

PO Attainment

Faculty Name: Akhilesh Kumar Pandey Class/Sem: M.Sc. Biotech I Academic Year: 2022-23
Course Name: Cell and Developmental Biology Course Code: MST-102 Program Name: M.Sc.

CO-PO MAPPING:

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

CO ATTAINMENT:

Akhilesh Kumar Pandey	Att. Level
CO1	2.89
CO2	2.89
CO3	3.00
CO4	2.89
CO5	2.89
CO6	3.00

PO ATTAINMENT :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Overall PO Attainment	2.9	2.7	2.9	2.9	2.9	3.0	2.8	2.9	3.0	2.9	2.9	2.9

Akhilesh Kumar Pandey
Head

Department of Biotechnology
Invertis University, Bareilly (U.P.)

Akhilesh Kumar Pandey
Faculty Signature

[Signature]
Dean
Faculty of Science
Invertis University, Bareilly (U.P.)

[Signature]
Registrar
Invertis University
Bareilly

Faculty Name: Akhilesh Kumar Pandey

Class/Sem: M.Sc. Biotech I sem Academic Year: 2022-23

Course Name: Cell and Developmental Biology

Course Code: MST-102

Program Name: M.Sc. Biotech

S. No.	University Reg. No.	Student Name							Internal Marks Scheme			Total Internal Marks	End Sem Exam Marks	Total Marks
			First Unit Test	Second Unit Test	First Class Test	Second Class Test	Best One From Unit Test	Best One From Class Test	Unit Test(UT)	Attendance(AT)	Teacher Assessment(TA)			
			Theory (30)	Theory (30)	Theory (10)	Theory (10)	Theory (30)	Theory (10)	12	12	6	Theory (30)	Theory (70)	Theory (100)
1	MSBT2022012	AKHILESH KUMAR	30	24	7	5	30	7	12	11	4	27	48	75
2	MSBT2022001	AYUSHI	30	24	7	5	30	7	12	11	4	27	50	77
3	MSBT2022003	KRITHI GUPTA	25	20	7	5	25	7	10	9	4	23	55	78
4	MSBT2022008	MANISHI RATHI	30	24	7	5	30	7	12	13	4	29	53	82
5	MSBT2022006	MANSI MATHUR	15	12	3	3	15	3	6	7	2	15	48	63
6	MSBT2022009	MANSI RASTOGI	25	20	7	5	25	7	10	11	4	25	35	60
7	MSBT2022017	MONIKA PAL	25	20	7	5	25	7	10	11	4	25	54	79
8	MSBT2022015	MUSKAN JOSHI	25	20	7	5	25	7	10	10	4	24	41	65
9	MSBT2022011	PRABHA GANGWAR	30	24	7	5	30	7	12	12	4	28	52	80
10	MSBT2022010	RAMJI DIXIT	25	20	7	5	25	7	10	11	4	25	54	79
11	MSBT2022005	RANJEET PAL	30	24	7	5	30	7	12	10	4	26	42	68
12	MSBT2022019	REHAN AHMAD	15	12	3	3	15	3	6	6	2	14	54	68
13	MSBT2022013	RINKLE SHARMA	30	24	7	5	30	7	12	13	4	29	54	83
14	MSBT2022014	SEEMA YADAV	30	24	7	5	30	7	12	12	4	28	57	85
15	MSBT2022004	SONAL GUPTA	30	24	10	8	30	10	12	12	6	30	52	82
16	MSBT2022016	SONIKA PAL	30	24	7	5	30	7	12	10	4	26	55	81
17	MSBT2022002	MANSI SAXENA	15	12	3	3	15	3	6	4	2	12	AB	12
18	MSBT2022020	SAMEER QURESHI	15	12	3	3	15	3	6	6	2	14	AB	14
19	MSBT2022007	SHIVANI CHAUDHARY	25	20	7	5	25	7	10	10	4	24	33	57
20	MSBT2022021	DHARMENDRA SINGH YADAV							6	7	2	15	32	47
Students appeared for the examination			19	19	19	19	19	19	20	20	20	22	18	20
Target / satisfactory mark set as benchmark			12	12	4	4	12	4	5	5	2	12	28	40
Students scored above the target set			19	19	15	15	19	15	20	19	15	12	18	18
% Students scored above the target set			100%	100%	79%	79%	100%	79%	100%	95%	75%	18	100%	90%
Attainment Level			3	3	3	3	3	3	3	3	2	15	3	3

														Overall
CO1	3		3		3	3	3	3	2	15	3	3	2.89	
CO2	3		3		3	3	3	3	2	15	3	3	2.89	
CO3	3				3		3	3		15	3	3	3.00	
CO4		3		3	3	3	3	3	2	15	3	3	2.89	
CO5		3		3	3	3	3	3	2	15	3	3	2.89	
CO6		3			3		3	3		15	3	3	3.00	

