Attainments of POs-PSOs of Physics Department

POs Assessment of Batch (2019-21)

COs – POs Matrix for all courses of M.Sc. Physics

Sem.	Course Outcomes (CO)	Subject	Program Outcomes (PO)						
			PO1	PO2	PO3	PO4	PO5	PO6	PO7
1st	C101	Mathematical Physics	2.07	2.93	3	2	3	1.07	2.93
	C102	Classical Mechanics	2.2	2.2	2.2	1.07	2.2	1.2	2.2
	C103	Quantum Mechanics	2.00	2.13	2.13	1.20	2.13	1.00	2.13
	C104	Electronic Devices	3.00	3.00	2.20	2.00	2.20	1.20	3.00
2nd	C201	Quantum Mechanics	2.93	2.87	2.93	2.00	2.93	1.87	2.80
	C202	Statistical Mechanics	2.93	3.00	2.07	1.13	2.93	1.07	2.00
	C203	E.D. and Plasma	2.93	2.87	2.87	1.87	3.00	1.93	2.93
	C204	Atomic and Molecular Physics	3.00	2.13	2.13	1.13	3.00	2.00	3.00
3rd	C301	Solid State Physics	2.87	3	2	2	3	2	3
	C302	Nuclear Physics	2.87	3.00	2.87	1.87	3.00	2.07	3.00
	C303	Special Paper-I (Electronics)	3.00	3.00	3.00	1.00	3.00	2.00	3.00
	C304	Special Paper-II (Electronics)	3.00	3.00	3.00	2.00	3.00	2.07	3.00
4th	C401	Laser Physics & Application of Laser	2.93	3.00	2.93	2.80	2.93	1.93	2.80
	C402	Computational Methods & Programming	2.93	2.07	2.93	2.00	2.93	1.93	1.93
	C403	Special Paper- Electronics	2.93	3.00	2.93	2.00	2.93	1.87	2.80
	C404	Electronics	2.93	3.00	2.93	2.00	2.93	2.07	2.87
Direct Attainment			2.78	2.76	2.63	1.75	2.82	1.70	2.71
Indirect Attainment			2.12	2.56	2.38	1.89	2.69	2.01	1.69

PO Assessment comparison graph for Direct and Indirect attainment of Batch (2019-21)

Comparison graph for POs Direct and Indirect Attainment

PSO Assessment of Batch (2019-21)

COs - PSOs Matrix for all courses of M.Sc. Physics

Sem.	Course Outcomes (CO)	Program Outcomes (PO)				
		Subject	PSO1	PSO2	PSO3	PSO4
1st	C101	Mathematical Physics	2	1	2.13	1
	C102	Classical Mechanics	1.2667	1.27	1.27	1.27
	C103	Quantum Mechanics	2.00	1.07	2	1.07
	C104	Electronic Devices	2.00	1.00	2	1.13
2nd	C201	Quantum Mechanics	2.07	1.87	2.87	1.87
	C202	Statistical Mechanics	2.13	1.00	2	2
	C203	E.D. and Plasma	2.07	1.00	2.07	1
	C204	Atomic and Molecular Physics	2.13	1.00	2.13	1.07
3rd	C301	Solid State Physics	2.07	1.00	2	1
	C302	Nuclear Physics	2.87	1.87	2.87	1.87
	C303	Special Paper-I (Electronics)	2.00	1.00	3	1
	C304	Special Paper-II (Electronics)	2.93	1.93	3	2
4th	C401	Laser Physics & Application of Laser	2.87	2.87	2.80	2.00
	C402	Computational Methods & Programming	2.07	2.00	2.07	1.87
	C403	Special Paper- Electronics	2.87	1.87	2.8	2
	C404	Electronics	2.13	2.07	2.13	1.13
Direct Attainment			2.22	1.49	2.32	1.45
Indirect Attainment			2.47	2.10	1.89	1.92

PSO Assessment comparison graph for Direct and Indirect attainment of Batch (2019-21)

Comparison graph for PSOs Direct and Indirect Attainment

Dr. Jagjeet Kaur Saluja

HOD Physics

Principal
Govt. V.Y.T. P.G. Autonomus
College, Durg (C.G.)

DEPARTMENT OF PHYSICS

Govt. V.Y.T. PG Autonomous College G.E. Road, Durg 491001 (C.G.)
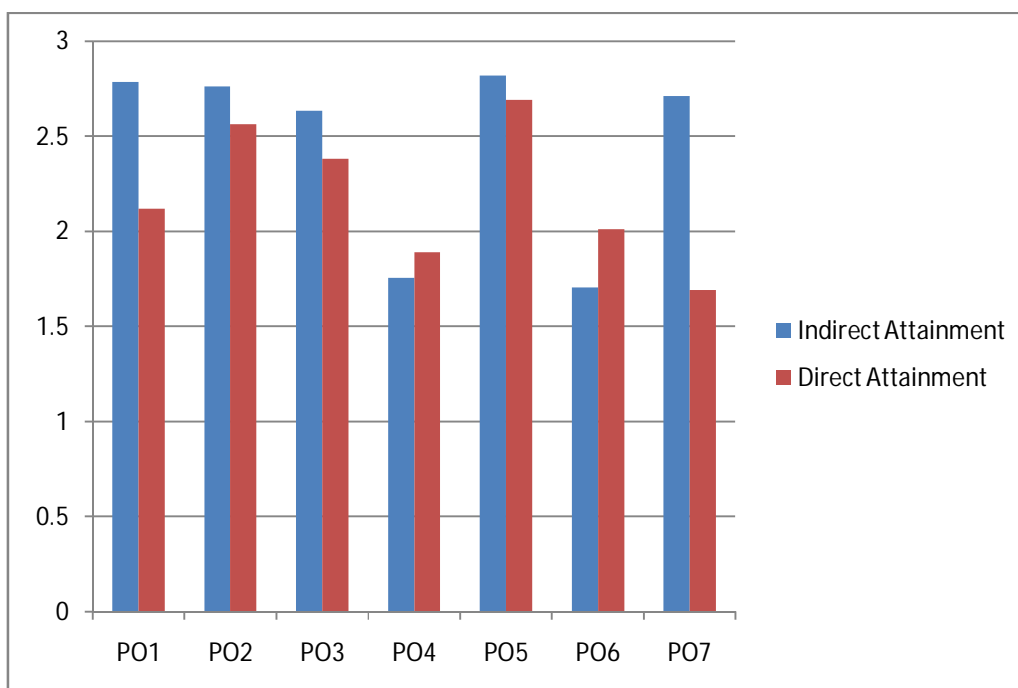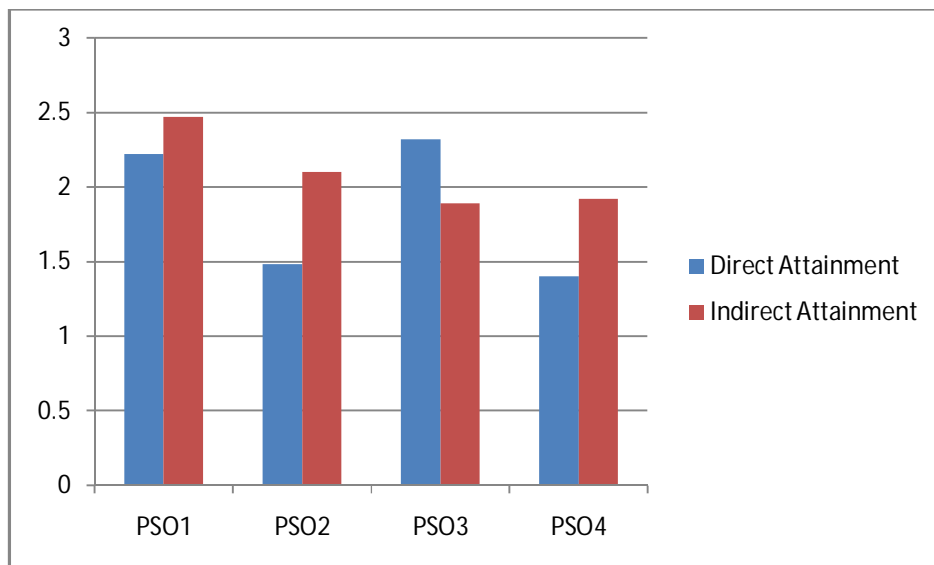
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Attainments of POs-PSOs of Physics Department

SEMESTER-IV

MPH401: Laser Physics & Application of Laser

After successful completion of the course, the student is expected to

CO1	Understand and explain basic Laser principles, Laser behaviour, Properties of laser radiations, Different types of Lasers and Laser applications
CO2	Explain different types Laser used and make a comparison between them.
CO3	Develop familiarity with the vast areas of laser application , especially in spectroscopy
CO4	Explore important connections between theory, experiment, and current applications of laser

CO-PO Matrix

Mapping of Course Outcomes with Program Outcomes										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	2	3	1	2	3	2	3	1
CO2	3	3	3	1	3	2	2	3	1	3	2
CO3	3	3	3	2	3	1	2	3	2	3	1
CO4	3	3	3	2	3	2	2	3	2	3	2
	2.75	2.50	2.75	1.75	3.00	1.50	2.00	2.32	2.26	2.23	2.15

IV Semester Internal Assessment I, 2019-20
M. Sc. PHYSICS
Paper I
[LASER PHYSICS AND APPLICATIONS OF LASERS]

[Time: 1:30 Hours]   [Maximum Marks: 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – I

Q. No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.1 A.	Define laser pumping.	(1)		L2
Q.1 B.	Define quality factor of a resonator.	(1)		L2
Q.1 C.	Describe the mode locking process in a laser. **OR** Describe losses inside a cavity.	(3)	CO1	L2
Q.1 D.	Describe line broadening mechanism in lasers. Hence describe Doppler Broadening in detail. **OR** Describe Giant Pulse Dynamics of Q-Switching.	(5)		L2,L3

Unit-II

Q. No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.2 A.	Explain spiking in Ruby lasers.	(1)		L3
Q.2 B.	Why do we call GaAs p-n junction lasers as injection lasers?	(1)		L3
Q.2 C.	Explain lasing mechanism in Nd:Glass lasers. **OR** Explain lasing mechanism in Nitrogen lasers.	(3)	CO2	L3
Q.2 D.	Describe construction, working principle and applications of Ruby lasers. **OR** Describe construction, working principle and applications of excimer lasers.	(5)		L4

CLASS TEST – I Marks

			Physics & Application of Laser		
			Q1	Q2	CT1
1	90101	ADITI SINGH KSHATRI	5	5	10
2	90102	AKARSHIT BARANWAL	5	4	9
3	90103	ANCHAL BHAVE	4	5	9
4	90104	BHARTI SINHA	5	5	10
5	90105	BHAVANA SINHA	5	4	9
6	90106	CHAKENDRA	4	5	9
7	90107	CHETNA DESHMUKH	5	4	9
8	90108	HOMESHWARI SAHU	4	4	8
9	90109	MANISH KUMAR	3	5	8
10	90110	MANISH SINHA	4	4	8
11	90111	MEGHA KUMARI SARTHI	5	4	9
12	90112	MITHLESH VERMA	4	4	8
13	90113	MUKTI VARMA	4	5	9
14	90114	OJASVI VARMA	5	5	10
15	90115	PRINCE KUMAR KUSHWAHA	5	4	9

16	90116	RANJANA SAHU	5	4	9
17	90117	RATNESH DHRUW	4	5	9
18	90118	RAVI SONBOIR	4	4	8
19	90119	RAVISHANKAR ARMO	4	5	9
20	90120	RUPALI JOSHI	4	4	8
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	4	9
23	90123	SURYA PRAKASH TIWARI	4	5	9
24	90124	VEDIKA RANI VERMA	5	5	10
25	90125	VIMAL KUMAR SINHA	4	5	9

Mapping between COs & CT1 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C401.1	C401.2	C401.3	C401.4	
Q.1	3				3
Q.2		2			2
					2.5

Mapping between CO & CT1 Questions in terms of %					Ave C401 Attainment
Question	Outcomes of the Subject				
	C401.1	C401.2	C401.3	C401.4	
Q.1	89.6				
Q.2		59.73333			
Average	89.60	59.73			74.67

If C401 is less than 60%: then 1 If C401 is between 60% to 75 %: then 2 If C401 is greater than 75%: then 3	Average C401 attainment for CT1 is 74.67. So attainment level is 2.

