

Lesson plan (January-June: 2020)

Name of the Assistant/ Associate Professor: **Mr. Naveen Kumar**

Class: **M. Sc. Physics, Semester IV**

Section: **4A**

Subject: **Electronics II**

Subject Code : **PHY(S)-404**

Week	Day No.	Topics	Remarks
1	Day 1	Unit I External Photoelectric Effect detector: Vacuum photodiode	
16 Jan.	Day 2	Photo-multipliers	
-	Day 3	Microchannels	
24 Jan.	Day 4	Pn junction photodiode	
	Day 5	Cont...	
	Day 6	Solar cell	
	Day 7	Cont...	
2	Day 8	Pin photodiode	
27 Jan.	Day 9	Avalanche photodiode	
-	Day 10	Cont...	
31 Jan.	Day 11	Phototransistor	
	Day 12	Light emitting diode	
3	Day 13	Revision of Unit: I	
02 Feb.	Day 14	Fundamentals of modulation	
-	Day 15	Frequency spectra in AM modulation	
07 Feb.	Day 16	Power in AM modulated class C amplifier	
	Day 17	Efficiency modulation	
4	Day 18	Linear demodulation of AM waves	
10 Feb.	Day 19	Frequency conversion	
-	Day 20	SSB system	
14 Feb.	Day 21	Balanced modulation	
	Day 22	Filtering the signal for SSB	
5	Day 23	Phase shift method	
17 Feb.	Day 24	Product detector	
-	Day 25	Class test: 01	
21 Feb.	Day 26	Pulse modulation	
6	Day 27	Pam, ptm, pwm, ppm, pcm	
24 Feb.	Day 28	Revision of Unit: II	
-	Day 29	First assignment	
28 Feb.	Day 30	Differential amplifier	
	Day 31	CMRR, circuit configuration	

7	Day 32	Emitter coupled supplied with constant current	
02 Mar.	Day 33	Transfer characteristics	
-	Day 34	Block diagram of Op. Amp	
06 Mar.	Day 35	Off-set currents and voltages,	
	Day 36	PSRR, Slew rate	
8	Day 37	Universal balancing techniques	
09 Mar.	Day 38	Inverting and non-inverting amplifier	
-	Day 39	Basic applications- summing, scaling	
13 Mar.	Day 40	Current to voltage & voltage to current signal conversion	
		Holi	
9	Day 41	Differential dc amplifier	
16 Mar.	Day 42	Voltage follower	
-	Day 43	Bridge amplifier	
20 Mar.	Day 44	AC-coupled amplifier	
	Day 45	Revision of Unit: III	
10	Day 46	Integration	
23 Mar.	Day 47	Differentiation	
-	Day 48	Second assignment	
27 Mar.	Day 49	Analog computation	
	Day 50	Class test: 02	
11	Day 51	Butterworth active filter circuits	
30 Mar.	Day 52	Logarithmic amplifier, antilogarithmic amplifier	
-	Day 53	Sample and hold circuits	
03 Apr.		Ram navmi	
	Day 54	Digital to analog conversion – ladder	
12	Day 55	Weighted resistor types	
06 Apr.	Day 56	Analog to digital conversion- counter type	
-	Day 57	AC/DC converters	
10 Apr.	Day 58	Comparators	
	Day 59	Regenerative comparator	
13	Day 60	Square wave generator	
13 Apr.	Day 61	Pulse generator	
-	Day 62	Cont...	
17 Apr.	Day 63	Triangle wave generator	
	Day 64	Cont...	

Lesson plan (January-June: 2020)

Name of the Assistant/ Associate Professor: **Mr. Naveen Kumar**

Class: **M. Sc. Physics, Semester IV**

Section: **4B**

Subject: **Electronics II**

Subject Code : **PHY(S)-404**

Week	Day No.	Topics	Remarks
1	Day 1	Unit I External Photoelectric Effect detector: Vacuum photodiode	
16 Jan.	Day 2	Photo-multipliers	
-	Day 3	Microchannels	
24 Jan.	Day 4	Pn junction photodiode	
	Day 5	Cont...	
	Day 6	Solar cell	
	Day 7	Cont...	
2	Day 8	Pin photodiode	
27 Jan.	Day 9	Avalanche photodiode	
-	Day 10	Cont...	
31 Jan.	Day 11	Phototransistor	
	Day 12	Light emitting diode	
3	Day 13	Revision of Unit: I	
02 Feb.	Day 14	Fundamentals of modulation	
-	Day 15	Frequency spectra in AM modulation	
07 Feb.	Day 16	Power in AM modulated class C amplifier	
	Day 17	Efficiency modulation	
4	Day 18	Linear demodulation of AM waves	
10 Feb.	Day 19	Frequency conversion	
-	Day 20	SSB system	
14 Feb.	Day 21	Balanced modulation	
	Day 22	Filtering the signal for SSB	
5	Day 23	Phase shift method	
17 Feb.	Day 24	Product detector	
-	Day 25	Class test: 01	
21 Feb.	Day 26	Pulse modulation	
6	Day 27	Pam, ptm, pwm, ppm, pcm	
24 Feb.	Day 28	Revision of Unit: II	
-	Day 29	First assignment	
28 Feb.	Day 30	Differential amplifier	
	Day 31	CMRR, circuit configuration	