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

Overall attainment 2.93

Akhilesh Kumar Pandey
Faculty Signature

Pandey
Head
Department of Biotechnology
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Dean
Faculty of Science
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SK
Registrar
Invertis University
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Even Semester Examination 2022-23



M.Sc. Biotech - I Semester

Course/Code: Cell and Developmental Biology (MST-102)

Maximum Marks :70; Duration: 3 Hours

Q.No	Questions	Marks (70)	CO	BL
	Explain the following:			
1-I	Define tissue	01	CO1	L2
1-II	Define protein	01	CO2	L1
1-III	is used to isolates cells and their parts	01	CO2	L2
1-IV	Explain carbohydartes	01	CO2	L1
1-V	Write example of symport transporter	01	CO2	L1
1-VI	GPCR	01	CO1	L1
1-VII	Define M phase	01	CO1	L1
	Explain the following:			
2-I	Give example of semi-autonomous organalle	01	CO1	L1
2-II	Write function of Cadherins	01	CO1	L1
2-III	Explain blotting?	01	CO1	L1
2-IV	What is principle of cell theory?	01	CO1	L2
2-V	Define centrifugation	01	CO1	L1
2-VI	Explain diffusion	01	CO1	L1
2-VII	Write the name of protein found in nucleus	01	CO1	L1
3-I	Explain the separation of cell organlle	7	CO2	L2
3-II	Discuss the Mitosis	7	CO3	L3
4-I	Describe the cell theory	7	CO3	L5
4-II	Discuss the types of transport of molecules	7	CO4	L3
5	Discuss the nucleus in detail	14	CO5	L4
6	Define GPCR signalling with suitable diagrams	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

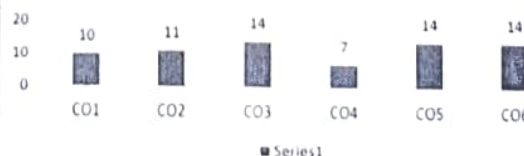
Level	Marks	CO	Marks
Level1	11	CO1	10
Level2	10	CO2	11
Level3	14	CO3	14
Level4	14	CO4	7
Level5	7	CO5	14
Level6	14	CO6	14
Total	70	Total	70

Bloom's Level wise Marks Distribution



■ Level2 ■ Level3 ■ Level4 ■ Level5 ■ Level6

Course Outcome wise Marks Distribution



■ Series1

Registrar
Invertis University
BareillyHead
Department of Biotechnology
Invertis University, BareillyDean
Faculty of Science
Invertis University, Bareilly (U.P.)

Q.No	Questions	Marks (30)	CO	BL
	Explain the following in very short -			
1-I	Fluid mosaic model is given by	01	CO1	L1
1-II	Northern blotting is related to	01	CO1	L1
1-III	SDS electrophoresis is used to separate	01	CO2	L2
1-IV	70S ribosome is present in	01	CO1	L2
1-V	Full form of TEM and SEM	01	CO1	L1
	Explain the following			
2-I	The nature of histone proteins are	01	CO2	L2
2-II	Give two examples of monosaccharide	01	CO2	L1
2-III	Write example of sulfur containing amino acid?	01	CO2	L2
2-IV	Write the Full form of GPCR	01	CO2	L2
2-V	Write different phases of cell cycle	01	CO2	L1
3	Explain the fluid mosaic model of cell membrane with suitable diagrams	08	CO2	L3
4-A	Write a long notes on cell signaling.	06	CO3	L4
4-B	Describe the method of separation of cell organelle	06	CO3	L4

BL – Bloom's Taxonomy Levels

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

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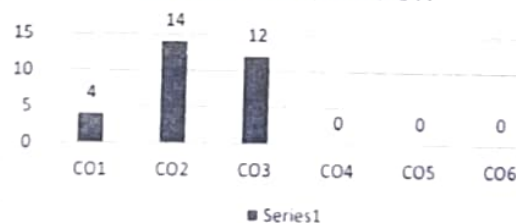
Level	Marks	CO	Marks
Level1	5	CO1	4
Level2	5	CO2	14
Level3	8	CO3	12
Level4	12	CO4	0
Level5	0	CO5	0
Level6	0	CO6	0
Total	30	Total	30

Bloom's Level wise Marks Distribution



■ Level1 ■ Level2 ■ Level3 ■ Level4 ■ Level5 ■ Level6

Course Outcome wise Marks Distribution



■ Series1

Paul
Head

Department of Biotechnology
Invertis University, Bareilly

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Dean
Faculty of Science
Invertis University, Bareilly

SK
Registrar
Invertis University
Bareilly

Q.No	Questions	Marks (30)	CO	BL
	Explain the following in very short -			
1-I	Define SER	01	CO4	L1
1-II	Define nucleolous	01	CO4	L1
1-III	Explain Nucleic acid	01	CO4	L2
1-IV	Explain signal	01	CO4	L1
1-V	Write example of symport transporter	01	CO4	L1
	Explain the following function -			
2-I	Explain the histone proteins	01	CO4	L2
2-II	What is autocrine signaling?	01	CO5	L2
2-III	Give two examples of neurotransmitters	01	CO5	L2
2-IV	Give the name of secondary messengers	01	CO5	L2
2-V	Progeria syndrome is caused by	01	CO5	L2
3	Write a note on mitochondria	08	CO5	L3
4-A	Discuss signal transduction in nerve cell	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

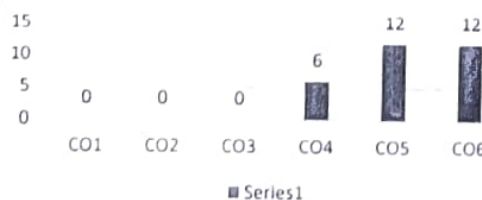
Level	Marks	CO	Marks
Level1	4	CO1	0
Level2	6	CO2	0
Level3	8	CO3	0
Level4	12	CO4	6
Level5	0	CO5	12
Level6	0	CO6	12
Total	30	Total	30

Bloom's Level wise Marks Distribution



Level1 Level2 Level3 Level4 Level5 Level6

Course Outcome wise Marks Distribution



Series1

Faruk
Head

Department of Biotechnology
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Dean
Dean

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Invertis University, Bareilly (U.P.)

Registrar
Registrar

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Invertis University
Bareilly

Q.No	Questions	Marks (10)	CO	BL
1	Discuss cell and organelles	05	CO1	L3
2	Discuss nuclear transport	05	CO2	L1

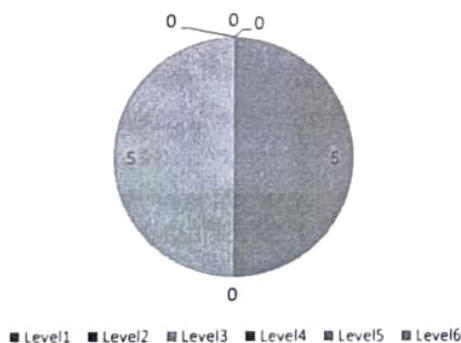
BL – Bloom's Taxonomy Levels

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

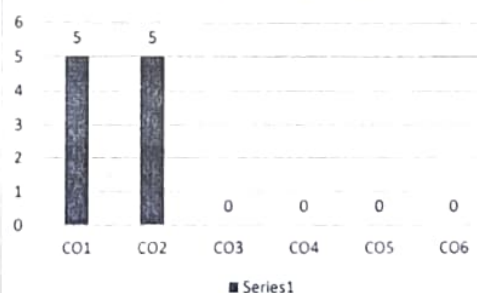
CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

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



Pankaj
Head
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[Signature]
Dean
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[Signature]

Invertis University
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Second Class Test 2022-23

M.Sc. Biotech - I Semester

Course/Code: Cell and Developmental Biology (MST-102)

Maximum Marks :10; Duration: 30 Minutes

Q.No	Questions	Marks (10)	CO	BL
1	Explain transport phenomena in cell.	05	CO4	L2
2	Discuss cell signaling and their types	05	CO5	L1

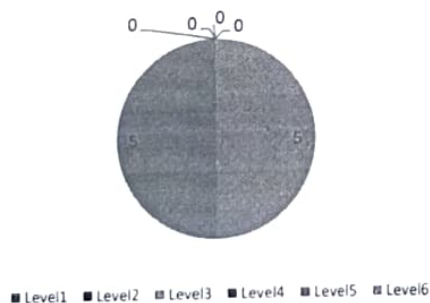
BL – Bloom's Taxonomy Levels

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

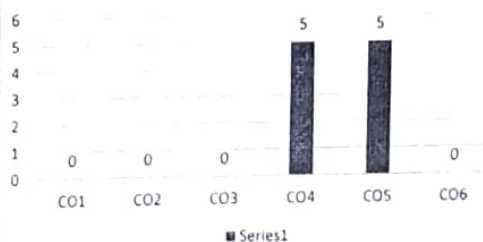
CO – Course Outcomes PO – Program Outcomes; PI Code – Performance Indicator Code

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



Course Outcome wise Marks Distribution



Pankaj
Head
Department of Biotechnology
Invertis University, Bareilly (UP)

Dean
Faculty of Science
Invertis University, Bareilly (UP)