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C401 (From CO-PO Mapping)	2.75	2.5	2.75	1.75	3	1.5	2	Avg
Ave C401 Attainment	74.67	74.67	74.67	74.67	74.67	74.67	74.67	
PO Attainment of C401 for CT-1 in terms of %	68.45	62.23	68.45	43.56	74.67	37.34	49.78	57.78
PO Attainment of C401 for CT-1 in terms of levels	3	3	3	2	3	2	2	2.57
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.4	0.4	0.51

CO#	PSO1	PSO2	PSO3	PSO4	
C401 (From CO-PSO Mapping)	**2.50**	**1.75**	**2.50**	**1.50**	
Ave C401Attainment	**74.67**	**74.67**	**74.67**	**74.67**	**If PSO is less than 40%: then 1 If PSO is between40% to 60%: then 2 If PSO is greater than 60%: then 3**
PSO Attainment of C401for CT-1 in terms of %	**58**	**56**	**55**	**54**	
PSO Attainment of C401for CT-1 in terms of levels	**2**	**2**	**2**	**2**	**2.00**
Internal Assessment (20%)	**0.4**	**0.4**	**0.4**	**0.4**	**0.40**

IV Semester Internal Assessment II, 2019-20
M. Sc. PHYSICS
Paper I
[LASER PHYSICS AND APPLICATIONS OF LASERS]

[Time: 1:30 Hours]   [Maximum Marks : 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – III

Q. No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.3 A.	What is the threshold energy for non-linear photo electric effects?	**(1)**		**L2**
Q.3 B.	What is hyper Raman Effect?	**(1)**		**L2**
Q.3 C.	Write the principle and working of photo acoustic Raman spectroscopy. **OR** Explain the phenomena of harmonic generation.	**(3)**	**CO3**	**L3**
Q.3 D.	Describe the phenomena of phase matching and optical mixing and their role in second harmonic generation. **OR**	**(5)**		**L4**

		Explain broad band communication process using lasers.			

Unit-IV

Q.4 A.	What are the drawbacks of monomode lasers?	**(1)**		**L2**
Q.4 B.	Define splice loss in an optical fibre.	**(1)**		**L2**
Q.4 C.	Explain the process of isotope separation using lasers. **OR** Explain broad band communication process using lasers.	**(3)**	**CO4**	**L3**
Q.4 D.	Write various sources of pulse dispersion in an optical fibre. Hence calculate pulse dispersion for step index fibres. **OR** Describe various steps and processes used in an optical fibre communication system.	**(5)**		**L4**

CLASS TEST – II Marks

			Physics & Application of Laser		
			Q1	Q2	CT2
1	90101	ADITI SINGH KSHATRI	4	5	9
2	90102	AKARSHIT BARANWAL	4	6	10
3	90103	ANCHAL BHAVE	5	5	10
4	90104	BHARTI SINHA	5	4	9
5	90105	BHAVANA SINHA	5	5	10
6	90106	CHAKENDRA	4	5	9
7	90107	CHETNA DESHMUKH	5	5	10
8	90108	HOMESHWARI SAHU	4	6	10
9	90109	MANISH KUMAR	4	4	8
10	90110	MANISH SINHA	4	5	9
11	90111	MEGHA KUMARI SARTHI	5	5	10
12	90112	MITHLESH VERMA	4	4	8
13	90113	MUKTI VARMA	4	6	10
14	90114	OJASVI VARMA	4	5	9
15	90115	PRINCE KUMAR KUSHWAHA	5	5	10
16	90116	RANJANA SAHU	5	5	10
17	90117	RATNESH DHRUW	5	4	9
18	90118	RAVI SONBOIR	4	5	9
19	90119	RAVISHANKAR ARMO	4	4	8
20	90120	RUPALI JOSHI	5	4	9
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	5	10
23	90123	SURYA PRAKASH TIWARI	4	5	9
24	90124	VEDIKA RANI VERMA	5	5	10
25	90125	VIMAL KUMAR SINHA	5	5	10

Mapping between COs & CT2 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C401.1	C401.2	C401.3	C401.4	
Q.1			2		2
Q.2				3	3
					2.5

Mapping between CO & CT2 Questions in terms of %					Ave C401 Attainment
Question	Outcomes of the Subject				
	C401.1	C401.2	C401.3	C401.4	
Q.1			63.2		
Q.2				94.8	
Average			63.20	94.80	79.00

If C401 is less than 60%: then 1 If C401 is between 60% to 75 %: then 2 If C401 is greater than 75%: then	Average C401 attainment for CT2 is 79.00. So attainment level is 3

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	Average
C401 (From CO-PO Mapping)	2.75	2.5	2.75	1.75	3	1.5	2	
Ave C401 Attainment	79.00	79.00	79.00	79.00	79.00	79.00	79.00	
PO Attainment of C401 for CT-2 in terms of %	72.42	65.83	72.42	46.08	79.00	39.50	52.67	61.13
PO Attainment of C401 for CT-2 in terms of levels	3	3	3	2	3	2	3	2.71
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.4	0.6	0.54

CO#	PSO1	PSO2	PSO3	PSO4	
C401 (From CO-PSO Mapping)	2.50	1.75	2.50	1.50	If PSO is less than 40%: then 1 If PSO is between 40% to 60%: then 2 If PSO is greater than 60%: then 3
Ave C401 Attainment	79.00	79.00	79.00	79.00	
PSO Attainment of C401 for CT-2 in terms of %	61	60	59	57	
PSO Attainment of C401 for CT-2 in terms of levels	3	3	2	2	2.5
Internal Assessment (20%)	0.6	0.6	0.4	0.4	0.5

Assignment Marks

Sl.No.	Name of Students	Q1 (10)	Q2 (10)	Q3(10)	Q4(10)	Total Marks in assignment (40)
1	ADITI SINGH KSHATRI	4	6	8	6	24
2	AKARSHIT BARANWAL	10	9	7	7	33
3	ANCHAL BHAVE	7	9	10	8	34
4	BHARTI SINHA	9	4	4	8	25
5	BHAVANA SINHA	10	9	8	7	34
6	CHAKENDRA	8	8	9	8	33
7	CHETNA DESHMUKH	6	4	8	4	22
8	HOMESHWARI SAHU	10	8	7	6	31
9	MANISH KUMAR	5	8	7	6	26
10	MANISH SINHA	5	6	8	10	29
11	MEGHA KUMARI SARTHI	6	10	6	8	30
12	MITHLESH VERMA	10	9	7	9	35
13	MUKTI VARMA	10	8	8	6	32
14	OJASVI VARMA	6	4	8	6	24
15	PRINCE KUMAR KUSHWAHA	6	8	6	7	27
16	RANJANA SAHU	6	4	8	7	25
17	RATNESH DHRUW	6	8	6	8	28
18	RAVI SONBOIR	10	7	10	9	36
19	RAVISHANKAR ARMO	4	4	8	8	24
20	RUPALI JOSHI	10	9	8	9	36
21	SAMTA SALECHA	10	9	9	7	35
22	SUBHASHINI THAKUR	5	7	6	9	27
23	SURYA PRAKASH TIWARI	10	8	6	6	30
24	VEDIKA RANI VERMA	7	8	8	10	33
25	VIMAL KUMAR SINHA	6	10	10	8	34
	Total Marks	186	184	190	187	747
	Average Marks	**7.44**	**7.36**	**7.60**	**7.48**	**29.88**
	In Terms of percentage	74.4	73.6	76	74.8	74.7

Mapping between COs & Assignment Questions in terms of level					Ave CO Attainment
Question	**Outcomes of the Subject**				
	C401.1	**C401.2**	**C401.3**	**C401.4**	
Q.1	3				**3**
Q.2		3			**3**
Q.3			2		**2**
Q4				3	**3**
					2.666667

Question	Mapping between CO & Assignment Questions in terms of %				Ave C401 Attainment
	Outcomes of the Subject				
	C401.1	C401.2	C401.3	C401.4	
Q.1	74.70				
Q.2		74.70			
Q.3			49.80		
Q.4				74.70	
Average	74.70	74.70	49.80	74.70	68.48

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	If PO is less than 50%: then 1 If PO is between 50% to 70: then 2 If PO is greater than 70%: then 3
C401 (From CO-PO Mapping)	2.75	2.5	2.75	1.75	3	1.5	2	
Ave C401 Attainment	68.48	68.48	68.48	68.48	68.48	68.48	68.48	
Attainment of PO of C401 for Assignment in terms of %	62.77	57.07	62.77	39.95	68.48	34.24	45.65	52.99
Attainment of PO of C401 for Assignment in terms of levels	2	3	2	2	2	1	1	1.86
Internal Assessment (20%)	0.4	0.6	0.4	0.4	0.4	0.2	1	0.49

CO#	PSO1	PSO2	PSO3	PSO4	If PSO is less than 40%: then 1 If PSO is between40% to 60%: then 2 If PSO is greater than 60%: then 3
C401 (From CO-PSO Mapping)	2.50	1.75	2.50	1.50	
Ave C401 Attainment	68.48	68.48	68.48	68.48	
Attainment of PSO of C401 for Assignment in terms of %	53	52	51	49	
Attainment of PSO of C401 for Assignment in terms of levels	2	2	2	2	2.00
Internal Assessment (20%)	0.4	0.4	0.4	0.4	0.40

END SEMESTER

LASER PHYSICS AND APPLICATIONS OF LASER

Time : 3 Hrs.   Max. Marks : 80

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question should be answered in 200-250 words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit - I

Q.1 A. Define monochromacity in terms of bandwidth.   (2)

Q.1 B. What is mode locking operating.   (2)

Q.1 C. Derive an expression for quality factor for a resonator cavity. (4)

OR

Describe natural broadening mechanism both classically and quantum mechanically.

Q.1 D. Explain Resonators with focus on their vibrational modes, number of modes per unit volume and construction of various types of resonators.   (12)

OR

Discuss mode locking and hole burning processes used to control broadening in lasers.

Unit - II

).2 A. How does the C_r^{+3} ions in Ruby facilitates lasing.   **(2)**

).2 B. Define process of population inversion.   **(2)**

).2 C. Explain lasing mechanism in Ruby lasers.   **(4)**

OR

Explain lasing mechanism in Nd:YAG lasers.

).2 D. Describe construction, working principle and applications of CO_2 lasers.   **(12)**

OR

Describe construction, working principle and applications of semiconductor lasers.

Unit - III

).3 A. What is the role of lasers in Raman Spectroscopy.   **(2)**

).3 B. Explain self focussing in lasers.   **(2)**

).3 C. Obtain the condition for phase matching.   **(4)**

OR

Describe principle and working of parametric oscillators.

Q.3 D. Obtain an expression for probability of occurance of a two photon process.   (12)

OR

Explain multiphoton processes. Hence describe detailed process of Doppler free two photon spectroscopy.

Unit - IV

Q.4 A. What is numerical operture of an optical fibre.   (2)

Q.4 B. Write an expression for number of modes which a fibre can support.   (2)

Q.4 C. Write a comment on pulse dispersion in a step index fibre. (4)

OR

What are varions applications of lasers in the field of biology.

Q.4 D. Give a detailed account of modal analysis in step index fibre.(12)

OR

Describe optical fibre communication technology in detail. Hence compare various generations of optical fibre communication systems.

END Semester Marks

S.No.	Roll No.	Name	Marks
1	90101	ADITI SINGH KSHATRI	73
2	90102	AKARSHIT BARANWAL	74
3	90103	ANCHAL BHAVE	70
4	90104	BHARTI SINHA	75
5	90105	BHAVANA SINHA	73
6	90106	CHAKENDRA	72
7	90107	CHETNA DESHMUKH	74
8	90108	HOMESHWARI SAHU	71
9	90109	MANISH KUMAR	64
10	90110	MANISH SINHA	71
11	90111	MEGHA KUMARI SARTHI	74
12	90112	MITHLESH VERMA	70
13	90113	MUKTI VARMA	75
14	90114	OJASVI VARMA	74
15	90115	PRINCE KUMAR KUSHWAHA	74
16	90116	RANJANA SAHU	72
17	90117	RATNESH DHRUW	71
18	90118	RAVI SONBOIR	68
19	90119	RAVISHANKAR ARMO	63
20	90120	RUPALI JOSHI	76

21	90121	SAMTA SALECHA	72
22	90122	SUBHASHINI THAKUR	72
23	90123	SURYA PRAKASH TIWARI	63
24	90124	VEDIKA RANI VERMA	73
25	90125	VIMAL KUMAR SINHA	72

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C401.1	3				3
C401.2		2			2
C401.3			3		3
C401.4				3	3
Average Attainment of C401 for Laser Physics & Application of Laser ESE					2.75

Mapping of CO and ESA Question Paper in terms of percentage					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C401.1	76.46				76.46
C401.2		50.97			50.97
C401.3			76.46		76.46
C401.4				76.46	76.46
Average Attainment of C401 for Laser Physics & Application of Laser ESE					70.09
Attainment Level					2.10

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C401 (From CO-PO Mapping)	2.8	2.6	2.4	2.8	2	2	1	If PSO is less than 50%: then 1 If PSO is between 51% to 75%: then 2 If PSO is greater than 75%: then 3
ESE Ave Marks	89.30	89.30	89.30	89.30	89.30	89.30	89.30	
PO Attainment of ESE in terms of %	83	77	71	83	60	60	30	
PO Attainment of ESE in terms of levels	3	3	3	3	3	3	1	2.11
External Assessment (80%)	2.4	2.4	2.4	2.4	2.4	2.4	0.8	1.69

CO#	PSO1	PSO2	PSO3	PSO4	
C401 (From CO-PSO Mapping)	2.50	1.75	2.50	1.50	If PSO is less than 40%: then 1
ESE Ave Marks	81.80	81.80	81.80	81.80	If PSO is between 40% to 60%: then 2 If PSO is greater than 60%: then 3
PSO Attainment of ESE in terms of %	63	62	61	59	
PSO Attainment of ESE in terms of levels	3	3	3	2	3.00
External Assessment (80%)	2.4	2.4	2.4	1.6	2.40

Final Attainments Level

PO'S Attainment of Laser Physics & Application of Laser (MPH401) through Internal Assessment								
Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser						
		Program Outcomes						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
3	Class Test -1	3	3	3	2	3	2	2
4	Class Test -2	3	3	3	2	3	2	3
5	Assignment	2	3	2	2	2	1	1
Avg		2.67	3.00	2.67	2.00	2.67	1.67	2.00

PO'S Attainment of Laser Physics & Application of Laser (MPH401) through External Assessment								
Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser						
		Program Outcomes						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
1	ESE	3	3	3	3	3	2	3
	Avg							

Course Laser Physics & Application of Laser (MPH401) Net attainment:								
Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser						
		Program Outcomes						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
1	External Assessment (80%)	2.4	2.4	2.4	2.4	2.4	1.6	2.4
2	Internal Assessment (20%)	0.53	0.60	0.53	0.40	0.53	0.33	0.40
Net Assessment of C401		2.93	3.00	2.93	2.80	2.93	1.93	2.80
							Average	2.76

Target Set for PO Attainment with respect toLaser Physics & Application of Laser is 2.8. We Achieved 2.76. So needs remedial action.

Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser			
PSO'S Attainment of Laser Physics & Application of Laser through Internal Assessment					
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	Class Test -1	2	2	2	2
2	Class Test -2	3	3	2	2
3	Assignment	2	2	2	2
Avg		2.38	2.33	2.33	2.00

PSO'S Attainment of Laser Physics & Application of Laser Internal Assessment

Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	ESE	3	3	3	2
Avg		3	3	3	2

PSO'S Attainment of Laser Physics & Application of Laser through Internal Assessment

Sl. No	Parameters	Name of Subject: Laser Physics & Application of Laser			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	External Assessment (80%)	2.4	2.4	2.4	1.6
2	Internal Assessment (20%)	0.4667	0.4667	0.4	0.4
Avg		2.164	2.87	2.87	2.80

Target Set for PSO Attainment w.r.t Laser Physics & Application of Laser is 2.8. We Achieved 2.63.

Attainments of POs-PSOs of Physics Department
SEMESTER-IV

MPH402: Computational Methods & Programming

After successful completion of the course, the student is expected to

CO1   Learn and apply different numerical methods such as Newton for physical problems.

CO2   Understand and analyze data by interpolation and curve fitting etc.

CO3   Learn and solve ODE using Picard's Method, Taylor Series expansion

CO4   Apply Newton's forward and backward difference formula , Stirling's formula for numerical differentiation . Use trapezoidal and Simpson's rule for numerical Integration.

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
Mapping of Course Outcomes with Program Outcomes											
CO1	3	3	3	2	2		2	3	2	3	1
CO2	3	2	3	2	2	2		3		2	2
CO3	3	2	3		3	2	2	2	2	3	
CO4	2	2	3	2	3	1	2	2	2	3	2
	2.75	2.25	3.00	2.00	2.50	1.67	2.00	2.50	2.00	2.75	1.67

IV Semester Internal Assessment I, 2019-20
M. Sc. PHYSICS
Paper II
[COMPUTATIONAL METHODS & PROGRAMMING]
[Time: 1:30 Hours]   [Maximum Marks: 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – I

Q. No.	Question	Marks	CO's- Mapping	Bloom's Level
Q.1 A.	Write the properties of Eigen values.	(1)		L1
Q.1 B.	Find the position root of $x^3 - x = 10$. Solve x_1 using Newton-Raphson method.	(1)		L1
Q.1 C.	Find a real root of the equation $x^3 - 2x - 5 = 0$ by the method of false position correct to four decimal places. **OR** Using Jacobi's method, find all the Eigen values and the Eigen vectors of the matrix: $$A = \begin{bmatrix} 1 & \sqrt{2} & 2 \\ \sqrt{2} & 3 & \sqrt{2} \\ 2 & \sqrt{2} & 1 \end{bmatrix}$$	(3)	CO1	L1,L2
Q.1 D.	Using Iteration method, find a root of the equation $x^3 - x^2 - 1 = 0$ correct to four decimal places. **OR** Apply Cramer's rule to solve the following : $$3x + y + 2z = 3$$ $$2x - 3y - z = 4$$ $$x + 2y + z = 4$$	(5)		L3

Unit-II

Q.2 A.	Reduce to linear form of given equation : $$y = ax^n + b\,logx$$	(1)		L3
Q.2 B.	Fit the curve $y = ax^2 + \dfrac{b}{x}$	(1)		L3
Q.2 C.	If P is the pull required to lift a load W by means of a pulley block, find a linear law of the form $P = mW + C$ connecting P and W using the following data: $P =$ 12 15 21 25 $W =$ 50 70 100 120 Where P and W are taken in kg-wt. Compute P when $W=$	(3)	CO2	L3

	150kg.							
	OR							
	Find the polynomial $f(x)$ by using Lagranges formula and hencefind $f(3)$ for :							

x	0	1	2	5
$f(x)$	2	3	12	147

Q.2 D.	Obtain the cubic spline for the following data :	**(5)**		**L3**

x	0	1	2	3
y	2	-6	-8	2

OR

Using Gauss background difference formula. Find $y(8)$ from the following table:

x	0	5	10	15	20	35
y	7	11	14	18	24	32

CLASS-TEST-I

S. No.	Roll No.	Name	Q1	Q2	CT1
1	90101	ADITI SINGH KSHATRI	4	3	7
2	90102	AKARSHIT BARANWAL	5	5	10
3	90103	ANCHAL BHAVE	3	4	7
4	90104	BHARTI SINHA	4	6	10
5	90105	BHAVANA SINHA	5	5	10
6	90106	CHAKENDRA	6	4	10
7	90107	CHETNA DESHMUKH	4	6	10
8	90108	HOMESHWARI SAHU	4	6	10
9	90109	MANISH KUMAR	4	4	8
10	90110	MANISH SINHA	4	5	9
11	90111	MEGHA KUMARI SARTHI	5	5	10
12	90112	MITHLESH VERMA	3	5	8
13	90113	MUKTI VARMA	4	5	9
14	90114	OJASVI VARMA	5	4	9
15	90115	PRINCE KUMAR KUSHWAHA	5	5	10
16	90116	RANJANA SAHU	5	3	8
17	90117	RATNESH DHRUW	4	5	9
18	90118	RAVI SONBOIR	4	4	8
19	90119	RAVISHANKAR ARMO	5	3	8

20	90120	RUPALI JOSHI	4	4	8
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	4	9
23	90123	SURYA PRAKASH TIWARI	4	4	8
24	90124	VEDIKA RANI VERMA	5	4	9
25	90125	VIMAL KUMAR SINHA	4	5	9
		Total	110	113	223
		Average	4.4	4.52	8.92

Mapping between COs & CT1 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C402.1	C402.2	C402.3	C402.4	
Q.1	2				2
Q.2		3			3
					2.5

Mapping between CO & CT1 Questions in terms of %					Ave C402 Attainment
Question	Outcomes of the Subject				
	C402.1	C402.2	C402.3	C402.4	
Q.1	59.46666667				
Q.2		89.2			
Average	59.47	89.20			74.33

If C402 is less than 40%: then 1 If C402 is between 40% to 65%: then 2 If C402 is greater than 65%: then 3	Average C402 attainment for CT1 is 74.33. So attainment level is 3

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C402 (From CO-PO Mapping)	2.75	2.25	3	2	2.5	1.66667	2	Average
Ave C402 Attainment	74.33	74.33	74.33	74.33	74.33	74.33	74.33	
PO Attainment of C402for CT-1 in terms of %	68.14	55.75	74.33	49.56	61.94	41.30	49.56	57.22
PO Attainment of C402for CT-1 in terms of levels	3	3	3	2	3	2	2	2.57
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.4	0.4	0.51

CO#	PSO1	PSO2	PSO3	PSO4	
C402 (From CO-PSO Mapping)	**2.50**	**2.00**	**2.75**	**1.67**	**If PSO is less than 40%: then 1**
Ave C402 Attainment	**74.33**	**74.33**	**74.33**	**74.33**	**If PSO is between40% to 60%: then 2**
PSO Attainment of C402 for CT-1 in terms of %	**62**	**50**	**68**	**41**	**If PSO is greater than 60%: then 3**
PSO Attainment of C402 for CT-1 in terms of levels	**3**	**2**	**3**	**2**	**2.50**
Internal Assessment (20%)	**0.6**	**0.4**	**0.6**	**0.4**	**0.50**

IV Semester Internal Assessment II, 2019-20
M. Sc. PHYSICS
Paper II
[COMPUTATIONAL METHODS & PROGRAMMING]

[Time: 1:30 Hours]   [Maximum Marks : 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – III

Q. No.	Questions	Marks	CO's-Mapping	Bloom's Level
Q.3 A.	Write the formula of Taylor's series method.	(1)		L2
Q.3 B.	Write Milne's method for predictor and corrector.	(1)		L2
Q.3 C.	Apply Runge-Kutta fourth order method to find an approximate value of y when $x = 0.2$, given that $\frac{dy}{dx} = x + y$ and $y = 1$ when $x = 0$. **OR** Find by Taylor's series method, the values of y at $x = 0.1$ and $x = 0.2$ to five places of decimals from $\frac{dy}{dx} = x^2 y - 1, y(0) = 1$.	(3)	CO3	L3
Q.3 D.	Using Euler's method, find an approximate value of y corresponding to $x = 1$, given that $\frac{dy}{dx} = x + y$ and $y = 1$	(5)		L3

	when $x = 0$.			
	OR			
	Apply Milne's method to find a solution of the differential equation $y = x - y^2$ in the range $0 \le x \le 1$ for the boundary condition $y = 0$ at $x = 0$.			

Unit-IV

Q.4 A.	Write FORTRAN operator symbols and Arithmetic operation.	**(1)**		**L1**
Q.4 B.	Write advantage of flow chart.	**(1)**		**L1**
Q.4 C.	What are statements? Explain Input/Output statements. **OR** Write definition of flow chart. Explain all flow chart symbols.	**(3)**	**CO4**	**L2**
Q.4 D.	Explain control statements. **OR** Solve the expression with the help of FORTRAN: 1) $\frac{a+b}{a-b}$ 2) $x^{1/3} - y^{-2}$	**(5)**		**L4**

CLASS-TEST-II

S. No.	Roll No.	Name	Q1	Q2	CT2
1	90101	ADITI SINGH KSHATRI	5	3	8
2	90102	AKARSHIT BARANWAL	5	5	10
3	90103	ANCHAL BHAVE	4	5	9
4	90104	BHARTI SINHA	5	4	9
5	90105	BHAVANA SINHA	5	5	10
6	90106	CHAKENDRA	4	4	8
7	90107	CHETNA DESHMUKH	4	5	9
8	90108	HOMESHWARI SAHU	4	4	8
9	90109	MANISH KUMAR	4	5	9
10	90110	MANISH SINHA	5	5	10
11	90111	MEGHA KUMARI SARTHI	4	5	9
12	90112	MITHLESH VERMA	4	5	9
13	90113	MUKTI VARMA	4	5	9
14	90114	OJASVI VARMA	5	5	10
15	90115	PRINCE KUMAR KUSHWAHA	5	4	9

16	90116	RANJANA SAHU	5	5	10
17	90117	RATNESH DHRUW	4	4	8
18	90118	RAVI SONBOIR	5	4	9
19	90119	RAVISHANKAR ARMO	5	4	9
20	90120	RUPALI JOSHI	5	4	9
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	4	5	9
23	90123	SURYA PRAKASH TIWARI	4	5	9
24	90124	VEDIKA RANI VERMA	5	4	9
25	90125	VIMAL KUMAR SINHA	5	5	10
		Total	114	114	228
		Average	4.56	4.56	9.12

Mapping between COs & CT2 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C402.1	C402.2	C402.3	C402.4	
Q.1			2		2
Q.2				2	2
					2

Mapping between CO & CT2 Questions in terms of %					Ave C402 Attainment
Question	Outcomes of the Subject				
	C402.1	C402.2	C402.3	C402.4	
Q.1			60.8		
Q.2				60.8	
Average			60.80	60.80	60.80

If C402 is less than 40%: then 1	Average C402 attainment for CT2 is 60.8.
If C402 is between 40% to 65%: then 2	So attainment level is 2
If C402 is greater than 65%: then 3	

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C402 (From CO-PO Mapping)	2.75	2.25	3	2	2.5	1.66667	2	Average
Ave C402 Attainment	60.80	60.80	60.80	60.80	60.80	60.80	60.80	
PO Attainment of C402 for CT-2 in terms of %	55.73	45.60	60.80	40.53	50.67	33.78	40.53	46.81
PO Attainment of C402 for CT-2 in terms of levels	3	2	3	2	3	2	2	2.43
Internal Assessment (20%)	0.6	0.4	0.6	0.4	0.6	0.4	0.4	0.49

CO#	PSO1	PSO2	PSO3	PSO4	
C402 (From CO-PSO Mapping)	2.50	2.00	2.75	1.67	**If PSO is less than 40%: then 1** **If PSO is between40% to 60%: then 2** **If PSO is greater than 60%: then 3**
Ave C402 Attainment	60.80	60.80	60.80	60.80	
PSO Attainment of C402 for CT-2 in terms of %	51	41	56	34	
PSO Attainment of C402 for CT-2 in terms of levels	2	2	2	1	1.75
Internal Assessment (20%)	0.4	0.4	0.4	0.2	0.35

Internal Assessment						
Sl.No.	Name of Students	Q1 (10)	Q2 (10)	Q3(10)	Q4(10)	Total Marks in assignment (40)	Grades
1	ADITI SINGH KSHATRI	4	6	8	5	23	B
2	AKARSHIT BARANWAL	10	9	7	7	33	A
3	ANCHAL BHAVE	7	9	10	8	34	A
4	BHARTI SINHA	9	4	4	6	23	B
5	BHAVANA SINHA	10	9	8	7	34	A
6	CHAKENDRA	8	8	9	8	33	A
7	CHETNA DESHMUKH	6	4	8	4	22	B
8	HOMESHWARI SAHU	10	8	7	6	31	A
9	MANISH KUMAR	9	4	4	7	24	B
10	MANISH SINHA	5	6	8	10	29	B
11	MEGHA KUMARI SARTHI	6	10	6	8	30	B
12	MITHLESH VERMA	10	9	7	9	35	A
13	MUKTI VARMA	10	8	8	6	32	A
14	OJASVI VARMA	6	4	7	8	25	B
15	PRINCE KUMAR KUSHWAHA	6	8	6	7	27	B
16	RANJANA SAHU	6	4	8	4	22	B
17	RATNESH DHRUW	6	8	6	8	28	B
18	RAVI SONBOIR	10	7	10	9	36	A
19	RAVISHANKAR ARMO	4	4	8	8	24	B
20	RUPALI JOSHI	10	9	8	9	36	A
21	SAMTA SALECHA	10	9	9	7	35	A
22	SUBHASHINI THAKUR	5	7	6	9	27	B

23	SURYA PRAKASH TIWARI	10	8	6	6	30		B
24	VEDIKA RANI VERMA	7	8	8	10	33		A
25	VIMAL KUMAR SINHA	6	10	10	8	34		A
	Total Marks	190	180	186	184	740		
	Average Marks	**7.60**	**7.20**	**7.44**	**7.36**	**29.60**		
	In Terms of percentage	76	72	74.4	73.6	74		

Number of Students not Submitted	**0**
Number of Students with 'A' grade	**12**
Number of Students with 'B' grade	**13**
Number of Students with 'C' grade	**0**
Number of students scoring more than or equal to 24 (60% marks)	**21** — **84.00%**

Mapping between COs & Assignment Questions in terms of level					Ave CO Attainment
Question	**Outcomes of the Subject**				
	C402.1	**C402.2**	**C402.3**	**C402.4**	
Q.1	3				**3**
Q.2		2			**2**
Q.3			2		**2**
Q4				3	**3**
					2.333333

Mapping between CO & Assignment Questions in terms of %					Ave C402 Attainment
Question	**Outcomes of the Subject**				
	C402.1	**C402.2**	**C402.3**	**C402.4**	
Q.1	**74.00**				
Q.2		**49.33**			
Q.3			**49.33**		
Q.4				**74.00**	
Average	**74.00**	**49.33**	**49.33**	**74.00**	**61.67**

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C402 (From CO-PO Mapping)	2.75	2.25	3	2	2.5	1.66667	2	Average
Ave C402 Attainment	61.67	61.67	61.67	61.67	61.67	61.67	61.67	
Attainment of PO of C402 for Assignment in terms of %	56.53	46.25	61.67	41.11	51.39	34.26	41.11	47.47
Attainment of PO of C402 for Assignment in terms of levels	2	2	2	2	2	1	1	1.71

Internal Assessment (20%)	0.4	0.4	0.4	0.4	0.4	0.2	1	0.46

CO#	PSO1	PSO2	PSO3	PSO4	
C402 (From CO-PSO Mapping)	2.50	2.00	2.75	1.67	If PSO is PSO is less than 40%: then 1 If PSO is between40% to 60%: then 2 If PSO is greater than 60%: then 3
Ave C402 Attainment	61.67	61.67	61.67	61.67	
Attainment of PSO of C402 for Assignment in terms of %	51	41	57	34	
Attainment of PSO of C402 for Assignment in terms of levels	2	2	2	1	1.75
Internal Assessment (20%)	0.4	0.4	0.4	0.2	0.35

Code No. : A04/4201

Fourth Semester Online Examination, August 2021

M.Sc. PHYSICS

Paper - II

COMPUTATIONAL METHODS AND PROGRAMMING

Time : 3 Hrs.   Max. Marks : 80

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question should be answered in 200-250 words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit - I

Q.1 A. Write the definition of transcendental equation. (2)

Q.1 B. What is the Iteration formula of Bisection method. (2)

Q.1 C. Find a real root of the equation $x^3 - 2x - 5 = 0$ by the method of false position correct to three decimal places. (4)

OR

Apply Gauss elimination method to solve the equations $x + 4y - z = -5$; $x + y - 6z = -12$; $3x - y - z = 4$.

).1 D. Apply Gauss-Seidal iteration method to solve the equation. **(12)**

$$20x + y - 2z = 17; \ 3x + 20y - z = -18; \ 2x - 3y + 20z = 25.$$

OR

Determine the largest eigen value and the corresponding eigen vector of the matrix $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$

Unit - II

).2 A. What is curve-fitting? **(2)**

).2 B. Write the formula of forward differences. **(2)**

).2 C. Fit a straight line to the following data : **(4)**

x	6	7	7	8	8
y	5	5	4	5	4

OR

Find the cubic polynomial which takes the following values :

x	0	1	2	3
y	1	2	1	10

Hence or otherwise evaluate $f(4)$.

).2 D. Use Gauss's Forward formula to evaluate y_{30}, given that $y_{21} = 18.4708$, $y_{25} = 17.8144$, $y_{29} = 17.1070$, $y_{33} = 16.3432$, and $y_{37} = 15.5154$. **(12)**

OR

Find the polynomial $f(x)$ by using Lagranges formula and hence

find $f(3)$ for

x	0	1	2	5
$f(x)$	2	3	12	147

Unit - III

Q.3 A. Write Laplace equation.   (2)

Q.3 B. Write Taylor's method.   (2)

Q.3 C. Using Runge-Kutta method of fourth order, solve $dy/dx = y^2 - x^2 / y^2 + x^2$ with $y(0) = 1$ at $x = 0.2$. (4)

OR

Using Milne's method find $y(4.5)$ given $5x y' + y^2 - 2 = 0$ given $y(4) = 1$, $y(4.1) = 1.00049$, $y(4.2) = 1.0097$, $y(4.3) = 1.0143$, $y(4.4) = 1.0187$.

Q.3 D. Given $\dfrac{dy}{dx} = x^2 (1 + y)$ and $y(1) = 1$, $y(1.1) = 1.233$, $y(1.2) = 1.548$, $y(1.3) = 1.979$, evaluate $y(1.4)$ by Adams-Bashforth method. (12)

OR

Using modified Euler's method, find $y(0.2)$ and $y(0.4)$ given $y' = y + e^x$, $y(0) = 0$.

Unit - IV

).4 A. Write short notes of compiler.   (2)

).4 B. Illustrate computer language Translation.   (2)

).4 C. Write notes on FORTRAN constants and variables.   (4)

OR

Explain Input/Output statements.

).4 D. Solve the Expression with the help of FORTRAN   (12)

(i) $a^2 + b^2 - 2ab$

(ii) $\dfrac{a+b}{a-b}$

OR

Write definition of flow chart.

Explain all flow chart symbols.

---X---

END SEM Marks

S. No.	R. No.	Name	Marks
1	90101	ADITI SINGH KSHATRI	70
2	90102	AKARSHIT BARANWAL	74
3	90103	ANCHAL BHAVE	70
4	90104	BHARTI SINHA	70
5	90105	BHAVANA SINHA	71
6	90106	CHAKENDRA	63
7	90107	CHETNA DESHMUKH	74
8	90108	HOMESHWARI SAHU	73
9	90109	MANISH KUMAR	67
10	90110	MANISH SINHA	70
11	90111	MEGHA KUMARI SARTHI	74
12	90112	MITHLESH VERMA	72
13	90113	MUKTI VARMA	75
14	90114	OJASVI VARMA	75
15	90115	PRINCE KUMAR KUSHWAHA	74
16	90116	RANJANA SAHU	69
17	90117	RATNESH DHRUW	70
18	90118	RAVI SONBOIR	66
19	90119	RAVISHANKAR ARMO	70
20	90120	RUPALI JOSHI	76
21	90121	SAMTA SALECHA	76
22	90122	SUBHASHINI THAKUR	70
23	90123	SURYA PRAKASH TIWARI	70
24	90124	VEDIKA RANI VERMA	73
25	90125	VIMAL KUMAR SINHA	73
		Total	1785
		Average	71.4

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C402.1	3				3
C402.2		2			2
C402.3			3		3
C402.4				2	2
Average Attainment of C402 for Computational Methods & Programming ESE					2.5

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C402.1	72.55				72.55
C402.2		48.37			48.37
C402.3			72.55		72.55
C402.4				48.37	48.37
Average Attainment of C402 for Computational Methods & Programming ESE					60.45
Attainment Level					1.8135

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	Average
C402 (From CO-PO Mapping)	2.75	2.25	3	2	2.5	1.6666667	2	
ESE Ave Marks	60.45	60.45	60.45	60.45	60.45	60.45	60.45	
PO Attainment of ESE in terms of %	55	45	60	40	50	34	40	
PO Attainment of ESE in terms of levels	3	2	3	2	3	2	2	2.43
External Assessment (80%)	2.4	1.6	2.4	1.6	2.4	1.6	1.6	1.94

CO#	PSO1	PSO2	PSO3	PSO4	
C402 (From CO-PSO Mapping)	2.50	2.00	2.75	1.67	**If PSO is less than 40%: then 1** **If PSO is between 40% to 60%: then 2** **If PSO is greater than 60%: then 3**
ESE Ave Marks	60.45	60.45	60.45	60.45	
PSO Attaiment of ESE in terms of %	50	40	55	34	
PSO Attaiment of ESE in terms of levels	2	2	2	1	1.75
External Assessment (80%)	1.6	1.6	1.6	1.6	1.40

Final Attainment

	PO'S Attainment of Computational Methods & Programming (MPH402) through External Assessment							
Sl. No	**Parameters**	**Name of Subject: Computational Methods & Programming**						
		Program Outcomes						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
3	Class Test -1	**3**	**3**	**3**	**2**	**3**	**2**	**2**
4	Class Test -2	**3**	**2**	**3**	**2**	**3**	**2**	**2**
5	Assignment	**2**	**2**	**2**	**2**	**2**	**1**	**1**
Avg		**2.67**	**2.33**	**2.67**	**2.00**	**2.67**	**1.67**	**1.67**

	PO'S Attainment of Computational Methods & Programming (MPH402) through External Assessment							
Sl. No	**Parameters**	**Name of Subject: Computational Methods & Programming**						
		Program Outcomes						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
1	**ESE**	**3**	**2**	**3**	**2**	**3**	**2**	**2**

	Course Computational Methods & Programming (C402) Net attainment								
Sl. No	**Parameters**	**Name of Subject: Computational Methods & Programming**							
		Program Outcomes							
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	
1	**External Assessment (80%)**	2.4	1.6	2.4	1.6	2.4	1.6	1.6	
2	**Internal Assessment (20%)**	0.53	0.47	0.53	0.40	0.53	0.33	0.33	
Net Assessment of C402		**2.93**	**2.07**	**2.93**	**2.00**	**2.93**	**1.93**	**1.93**	**2.39**

Target Set for PO Attainment w.r.t Computational Methods & Programming is 2.75. We Achieved 2.39. So needs remedial action.

PSO'S Attainment of Computational Methods & Programming through Internal Assessment

Sl. No	Parameters	Name of Subject: Computational Methods & Programming			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	Class Test -1	3	2	3	2
2	Class Test -2	2	2	2	1
3	Assignment	2	2	2	1
Avg		2.38	2.38	2.38	2.38

PSO'S Attainment of Computational Methods & Programming through Internal Assessment

Sl. No	Parameters	Name of Subject: Computational Methods & Programming			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	ESE	2	2	2	2
Avg		2	2	2	2

PSO'S Attainment of Computational Methods & Programming through Internal Assessment

Sl. No	Parameters	Name of Subject: Computational Methods & Programming				
		Program Specific Outcomes				
		PSO1	PSO2	PSO3	PSO4	
1	External Assessment (80%)	1.6	1.6	1.6	1.6	
2	Internal Assessment (20%)	0.476	0.476	0.476	0.476	
Avg		2.164	2.164	2.164	2.164	2.16

Target Set for PSO Attainment w.r.t Computational Methods & Programming (C402) is 1.51. We Achieved 2.16.

Attainments of POs-PSOs of Physics Department
SEMESTER-IV

MPH403: Special Paper- Electronics

After successful completion of the course, the student is expected to

CO1   Get familiarized with Amplitude Modulation, its principle and applications
CO2   Present mathematical representation of different modulation techniques.
CO3   Learn and apply sampling theorem for Mathematical representation of of FM and PM signal, inter system comparison (FM & AM) generation of FM direct & indirect method.
CO4   Understand and compare different computer communication systems viz. LAN, WAN and MAN, Wireless network, Network topology, etc.

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	3	2	2	3	1	2	3	2	3	
CO2	3	2	3		3		3	2	1	2	2
CO3	2	3	3	1	3	1	2	3		2	
CO4	3	3	2		3	2	2	3	2	2	2
	2.50	2.75	2.50	1.50	3.00	1.33	2.25	2.75	1.67	2.25	2.00

Mapping of Course Outcomes with Program Outcomes

IV Semester Internal Assessment I, 2020-21
M. Sc. PHYSICS
Paper III
[SPECIAL PAPER III ELECTRONICS]

Time: 1:30 Hours]   [Maximum Marks: 20

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – I

Q.No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.1 A.	State Nyquist criterion for band pass signal.	(1)		L2
Q.1 B.	What is the minimum requirement of signal to noise power ratio?	(1)		L2
Q.1 C.	Describe pulse amplitude modulation and also discuss about the channel bandwidth requirement for transmitting PAM signal. **OR** Discuss the sample and holding of the signal in sampling the signal.	(3)	CO1	L3
Q.1 D.	Describe the natural sampling technique of the signal with the help of block diagram, working and mathematical calculation. **OR** Describe the differential pulse code modulation technique of the signal with the help of block diagram, working andmathematical calculation	(5)		L4

Unit-II

Q.No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.2 A.	What do you mean by base band modulation and band pass modulation? Write the name of Various techniques?	(1)		L3
Q.2 B.	What do you mean by AWGN (Additive while Gaussian Noise).	(1)		L4
Q.2 C.	Describe the mathematical representation of noise signal. **OR** Discuss the spectral components of noise.	(3)	CO2	L4
Q.2 D.	Describe phase shift lceying technique for carrier modulation with the help of block diagram, mathematical expression for channel band width requirement and phasor diagram. **OR** Describe the noise in frequancy domain presenting the power spectral density. Explain the superposition of noise mathematically.	(5)		L5

Class Test-I

S. No.	Roll No.	Name	Q1	Q2	CT1
1	90101	ADITI SINGH KSHATRI	4	5	9
2	90102	AKARSHIT BARANWAL	5	5	10
3	90103	ANCHAL BHAVE	5	4	9
4	90104	BHARTI SINHA	5	5	10
5	90105	BHAVANA SINHA	5	5	10
6	90106	CHAKENDRA	5	4	9
7	90107	CHETNA DESHMUKH	4	5	9
8	90108	HOMESHWARI SAHU	5	4	9
9	90109	MANISH KUMAR	4	4	8
10	90110	MANISH SINHA	5	4	9

11	90111	MEGHA KUMARI SARTHI	5	5	10
12	90112	MITHLESH VERMA	5	3	8
13	90113	MUKTI VARMA	5	5	10
14	90114	OJASVI VARMA	5	5	10
15	90115	PRINCE KUMAR KUSHWAHA	5	4	9
16	90116	RANJANA SAHU	4	4	8
17	90117	RATNESH DHRUW	6	3	9
18	90118	RAVI SONBOIR	5	5	10
19	90119	RAVISHANKAR ARMO	5	4	9
20	90120	RUPALI JOSHI	4	5	9
21	90121	SAMTA SALECHA	5	4	9
22	90122	SUBHASHINI THAKUR	5	4	9
23	90123	SURYA PRAKASH TIWARI	4	5	9
24	90124	VEDIKA RANI VERMA	5	4	9
25	90125	VIMAL KUMAR SINHA	4	5	9
		Total	119	106	225
		Average	4.76	4.4	9.16

Mapping between COs & CT1 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C403.1	C403.2	C403.3	C403.4	
Q.1	2				2
Q.2		2			2
					2

Mapping between CO & CT1 Questions in terms of %					Ave C403 Attainment
Question	Outcomes of the Subject				
	C403.1	C403.2	C403.3	C403.4	
Q.1	61.06666667				
Q.2		61.06666667			
Average	61.07	61.07			61.07

If C403 is less than 40%: then 1 If C403 is between 40% to 65%: then 2 If C403 is greater than 65%: then 3	Average C403 attainment for CT1 is 61.07. So attainment level is 2

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	Average
C403 (From CO-PO Mapping)	2.5	2.75	2.5	1.5	3	1.33333	2.25	
Ave C403 Attainment	61.07	61.07	61.07	61.07	61.07	61.07	61.07	
PO Attainment of C403 for CT-1 in terms of %	50.89	55.98	50.89	30.54	61.07	27.14	45.80	46.04
PO Attainment of C403 for CT-1 in terms of levels	3	3	3	2	3	1	2	2.43
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.2	0.4	0.49

CO#	PSO1	PSO2	PSO3	PSO4	
C403 (From CO-PSO Mapping)	**2.75**	**1.67**	**2.25**	**2.00**	**If PSO is less than 40%: then 1** **If PSO is between40% to 60%: then 2** **If PSO is greater than 60%: then 3**
Ave C403 Attainment	**61.07**	**61.07**	**61.07**	**61.07**	
PSO Attainment of C403 for CT-1 in terms of %	**56**	**34**	**46**	**41**	
PSO Attainment of C403 for CT-1 in terms of levels	**2**	**1**	**2**	**2**	**1.75**
Internal Assessment (20%)	**0.4**	**0.2**	**0.4**	**0.4**	**0.35**

IV Semester Internal Assessment II, 2020-21
M. Sc. PHYSICS
Paper III
[SPECIAL PAPER III ELECTRONICS]

[Time: 1:30 Hours]   [Maximum Marks: 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – III

Q. No.	Question	Marks	CO's-Mapping	Bloom's Level
Q.3 A.	Define internal and external noise, Name different types of noise.	**(1)**		**L2**
Q.3 B.	Write difference between coherent and non coherent receiving of signal.	**(1)**	**CO3**	**L3**
Q.3 C.	Explain working of matched filter with respect to mathematical Analysis.	**(3)**		**L4**

	OR Describe the working of optimum filter receiver with respect to mathematical analysis.			
Q.3 D.	What do you mean by quantization noise? Derive the formula of quantization error in PCM. **OR** Calculate the signal to noise power ratio for PCM technique and DM technique.	**(5)**		**L4, L5**