7	Day 32	Emitter coupled supplied with constant current	
02 Mar.	Day 33	Transfer characteristics	
-	Day 34	Block diagram of Op. Amp	
06 Mar.	Day 35	Off-set currents and voltages,	
	Day 36	PSRR, Slew rate	
8	Day 37	Universal balancing techniques	
09 Mar.	Day 38	Inverting and non-inverting amplifier	
-	Day 39	Basic applications- summing, scaling	
13 Mar.	Day 40	Current to voltage & voltage to current signal conversion	
		Holi	
9	Day 41	Differential dc amplifier	
16 Mar.	Day 42	Voltage follower	
-	Day 43	Bridge amplifier	
20 Mar.	Day 44	AC-coupled amplifier	
	Day 45	Revision of Unit: III	
10	Day 46	Integration	
23 Mar.	Day 47	Differentiation	
-	Day 48	Second assignment	
27 Mar.	Day 49	Analog computation	
	Day 50	Class test: 02	
11	Day 51	Butterworth active filter circuits	
30 Mar.	Day 52	Logarithmic amplifier, antilogarithmic amplifier	
-	Day 53	Sample and hold circuits	
03 Apr.		Ram navmi	
	Day 54	Digital to analog conversion – ladder	
12	Day 55	Weighted resistor types	
06 Apr.	Day 56	Analog to digital conversion- counter type	
-	Day 57	AC/DC converters	
10 Apr.	Day 58	Comparators	
	Day 59	Regenerative comparator	
13	Day 60	Square wave generator	
13 Apr.	Day 61	Pulse generator	
-	Day 62	Cont...	
17 Apr.	Day 63	Triangle wave generator	
	Day 64	Cont...	

Lesson Plan

Name of the Assistant/ Associate professor: Mr. Praveen

Class and Section: M.Sc. (F) 4th semester

Subject: Nuclear and particle physics -II

Week	Date	Topics
1	Day 1	Introduction of syllabus
	Day 2	Unit: Two nucleon problem and nuclear forces:
	Day 3	Binding energy, dipole moment
	Day 4	quadrupole moment
	Day 5	the evidence of non-central (Tensor) force & Numerical Problems
2	Day 6	Nucleon-nucleon scattering
	Day 7	s-wave effective range theory
	Day 8	charge independence and charge symmetry of nuclear forces
	Day 9	iso-spin formalism.
	Day 10	Revision of basic concepts
3	Day 11	spin dependence of nuclear force
	Day 12	Problems & assignment 1
	Day 13	Group discussion
	Day 14	Numerical problem discussion
	Day 15	Numerical problem discussion
4	Day 16	Revision of Two nucleon problem and nuclear forces
	Day 17	Class test of Two nucleon problem and nuclear forces
	Day 18	Unit II Nuclear Models: introduction
	Day 19	Liquid drop model ,
5	Day 20	stability of nuclei
	Day 21	Continue.....
	Day 22	fission
6	Day 23	evidence of shell structure
	Day 24	Continue.....
	Day 25	the shell model spin parity
7	Day 26	Continue.....
	Day 27	magnetic moment in extreme single particle model
	Day 28	Continue.....
	Day 29	evidence of collective excitations
	Day 30	collective vibration of a spherical liquid drop
8	Day 31	Problems
	Day 32	Revision of basic concept
	Day 33	Group discussion
	Day 34	Unit test 2
	Day 35	Result and discussion

9	Day 36	Unit III Nuclear decays and nuclear reactions
	Day 37	Alpha decay
	Day 39	Continue.....
	Day 40	Beta decay
	Day 41	Gamma decay
10	Day 42	Selections rules
	Day 43	Fermi's theory of beta decay, selection rules
	Day 44	Continue...
	Day 45	Kurie plot Fermi and Gamow -Teller Transitions
11	Day 46	comparative half lines
	Day 47	parity non-conservation in beta decay
	Day 48	Reaction cross section
	Day 49	compound nuclear reactions
	Day 50	direct reactions
12	Day 51	the optical model
	Day 52	Breit-Winger resonance formula for $l=0$.
	Day 53	Numerical problem and discussion
	Day 54	Class test
	Day 55	Last year paper discussion
13	Day 56	Result and group discussion
	Day 57	Unit 1 revision of important topics
	Day 58	Binding energy, dipole moment.....
	Day 59	the evidence of non-central (Tensor) force.....
	Day 60	Unit 2 revision
14	Day 61	The shell model spin parity.....
	Day 62	collective vibration of a spherical liquid drop.....
	Day 63	Unit 3 revision
	Day 64	Kurie plot Fermi and Gamow -Teller Transitions.....
	Day 65	Reaction cross section , compound reaction.....
15	Day 66	Basic interactions in nature : Gravitational, Electromagnetic
	Day 67	weak and strong
	Day 68	classification of elementary particles, Leptons, Hadrons
	Day 69	Mesons, Baryons
	Day 70	Continue.....
16	Day 71	Conservation Laws for Elementary Particles
	Day 72	Baryon, