	5
Level2	0	CO2	5
Level3	5	CO3	0
Level4	0	CO4	0
Level5	0	CO5	0
Level6	0	CO6	0
Total	10	Total	10

Bloom's Level wise Marks Distribution



Course Outcome wise Marks Distribution



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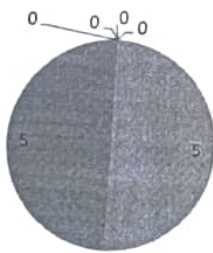
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Q.No	Questions	Marks (10)	CO	BL
1	Write in short on electrophoresis	05	CO4	L2
2	Explain 2D.	05	CO5	L1

BL – Bloom’s Taxonomy Levels
 (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)
 CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

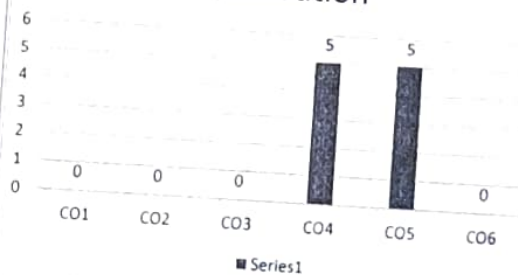
Level	Marks	CO	Marks
Level1	5	CO1	0
Level2	5	CO2	0
Level3	0	CO3	0
Level4	0	CO4	5
Level5	0	CO5	5
Level6	0	CO6	0
Total	10	Total	10

Bloom's Level wise Marks Distribution



Legend: Level1, Level2, Level3, Level4, Level5, Level6

Course Outcome wise Marks Distribution



Series1

Pankaj
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PROGRAM : BACHELOR OF SCIENCE HONOURS (BIOTECHNOLOGY)
SEMESTER : FIFTH
SESSION : 2022-23
COLLEGE : Faculty of Bio Science & Bio Technology