Unit-IV

Q.4 A.	What are time division and frequency division multiplexing.	**(1)**		**L2**
Q.4 B.	Write full form of ALOHA. In which category ALOHA is placed.	**(1)**		**L2**
Q.4 C.	Explain ARPANET with respect is practical aspect. **OR** Explain TYMNET with respect to practical aspect.	**(3)**		**L3**
Q.4 D.	What is the frequency range for transmitting signal through mobile communication system or satellite communication system. Explain any one communication system in detail. **OR** Explain the working of any multiple access communication system. Describe the protocols followed for transmitting message packet.	**(5)**	**CO4**	**L4,L5**

Class Test -II

S. No.	Roll No.	Name	Q1	Q2	CT2
1	90101	ADITI SINGH KSHATRI	4	5	9
2	90102	AKARSHIT BARANWAL	5	5	10
3	90103	ANCHAL BHAVE	5	5	10
4	90104	BHARTI SINHA	4	5	9
5	90105	BHAVANA SINHA	5	4	9
6	90106	CHAKENDRA	4	5	9
7	90107	CHETNA DESHMUKH	5	4	10
8	90108	HOMESHWARI SAHU	5	5	10
9	90109	MANISH KUMAR	5	5	10
10	90110	MANISH SINHA	5	5	10
11	90111	MEGHA KUMARI SARTHI	4	5	9
12	90112	MITHLESH VERMA	4	5	9
13	90113	MUKTI VARMA	5	4	9
14	90114	OJASVI VARMA	4	5	9
15	90115	PRINCE KUMAR KUSHWAHA	5	5	10
16	90116	RANJANA SAHU	6	4	10
17	90117	RATNESH DHRUW	5	3	8
18	90118	RAVI SONBOIR	6	3	9

19	90119	RAVISHANKAR ARMO	5	5	10
20	90120	RUPALI JOSHI	4	5	9
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	5	10
23	90123	SURYA PRAKASH TIWARI	4	5	9
24	90124	VEDIKA RANI VERMA	4	5	9
25	90125	VIMAL KUMAR SINHA	5	5	9
		Total	119	118	237
		Average	4.72	4.68	9.4

Mapping between COs & CT2 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C403.1	C403.2	C403.3	C403.4	
Q.1			2		2
Q.2				3	3
					2.5

Mapping between CO & CT2 Questions in terms of %					Ave C403 Attainment
Question	Outcomes of the Subject				
	C403.1	C403.2	C403.3	C403.4	
Q.1			62.6666667		
Q.2				94	
Average			62.67	94.00	78.33

If C403 is less than 40%: then 1 If C403 is between 40% to 65%: then 2 If C403 is greater than 65%: then 3	Average C403 attainment for CT2 is 78.33. So attainment level is 3

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C403 (From CO-PO Mapping)	2.5	2.75	2.5	1.5	3	1.33333	2.25	Average
Ave C403 Attainment	78.33	78.33	78.33	78.33	78.33	78.33	78.33	
PO Attainment of C403 for CT-2 in terms of %	65.28	71.80	65.28	39.17	78.33	34.81	58.75	59.06
PO Attainment of C403 for CT-2 in terms of levels	3	3	3	2	3	2	3	2.71
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.4	0.6	0.54

CO#	PSO1	PSO2	PSO3	PSO4	
C403 (From CO-PSO Mapping)	2.75	1.67	2.25	2.00	**If PSO is less than 40%: then 1** **If PSO is between40% to 60%: then 2** **If PSO is greater than 60%: then 3**
Ave C403 Attainment	78.33	78.33	78.33	78.33	
PSO Attainment of C403 for CT-2 in terms of %	72	44	59	52	
PSO Attainment of C403 for CT-2 in terms of levels	3	2	2	2	2.25
Internal Assessment (20%)	0.6	0.4	0.4	0.4	0.45

INTERNAL ASSESMENT

Internal Assessment						
Sl.No.	Name of Students	Q1 (10)	Q2 (10)	Q3 (10)	Q4 (10)	Total Marks in assignment (40)	Grades
1	ADITI SINGH KSHATRI	6	8	5	4	23	B
2	AKARSHIT BARANWAL	9	7	7	4	27	B
3	ANCHAL BHAVE	9	10	8	9	36	A
4	BHARTI SINHA	4	4	8	9	25	B
5	BHAVANA SINHA	9	8	7	10	34	A
6	CHAKENDRA	8	9	8	9	34	A
7	CHETNA DESHMUKH	4	8	4	4	20	C
8	HOMESHWARI SAHU	8	7	6	10	31	A
9	MANISH KUMAR	4	4	6	10	24	B
10	MANISH SINHA	6	8	10	4	28	B
11	MEGHA KUMARI SARTHI	10	6	8	8	32	A
12	MITHLESH VERMA	9	7	9	10	35	A
13	MUKTI VARMA	8	8	6	10	32	A
14	OJASVI VARMA	4	8	6	4	22	B
15	PRINCE KUMAR KUSHWAHA	8	6	7	4	25	B
16	RANJANA SAHU	4	8	4	4	20	C
17	RATNESH DHRUW	8	6	8	4	26	B
18	RAVI SONBOIR	7	10	9	6	32	A
19	RAVISHANKAR ARMO	4	8	8	8	28	B
20	RUPALI JOSHI	9	8	9	9	35	A
21	SAMTA SALECHA	9	9	7	8	33	A

22	SUBHASHINI THAKUR	7	6	9	8	30	B
23	SURYA PRAKASH TIWARI	8	6	6	10	30	B
24	VEDIKA RANI VERMA	8	8	10	10	36	A
25	VIMAL KUMAR SINHA	10	10	8	8	36	A
	Total Marks	180	187	183	184	734	
	Average Marks	**7.20**	**7.48**	**7.32**	**7.36**	**29.36**	
	InTerms of percentage	72	74.8	73.2	73.6	73.4	

Number of Students not Submitted	0
Number of Students with 'A' grade	**12**
Number of Students with 'B' grade	**11**
Number of Students with 'C' grade	**2**
Number of students scoring more than or equal to 24 (60% marks)	**21** **84.00%**

Mapping between COs & Assignment Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C403.1	**C403.2**	**C403.3**	**C403.4**	
Q.1	3				**3**
Q.2		2			**2**
Q.3			2		**2**
Q4				3	**3**
					2.333333

Mapping between CO & Assignment Questions in terms of %					Ave C403 Attainment
Question	Outcomes of the Subject				
	C403.1	**C403.2**	**C403.3**	**C403.4**	
Q.1	**73.40**				
Q.2		**48.93**			
Q.3			**48.93**		
Q.4				**73.40**	
Average	**73.40**	**48.93**	**48.93**	**73.40**	**61.17**

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C403(From CO-PO Mapping)	2.5	2.75	2.5	1.5	3	1.33333	2.25	**Average**
Ave C403Attainment	61.17	61.17	61.17	61.17	61.17	61.17	61.17	
Attainment of PO of C403 for Assignment in terms of %	50.97	56.07	50.97	30.58	61.17	27.19	45.88	46.16

Attainment of PO of C403for Assignment in terms of levels	2	3	2	2	2	1	1	1.86
Internal Assessment (20%)	0.4	0.6	0.4	0.4	0.4	0.2	1	0.49

CO#	PSO1	PSO2	PSO3	PSO4	
C403 (From CO-PSO Mapping)	2.75	1.67	2.25	2.00	**If PSO is less than 40%: then 1** **If PSO is between40% to 60%: then 2** **If PSO is greater than 60%: then 3**
Ave C403 Attainment	61.17	61.17	61.17	61.17	
Attainment of PSO of C403 for Assignment in terms of %	56	34	46	41	
Attainment of PSO of C403 for Assignment in terms of levels	2	1	2	2	1.75
Internal Assessment (20%)	0.4	0.2	0.4	0.4	0.35

END SEMESTER

Code No. : A04/4301

Fourth Semester Online Examination, August 2021

M.Sc. PHYSICS

Paper - III

SPECIAL PAPER ELECTRONICS

Time : 3 Hrs.   Max. Marks : 80

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences. Part C (Short answer type) of each question should be answered in 200-250 words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit - I

Q.1 A. What is sample and hold of signal?   (2)

Q.1 B. What is the minimum requirement of signal to noise power ratio for analog and digital communication system?   (2)

Q.1 C. What are the various types of sampling techniques? Explain any one in detail.   (4)

OR

Explain time division multiplexing with pulse amplitude modulation system.

Q.1 D. What are the various techniques to convert analog signal to digital signal for the communication of signal? Compare the performances of all the mentioned techniques.(12)

P.T.O.

OR

Draw the block diagram to represent digital communication system and explain its working.

Unit - II

Q.2 A. Name the various carrier modulation techniques for digital communication system. **(2)**

Q.2 B. Define noise mathematically. **(2)**

Q.2 C. Derive relation between noise of the signal and probability density function. **(4)**

OR

Describe BPSK modulation technique.

Q.2 D. Explain any one digital modulation technique in detail and compare its performances with other existing techniques. **(12)**

OR

Explain the working of binary phase-shift keying with the help of block diagram, mathematical representation and phasor diagram.

Unit - III

Q.3 A. What do you mean by quantization noise? **(2)**

Q.3 B. What is the unit of error in the digital receiver? **(2)**

Q.3 C. Describe the reception of signals using matched filter. **(4)**

OR

Explain thermal noise in detail.

Q.3 D. Derive the signal to quantization noise power ratio in PCM technique. **(12)**

OR

Describe the digital receiver using correlation principle.

Unit - IV

Q.4 A. What is data communication system? **(2)**

Q.4 B. What do you mean by signal multiplexing? **(2)**

Q.4 C. Describe the working of frequency division multiple access. **(4)**

OR

Discuss the working of Local Area Network (LAN).

Q.4 D. Explain in detail the working of integrated services digital network. **(12)**

OR

What is packet switched technology for data communication? Introduce the working of TYMNET.

S. No.	Roll No.	Name	Marks
1	90101	ADITI SINGH KSHATRI	71
2	90102	AKARSHIT BARANWAL	73
3	90103	ANCHAL BHAVE	70
4	90104	BHARTI SINHA	73
5	90105	BHAVANA SINHA	72
6	90106	CHAKENDRA	58
7	90107	CHETNA DESHMUKH	74
8	90108	HOMESHWARI SAHU	69
9	90109	MANISH KUMAR	52
10	90110	MANISH SINHA	70
11	90111	MEGHA KUMARI SARTHI	72
12	90112	MITHLESH VERMA	62
13	90113	MUKTI VARMA	74
14	90114	OJASVI VARMA	72
15	90115	PRINCE KUMAR KUSHWAHA	75
16	90116	RANJANA SAHU	74
17	90117	RATNESH DHRUW	63
18	90118	RAVI SONBOIR	70
19	90119	RAVISHANKAR ARMO	66
20	90120	RUPALI JOSHI	76
21	90121	SAMTA SALECHA	73
22	90122	SUBHASHINI THAKUR	72
23	90123	SURYA PRAKASH TIWARI	54
24	90124	VEDIKA RANI VERMA	73
25	90125	VIMAL KUMAR SINHA	74
		Total	1732
		Average	69.28

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C403.1	3				3
C403.2		3			3
C403.3			3		3
C403.4				2	2
Average Attainment of C403 for Special Paper-Electronics ESE					2.75

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C403.1	86.6				57.72756
C403.2		86.6			57.72756
C403.3			86.6		57.72756
C403.4				57.72756	57.72756
Average Attainment of C403 for Special Paper- Electronics ESE					79.38189
Attainment Level					2.381457

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C403 (From CO-PO Mapping)	2.5	2.75	2.5	1.5	3	1.3333333	2.25	Average
ESE Ave Marks	79.38	79.38	79.38	79.38	79.38	79.38	79.38	
PO Attainment of ESE in terms of %	66	73	66	40	79	35	60	
PO Attainment of ESE in terms of levels	3	3	3	2	3	2	3	2.71
External Assessment (80%)	2.4	2.4	2.4	1.6	2.4	1.6	2.4	2.17