Registrar
Invertis University
Bareilly

PROGRAM : MASTER OF SCIENCE (BIOTECHNOLOGY)
SEMESTER : FIRST
SESSION : 2022-23
COLLEGE : Faculty of Bio Science & Bio Technology

Sl. No.	Enrollment No.	Roll No.	Student Name	MST101		MST102		MST103		MST104		MST105		MST151		MST152		MST153		MST155	
				Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR	Max Marks	CR
1	222467	2220680023	AKHILESH KUMAR	70	20	100	4	70	30	100	4	70	30	100	4	70	30	100	4	70	30
2	222858	2220680024	ATUSH	38	26	64	4	48	27	75	4	53	29	82	4	49	29	78	4	49	29
3	223384	2220680025	KRITI GUPTA	43	28	71	4	50	27	77	4	62	28	90	4	58	29	87	4	58	29
4	223482	2220680026	MANISH BATHI	52	22	74	4	55	23	78	4	55	24	79	4	61	26	87	4	58	29
5	223495	2220680027	MANISH MATHUR	47	30	77	4	53	29	82	4	58	28	86	4	53	30	83	4	53	30
6	223497	2220680028	MANISH MATHUR	42	13	57	4	48	13	63	4	52	13	67	4	57	24	81	4	58	29
7	223497	2220680028	MANISH MATHUR	29	21	50	4	35	25	60	4	35	24	59	4	29	22	51	4	28	15
8	223497	2220680029	MONIKA PAL	42	24	66	4	54	25	79	4	55	25	83	4	50	27	77	4	40	24
9	223497	2220680030	MONIKA PAL	32	27	59	4	41	24	65	4	53	22	77	4	53	20	85	4	44	29
10	224078	2220680031	ANUSKA JOSHI	32	26	58	4	32	28	80	4	52	28	80	4	55	29	84	4	63	27
11	224082	2220680032	PRABHA GANGWAR	41	24	65	4	54	25	79	4	55	25	79	4	54	25	79	4	54	25
12	224100	2220680033	PRABHA GANGWAR	30	24	54	4	42	26	68	4	37	21	58	4	50	26	78	4	47	26
13	224110	2220680034	BEHAN AHMAD	41	14	55	4	34	14	68	4	52	14	66	4	53	14	67	4	44	14
14	224359	2220680035	RINKU SHAHMA	53	29	82	4	54	29	83	4	63	30	93	4	65	30	91	4	61	30
15	224359	2220680036	SEEMA YADAV	53	28	83	4	57	28	85	4	55	30	85	4	61	30	91	4	62	30
16	224359	2220680037	SONAL GUPTA	49	29	78	4	52	30	82	4	53	29	82	4	59	30	89	4	56	28
17	225498	2220680038	SONIKA PAL	45	24	69	4	55	26	81	4	56	26	84	4	51	28	79	4	54	26
18	224550	2220680039	MANISH SAXENA	AB	11	11	0	AB	12	12	0	AB	12	12	0	AB	12	12	0	AB	12
19	224550	2220680040	SAMEER QURESHI	AB	14	14	0	AB	14	14	0	AB	14	14	0	AB	14	14	0	AB	14
20	224550	2220680041	SHIVANI CHAUDHARY	12	24	36	0	33	24	57	4	38	26	64	4	30	27	57	4	35	28
21	224550	2220680042	DHARMENDRA SINGH YADAV	33	15	48	4	32	15	47	4	47	15	62	4	AB	15	15	0	AB	15

Controller of Examination

Passing marks - 40% in each course

Legend:-
External Marks
Internal Marks
Total Marks

Date: Jan 24, 2023

Passed with Grace Marks

E-Credit

MST101: BIOCHEMISTRY
MST102: IMMUNOLOGY
MST103: MOLECULAR BIOLOGY
MST104: CELL AND DEVELOPMENTAL BIOLOGY
MST105: COMPUTER APPLICATIONS & BIOSTATISTICS

MST101: MOLECULAR BIOLOGY
MST102: CELL AND DEVELOPMENTAL BIOLOGY
MST103: COMPUTER APPLICATIONS & BIOSTATISTICS
MST104: IMMUNOLOGY
MST105: MOLECULAR BIOLOGY

MST101: MOLECULAR BIOLOGY
MST102: CELL AND DEVELOPMENTAL BIOLOGY
MST103: COMPUTER APPLICATIONS & BIOSTATISTICS
MST104: IMMUNOLOGY
MST105: MOLECULAR BIOLOGY

Registrar

Vice Chancellor

Head
Department of Biotechnology
Invertis University, Bareilly (UP)

Dean
Faculty of Science
Invertis University, Bareilly (UP)

Registrar
Invertis University
Bareilly