Sl. No.	Enrollment No.	Roll No.	Student Name	BST501			BST502			BST503			BST504			BST505			BST506			BST511			BST512			Grand Total	Credit Secured	SG						
				Max Marks			CR			Max Marks			CR			Max Marks			CR			Max Marks			CR											
				70	30	100	4	70	30	100	4	70	30	100	4	70	30	100	4	70	30	100	4	70	30	100	4				35	15	50	2	50	50
1	203550	2010890002	ANSHU KUMAR	28	12	40	4	28	12	40	4	28	12	40	4	28	12	40	4	28	12	40	4	28	12	40	4	24	14	38	2	35	35	2	334	28
2	203551	2010890003	TANU	62	22	84	4	63	24	87	4	64	27	81	4	62	25	77	4	48	27	75	4	29	14	43	2	38	38	2	571	28				
3	203552	2010890004	SUMIT VERMA	32	12	44	4	28	12	40	4	32	12	44	4	38	12	50	4	28	12	40	4	24	14	38	2	35	35	2	353	28				
4	203553	2010890005	BOBY KASHYAP	28	12	44	4	28	12	40	4	32	12	44	4	38	12	50	4	28	12	40	4	24	14	38	2	35	35	2	334	28				
5	203554	2010890006	MOHD AYYAN MALIK	40	19	59	4	34	27	61	4	46	22	68	4	41	23	64	4	37	23	60	4	36	23	59	4	28	14	42	2	40	40	2	453	28
6	203555	2010890007	MOHAMMAD AJMAL	49	20	69	4	55	25	80	4	50	25	75	4	41	25	66	4	36	25	61	4	40	25	65	4	28	14	42	2	40	40	2	498	28
7	203557	2010890009	DEVANG PANDEY	46	14	60	4	30	14	44	4	59	18	73	4	44	14	58	4	43	14	57	4	30	14	44	4	31	14	45	2	39	39	2	416	28
8	203558	2010890010	UMMA KHAN	59	26	85	4	65	30	95	4	59	18	77	4	48	28	76	4	45	18	63	4	31	14	45	2	44	44	2	564	28				
9	203559	2010890011	RAJEEV KUMAR	35	26	61	4	32	27	79	4	46	25	71	4	40	23	63	4	28	23	51	4	37	24	61	4	28	14	42	2	39	39	2	467	28
10	203560	2010890012	SHIKHA SAMANT	60	28	88	4	62	30	92	4	62	29	91	4	54	28	82	4	44	29	73	4	42	29	71	4	31	14	45	2	46	46	2	588	28
11	203561	2010890013	AKSHAT	56	29	85	4	58	30	88	4	56	28	84	4	54	27	81	4	45	28	73	4	43	28	71	4	33	14	47	2	45	45	2	574	28
12	203563	2010890015	SHIVANSH GANGWAR	58	15	73	4	54	15	69	4	57	15	72	4	53	15	68	4	41	15	56	4	37	15	52	4	31	14	45	2	37	37	2	472	28
13	203564	2010890016	DHARAMPAL THAKUR	65	26	91	4	59	26	85	4	55	26	81	4	51	27	78	4	40	28	68	4	43	27	70	4	31	14	45	2	40	40	2	550	28
14	203565	2010890017	NEHA MAURYA	47	28	75	4	53	30	83	4	50	26	76	4	51	25	76	4	38	29	65	4	38	29	67	4	31	14	45	2	42	42	2	529	28
15	203566	2010890018	PRASOON YADAV	29	14	43	4	34	14	48	4	34	14	48	4	33	14	47	4	30	14	44	4	33	14	47	4	26	14	40	2	35	35	2	379	28
16	203569	2010890021	RIDA KHAN	52	24	76	4	61	30	91	4	62	26	88	4	53	26	79	4	48	27	75	4	48	27	75	4	33	14	47	2	45	45	2	560	28
17	203570	2010890022	DEEPAK SINGH	60	27	87	4	66	29	95	4	69	27	96	4	61	26	87	4	48	28	76	4	46	27	93	4	32	14	46	2	47	47	2	627	28
18	203571	2010890023	ABHAY VARSHNEY	45	26	71	4	28	21	49	4	54	25	79	4	51	25	76	4	37	21	58	4	30	15	45	4	28	14	42	2	40	40	2	460	28
19	203572	2010890024	AVANTIKA SINGH	46	12	58	4	28	12	40	4	50	12	62	4	40	12	52	4	33	12	45	4	28	12	40	4	25	14	39	2	35	35	2	371	28
20	203574	2010890025	DEVANSH PANDEY	53	28	81	4	53	29	82	4	60	27	87	4	51	27	78	4	39	26	65	4	32	29	81	4	31	14	45	2	42	42	2	581	28
21	203575	2010890027	SHRESHA GUPTA	52	29	81	4	63	30	93	4	65	28	93	4	52	28	80	4	40	30	70	4	65	28	93	4	33	14	47	2	46	46	2	582	28
22	203577	2010890029	KANISHKA GUPTA	50	18	68	4	58	18	76	4	63	26	89	4	56	27	83	4	48	28	76	4	40	28	78	4	32	14	46	2	45	45	2	495	28
23	203578	2010890030	GARGI SINGH	42	27	69	4	46	30	76	4	31	26	57	4	51	25	76	4	38	25	63	4	46	18	64	4	31	14	45	2	47	47	2	533	28
24	203579	2010890031	HIMANSHU BHARTI	56	26	82	4	50	23	73	4	51	27	78	4	55	25	80	4	39	24	63	4	50	13	65	4	31	14	45	2	47	47	2	582	28
25	203580	2010890032	ADITI GOYAL	62	30	92	4	64	30	94	4	69	29	98	4	60	28	88	4	67	30	97	4	65	29	94	4	33	14	47	2	46	46	2	657	28
26	203581	2010890033	AMARJEET SINGH	55	28	83	4	58	30	88	4	57	28	85	4	55	28	83	4	46	30	66	4	54	30	84	4	33	14	47	2	45	45	2	582	28
27	203582	2010890034	AMISHA SAXENA	57	26	83	4	56	30	86	4	56	27	83	4	56	26	82	4	60	29	89	4	54	29	83	4	32	14	46	2	45	45	2	597	28
28	203583	2010890035	ABHISHEK MISHRA	35	15	50	4	29	21	50	4	31	15	54	4	31	15	54	4	22	12	34	4	19	13	34	0	23	37	2	352	24				
29	203584	2010890036	ABHISHEK SHARMA	28	12	40	4	28	12	40	4	35	12	47	4	31	12	46	4	22	12	34	4	28	12	40	4	28	14	42	2	35	35	2	330	24
30	203576	2010890028	KARISHMA SEIVASTAVA	AB	12	24	0	AB	12	24	0	AB	12	24	0	AB	12	24	0	AB	12	24	0	AB	12	24	0	AB	12	24	0	35	35	2	121	2

Registrar
 Department of Biotechnology
 Invertis University, Bareilly, India

Head of Department
 Faculty of Science
 Invertis University, Bareilly, India

Vice Chancellor

Controller of Examination

Passing marks - 40% in each course

> C/P of Re-Appeal Students are not Calculated.
 Legend-
 . External Marks 1 : Internal Marks
 . Total Marks

date : Jan 24, 2023
 Prepared with Grace Marks
 B-Credit

BST501 RECOMBINANT DNA TECHNOLOGY
 BST502 RECOMBINANT DNA TECHNOLOGY
 BST503 PLANT PHYSIOLOGY
 BST504 FRONTIER IN BIOTECHNOLOGY
 BST505 MEDICAL MICROBIOLOGY
 BST506 PLANT BIOTECHNOLOGY