CO#	PSO1	PSO2	PSO3	PSO4	
C403 (From CO-PSO Mapping)	2.75	1.67	2.25	2.00	**If PSO is less than 40%: then 1**
ESE Ave Marks	79.38	79.38	79.38	79.38	**If PSO is between 40% to 60%: then 2**
PSO Attainment of ESE in terms of %	73	44	60	53	**If PSO is greater than 60%: then 3**
PSO Attainment of ESE in terms of levels	3	2	3	2	2.50
External Assessment (80%)	2.4	1.6	2.4	1.6	2.00

FINAL ASSESMENT

		PO'S Attainment of Special Paper- Electronics (MPH403) through External Assessment						
Sl. No	Parameters	Name of Subject: Computational Methods & Programming						
		Program Outcomes						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
3	Class Test -1	3	3	3	2	3	1	2
4	Class Test -2	3	3	3	2	3	2	3
5	Assignment	2	3	2	2	2	1	1
	Avg	2.67	3.00	2.67	2.00	2.67	1.33	2.00

PO'S Attainment of Special Paper- Electronics(MPH403) through External Assessment								
Sl. No	Parameters	**Name of Subject: Special Paper- Electronics**						
		Program Outcomes						
		PO1	PO2	PO3	PO4	PO5	PO6	PO7
1	ESE	3	3	3	2	3	2	3

Course Special Paper- Electronics Net attainment:									
Sl. No	Parameters	**Name of Subject: Special Paper- Electronics**							Average
		Program Outcomes							
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	
1	External Assessment (80%)	2.4	2.4	2.4	1.6	2.4	1.6	2.4	
2	Internal Assessment (20%)	0.53	0.60	0.53	0.40	0.53	0.27	0.40	
Net Assessment of C403		2.93	3.00	2.93	2.00	2.93	1.87	2.80	2.64

Target Set for PO Attainment w.r.t Special Paper- Electronics is 2.7. We Achieved 2.64. So needs remedial action.

PSO'S Attainment of Special Paper- Electronics through Internal Assessment					
Sl. No	Parameters	**Name of Subject: Special Paper- Electronics**			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	Class Test -1	2	1	2	2
2	Class Test -2	3	2	2	2
3	Assignment	2	1	2	2
Avg		2.33	1.33	2.00	2.00

PSO'S Attainment of Special Paper- Electronics through Internal Assessment					
Sl. No	Parameters	Name of Subject: Special Paper- Electronics			
		Program Specific Outcomes			
		PSO1	PSO2	PSO3	PSO4
1	ESE	3	2	3	2
Avg		3	2	3	2

PSO'S Attainment of Special Paper- Electronics through Internal Assessment						
Sl. No	Parameters	Name of Subject: Special Paper- Electronics				
		Program Specific Outcomes				
		PSO1	PSO2	PSO3	PSO4	
1	External Assessment (80%)	2.4	1.6	2.4	1.6	
2	Internal Assessment (20%)	0.466666667	0.266667	0.4	0.4	
Avg		2.87	1.87	2.80	2.00	2.38

Target Set for PSO Attainment w.r. Special Paper- Electronics (C403) is 2.5. We Achieved 2.38.

Attainments of POs-PSOs of Physics Department
SEMESTER-IV

MPH404: Electronics

After successful completion of the course, the student is expected to

CO1   Explain Architecture and pin diagram of 8086 Microprocessor.

CO2   Analyse addressing modes and instructions of advanced Microprocessors.

CO3   Learn and Understand memory Interfaces of 8088 & 8086 and Basic idea about 32 bit and 64 bit memory interfaces.

CO4   Understand and present I/O interface, basic descriptive idea of Peripheral interface like 8255,8279(key board display) 8255(Functional description only)

Mapping of Course Outcomes with Program Outcomes										
CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3		3	2	2	3	2	3	2
CO2	3	2	3	2	2		3	2		3	1
CO3	2	2	3	1	3		3	2		2	1
CO4	3	3	2		2	2	2	3	2	2	2
	2.75	2.50	2.75	1.50	2.50	2.00	2.50	2.50	2.00	2.50	1.50

IV Semester Internal Assessment I, 2020-21
M. Sc. PHYSICS
Paper IV
[SPECIAL PAPER IV (ELECTRONICS)]
[Time: 1:30 Hours]   [Maximum Marks: 20]

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
- Part C (Short answer type) of each question will be answered in 200-250words.
- Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit – I

Q. No.	Questions	Marks	CO's Mapping	Bloom's Level
Q.1 A.	Name the different configurations of 8086 microprocessor.	**(1)**		**L2**
Q.1 B.	Why is queue instruction not more than 6 bytes ?	**(1)**		**L3**
Q.1 C.	Explain the generation of 20-bit physical addresses in 8086 microprocessor. **OR** Write the features of 8086 microprocessor.	**(3)**	**CO1**	**L3**
Q.1 D.	Explain the function of signals of 8086 microprocessor. **OR** Explain the concept of segmented memory. What are its advantages?	**(5)**		**L4**

Unit-II

Q. No.	Questions	Marks	CO's Mapping	Bloom's Level
Q.2 A.	Which base register addresses data in the stack segment?	**(1)**		**L3**
Q.2 B.	What is wrong with a MOV [BX],[DI] instruction?	**(1)**		**L3**
Q.2 C.	Write the differences between JUMP and LOOP instruction. **OR** Explain addressing in real mode and addressing in protected mode.	**(3)**	**CO2**	**L4**
Q.2 D.	Explain arithmetic instructions of 8086 microprocessor. **OR** Explain instruction format of 8086 microprocessor.	**(5)**		**L4,L5**

Class Test –I Marks

S. No.	Roll No.	Name	Q1	Q2	CT1
1	90101	ADITI SINGH KSHATRI	5	4	9
2	90102	AKARSHIT BARANWAL	4	5	9
3	90103	ANCHAL BHAVE	5	5	10
4	90104	BHARTI SINHA	5	5	10
5	90105	BHAVANA SINHA	4	5	9
6	90106	CHAKENDRA	5	4	9
7	90107	CHETNA DESHMUKH	5	5	10
8	90108	HOMESHWARI SAHU	5	3	8

9	90109	MANISH KUMAR	4	4	8
10	90110	MANISH SINHA	4	4	8
11	90111	MEGHA KUMARI SARTHI	5	4	9
12	90112	MITHLESH VERMA	5	4	9
13	90113	MUKTI VARMA	5	4	9
14	90114	OJASVI VARMA	4	5	9
15	90115	PRINCE KUMAR KUSHWAHA	4	5	9
16	90116	RANJANA SAHU	4	4	8
17	90117	RATNESH DHRUW	5	3	8
18	90118	RAVI SONBOIR	6	3	9
19	90119	RAVISHANKAR ARMO	5	4	9
20	90120	RUPALI JOSHI	5	4	9
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	4	9
23	90123	SURYA PRAKASH TIWARI	5	5	10
24	90124	VEDIKA RANI VERMA	5	4	9
25	90125	VIMAL KUMAR SINHA	5	4	9
		Total	119	106	225
		Average	4.76	4.24	9

Mapping between COs & CT1 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C404.1	C404.2	C404.3	C404.4	
Q.1	3				3
Q.2		3			3
					3

Mapping between CO & CT1 Questions in terms of %					Ave C404 Attainment
Question	Outcomes of the Subject				
	C404.1	C404.2	C404.3	C404.4	
Q.1	90				
Q.2		90			
Average	90.00	90.00			90.00

If C404 is less than 40%: then 1 If C404 is between 40% to 65%: then 2 If C404 is greater than 65%: then 3	Average C404 attainment for CT1 is 90. So attainment level is 3.

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C404 (From CO-PO Mapping)	2.75	2.5	2.75	1.5	2.5	2	2.5	Average
Ave C404 Attainment	90.00	90.00	90.00	90.00	90.00	90.00	90.00	
PO Attainment of C404 for CT-1 in terms of %	82.50	75.00	82.50	45.00	75.00	60.00	75.00	70.00
PO Attainment of C404 for CT-1 in terms of levels	3	3	3	2	3	3	3	2.83
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.6	0.6	0.57

CO#	PSO1	PSO2	PSO3	PSO4	
C404 (From CO-PSO Mapping)	2.50	2.00	2.50	1.50	If PSO is less than 40%: then 1 If PSO is between40% to 60%: then 2 If PSO is greater than 60%: then 3
Ave C404 Attainment	90.00	90.00	90.00	90.00	
PSO Attainment of C404 for CT-1 in terms of %	75	60	75	45	
PSO Attainment of C404 for CT-1 in terms of levels	3	3	3	2	2.75
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.55

Class Test –II Marks

S. No.	Roll No.	Name	Q1	Q2	CT2
1	90101	ADITI SINGH KSHATRI	4	6	10
2	90102	AKARSHIT BARANWAL	5	5	10
3	90103	ANCHAL BHAVE	5	4	9
4	90104	BHARTI SINHA	4	5	9
5	90105	BHAVANA SINHA	4	5	9
6	90106	CHAKENDRA	5	4	9
7	90107	CHETNA DESHMUKH	5	4	9
8	90108	HOMESHWARI SAHU	5	5	10
9	90109	MANISH KUMAR	5	5	10
10	90110	MANISH SINHA	4	5	9
11	90111	MEGHA KUMARI SARTHI	5	5	10
12	90112	MITHLESH VERMA	4	5	9
13	90113	MUKTI VARMA	5	5	10
14	90114	OJASVI VARMA	5	4	9
15	90115	PRINCE KUMAR KUSHWAHA	5	5	10
16	90116	RANJANA SAHU	6	3	9

17	90117	RATNESH DHRUW	5	4	9
18	90118	RAVI SONBOIR	4	4	8
19	90119	RAVISHANKAR ARMO	5	5	10
20	90120	RUPALI JOSHI	5	5	10
21	90121	SAMTA SALECHA	5	5	10
22	90122	SUBHASHINI THAKUR	5	5	10
23	90123	SURYA PRAKASH TIWARI	5	5	10
24	90124	VEDIKA RANI VERMA	5	5	10
25	90125	VIMAL KUMAR SINHA	4	5	9
		Total	119	118	237
		Average	4.76	4.72	9.48

Mapping between COs & CT2 Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C404.1	C404.2	C404.3	C404.4	
Q.1			3		3
Q.2				2	2
					2.5

Mapping between CO & CT2 Questions in terms of %					Ave C404 Attainment
Question	Outcomes of the Subject				
	C404.1	C404.2	C404.3	C404.4	
Q.1			94.8		
Q.2				63.2	
Average			94.80	63.20	79.00

If C404 is less than 40%: then 1 If C404 is between 40% to 65%: then 2 If C404 is greater than 65%: then 3	Average C404 attainment for CT2 is 79. So attainment level is 3

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C404 (From CO-PO Mapping)	2.75	2.5	2.75	1.5	2.5	2	2.5	Average
Ave C404 Attainment	79.00	79.00	79.00	79.00	79.00	79.00	79.00	
PO Attainment of C404 for CT-2 in terms of %	72.42	65.83	72.42	39.50	65.83	52.67	65.83	61.44
PO Attainment of C404 for CT-2 in terms of levels	3	3	3	2	3	3	3	2.83
Internal Assessment (20%)	0.6	0.6	0.6	0.4	0.6	0.6	0.6	0.57

CO#	PSO1	PSO2	PSO3	PSO4	
C404 (From CO-PSO Mapping)	2.50	2.00	2.50	1.50	If PSO is less than 40%: then 1 If PSO is between 40% to 60%: then 2 If PSO is greater than 60%: then 3
Ave C404 Attainment	79.00	79.00	79.00	79.00	
PSO Attainment of C404 for CT-2 in terms of %	66	53	66	40	
PSO Attainment of C404 for CT-2 in terms of levels	3	2	3	2	2.50
Internal Assessment (20%)	0.6	0.4	0.6	0.4	0.50

Internal Assessment							
Sl.No.	Name of Students	Q1 (10)	Q2 (10)	Q3 (10)	Q4 (10)	Total Marks in assignment (40)	Grades
1	ADITI SINGH KSHATRI	8	9	8	9	22	B
2	AKARSHIT BARANWAL	4	8	4	4	26	B
3	ANCHAL BHAVE	8	7	6	10	20	C
4	BHARTI SINHA	4	4	6	10	26	B
5	BHAVANA SINHA	6	8	10	4	32	A
6	CHAKENDRA	10	6	8	8	32	A
7	CHETNA DESHMUKH	9	7	9	10	32	A
8	HOMESHWARI SAHU	8	8	6	10	28	B
9	MANISH KUMAR	4	8	6	4	35	A
10	MANISH SINHA	8	8	6	4	28	B
11	MEGHA KUMARI SARTHI	4	8	4	4	32	A
12	MITHLESH VERMA	8	6	8	4	34	A
13	MUKTI VARMA	7	10	9	6	20	C
14	OJASVI VARMA	7	10	9	6	31	A
15	PRINCE KUMAR KUSHWAHA	7	10	9	6	24	B
16	RANJANA SAHU	4	8	8	8	28	B
17	RATNESH DHRUW	9	8	9	9	32	A
18	RAVI SONBOIR	6	8	10	4	32	A
19	RAVISHANKAR ARMO	10	6	8	8	28	B
20	RUPALI JOSHI	9	8	9	9	35	A
21	SAMTA SALECHA	9	9	7	8	33	A

22	SUBHASHINI THAKUR	7	6	9	8	30	B
23	SURYA PRAKASH TIWARI	8	6	6	10	30	B
24	VEDIKA RANI VERMA	8	8	10	10	36	A
25	VIMAL KUMAR SINHA	10	10	8	8	36	A
	Total Marks	182	194	192	181	749	
	Average Marks	**7.28**	**7.76**	**7.68**	**7.24**	**29.68**	
	In Terms of percentage	72.8	77.6	76.8	72.4	74.2	

Number of Students not Submitted	0
Number of Students with 'A' grade	13
Number of Students with 'B' grade	10
Number of Students with 'C' grade	2

Number of students scoring more than or equal to 24 (60% marks)	22	88%

Mapping between COs & Assignment Questions in terms of level					Ave CO Attainment
Question	Outcomes of the Subject				
	C404.1	**C404.2**	**C404.3**	**C404.4**	
Q.1	3				**3**
Q.2		3			**3**
Q.3			2		**2**
Q4				3	**3**
					2.666667

Mapping between CO & Assignment Questions in terms of %					
Question	Outcomes of the Subject				
	C404.1	**C404.2**	**C404.3**	**C404.4**	
Q.1	**74.20**				**Ave C404 Attainment**
Q.2		**74.20**			
Q.3			**49.47**		
Q.4				**74.20**	
Average	**74.20**	**74.20**	**49.47**	**74.20**	**68.02**

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C404 (From CO-PO Mapping)	2.75	2.5	2.75	1.5	2.5	2	2.5	
Ave C404 Attainment	68.02	68.02	68.02	68.02	68.02	68.02	68.02	

Attainment of PO of C404 for Assignment in terms of %	62.35	56.68	62.35	34.01	56.68	45.34	56.68	52.90
Attainment of PO of C404 for Assignment in terms of levels	2	3	2	2	2	1	1	2.00
Internal Assessment (20%)	0.4	0.6	0.4	0.4	0.4	0.2	1	0.40

CO#	PSO1	PSO2	PSO3	PSO4	
C404 (From CO-PSO Mapping)	2.50	2.00	2.50	1.50	If PSO is less than 40%: then 1 If PSO is between40% to 60%: then 2 If PSO is greater than 60%: then 3
Ave C404Attainment	68.02	68.02	68.02	68.02	
Attainment of PSO of C404 for Assignment in terms of %	57	45	57	34	
Attainment of PSO of C404 for Assignment in terms of levels	2	2	2	2	2.00
Internal Assessment (20%)	0.4	0.4	0.4	0.4	0.40

END SEMESTER

Code No. : A04/4401

Fourth Semester Online Examination, August 2021

M.Sc. PHYSICS

Paper - IV

SPECIAL PAPER IV (ELECTRONICS)

Time : 3 Hrs.   Max. Marks : 80

- Part A and B of each question in each unit consist of very short answer type questions which are to be answered in one or two sentences.
  Part C (Short answer type) of each question should be answered in 200-250 words.
  Part D (Long answer type) of each question should be answered within the word limit 400-450.

Unit - I

Q.1 A. What does an offset tell us?   (2)

Q.1 B. Why is 8088 microprocessor faster than 8085, but slower than 8086?   (2)

Q.1 C. Write differences between 8085 and 8086 microprocessor.   (4)

OR

Write comparison between maximum and minimum mode of 8086 microprocessor.

Q.1 D. Explain the architecture of 8086 microprocessor.   (12)

OR

Explain two main differences between 8086 and 8088 microprocessors. Draw architecture of 8088 microprocessor.

Unit - II

Q.2 A. What is the purpose of the segment register in protected mode memory addressing? **(2)**

Q.2 B. What assembly language directive indicates the start of the CODE segment? **(2)**

Q.2 C. What are the different addressing modes supported by 8086 microprocessor? Give one example for each of them. **(4)**

OR

Write a program to convert the 8-bit BCD number to its equivalent binary.

Q.2 D. Explain data transfer instructions of 8086 microprocessor. **(12)**

OR

Write steps for developing an ALP.

Unit - III

Q.3 A. How much time is required to refresh the typical DRAM? **(2)**

Q.3 B. SRAM is an acronym for what type of device? **(2)**

Q.3 C. What is the purpose of the OE pin on a memory device? **(4)**

OR

What two methods are used to select the memory in the 8086 microprocessor?

Q.3 D. Explain address decoding in detail.   (12)

OR

Explain different memory devices.

Unit - IV

Q.4 A. What is the basic output interface?   (2)

Q.4 B. Where is the I/O port number stored for a string I/O instruction?   (2)

Q.4 C. Explain the term *handshaking* as it applies to computer I/O systems.   (4)

OR

What is the purpose of a contact bounce eliminator?

Q.4 D. (a) How many memory chips and I/O devices are interfaced to a microprocessor.

(b) Explain how a type 0 interrupt occurs.   (12)

OR

(a) Draw the block diagram of 825 I/O interface and explain its functioning.

(b) Explain the functioning of interrupts.

End Semester Marks

S. No.	Roll No.	Name	Marks
1	90101	ADITI SINGH KSHATRI	60
2	90102	AKARSHIT BARANWAL	69
3	90103	ANCHAL BHAVE	71
4	90104	BHARTI SINHA	67
5	90105	BHAVANA SINHA	66
6	90106	CHAKENDRA	66
7	90107	CHETNA DESHMUKH	68
8	90108	HOMESHWARI SAHU	66
9	90109	MANISH KUMAR	45
10	90110	MANISH SINHA	61
11	90111	MEGHA KUMARI SARTHI	72
12	90112	MITHLESH VERMA	56

13	90113	MUKTI VARMA	69
14	90114	OJASVI VARMA	68
15	90115	PRINCE KUMAR KUSHWAHA	69
16	90116	RANJANA SAHU	66
17	90117	RATNESH DHRUW	65
18	90118	RAVI SONBOIR	50
19	90119	RAVISHANKAR ARMO	55
20	90120	RUPALI JOSHI	67
21	90121	SAMTA SALECHA	67
22	90122	SUBHASHINI THAKUR	68
23	90123	SURYA PRAKASH TIWARI	54
24	90124	VEDIKA RANI VERMA	69
25	90125	VIMAL KUMAR SINHA	70
		Total	1604
		Average	64.16

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C404.1	2				2
C404.2		3			3
C404.3			3		3
C404.4				2	2
Average Attainment of C404 for Electronics ESE					2.5

Mapping of CO with ESE Question Paper					Ave
CO/ Ques	Q1	Q2	Q3	Q4	
C404.1	53.466132				53.46613
C404.2		80.2			80.2
C404.3			80.2		80.2
C404.4				53.466132	53.46613
Average Attainment of C404 for Electronics ESE					66.83307
Attainment Level					2.004992

CO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
C404 (From CO-PO Mapping)	2.75	2.5	2.75	1.5	2.5	2	2.5	
ESE Ave Marks	66.83	66.83	66.83	66.83	66.83	66.83	66.83	Average
PO Attainment of ESE in terms of %	61	56	61	33	56	45	56	
PO Attainment of ESE in terms of levels	3	3	3	2	3	2	3	2.71
External Assessment (80%)	2.4	2.4	2.4	1.6	2.4	1.6	2.4	2.17

CO#	PSO1	PSO2	PSO3	PSO4	
C404 (From CO-PSO Mapping)	**2.50**	**2.00**	**2.50**	**1.50**	**If PSO is less than 40%: then 1**
ESE Ave Marks	**66.83**	**66.83**	**66.83**	**66.83**	**If PSO is between40% to 60%: then 2** **If PSO is greater than 60%: then 3**
PSO Attainment of ESE in terms of %	56	45	56	33	
PSO Attainment of ESE in terms of levels	2	2	2	1	1.75
External Assessment (80%)	1.6	1.6	1.6	0.8	1.40

FINAL ATTAINMENTS

PO'S Attainment of Electronics (MPH404) through External Assessment								
Sl. No	**Parameters**	**Name of Subject: Electronics**						
		Program Outcomes						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
3	Class Test - 1	**3**	**3**	**3**	**2**	**3**	**3**	**3**
4	Class Test - 2	**3**	**3**	**3**	**2**	**3**	**3**	**3**
5	Assignment	**2**	**3**	**2**	**2**	**2**	**1**	**1**
Avg		**2.67**	**3.00**	**2.67**	**2.00**	**2.67**	**2.33**	**2.33**

PO'S Attainment of Electronics (MPH404) through External Assessment								
Sl. No	**Parameters**	**Name of Subject: Special Paper- Electronics**						
		Program Outcomes						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
1	**ESE**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

Sl. No	Parameters	PO1	PO2	PO3	PO4	PO5	PO6	PO7	
		Name of Subject: Electronics							
		Program Outcomes							
1	**External Assessment (80%)**	2.4	2.4	2.4	1.6	2.4	1.6	2.4	
2	**Internal Assessment (20%)**	0.53	0.60	0.53	0.40	0.53	0.47	0.47	
Net Assessment of C306		2.93	3.00	2.93	2.00	2.93	2.07	2.87	2.68

Course Electronics Net attainment:

Target Set for PO Attainment w.r.t Electronics 2.7 is . We Achieved 2.68. So needs remedial action.

PSO'S Attainment of Electronics through Internal Assessment

Sl. No	Parameters	PSO1	PSO2	PSO3	PSO4
		Name of Subject: Electronics			
		Program Specific Outcomes			
1	Class Test -1	**3**	**3**	**3**	**2**
2	Class Test -2	**3**	**2**	**3**	**2**
3	Assignment	**2**	**2**	**2**	**1**
Avg		2.67	2.33	2.67	1.67

PSO'S Attainment of Electronics through Internal Assessment

Sl. No	Parameters	PSO1	PSO2	PSO3	PSO4
		Name of Subject: Electronics			
		Program Specific Outcomes			
1	ESE	2	2	2	1
Avg		2	2	2	1

PSO'S Attainment of Electronics through Internal Assessment						
Sl. No	Parameters	Name of Subject: Electronics				
		Program Specific Outcomes				
		PSO1	PSO2	PSO3	PSO4	
1	External Assessment (80%)	1.6	1.6	1.6	0.8	
2	Internal Assessment (20%)	0.533333333	0.466667	0.533333	0.333333	
Avg		2.13	2.07	2.13	1.13	1.87

Target Set for PSO Attainment w.r.t Electronics (C404) is 2.5. We Achieved 1.87.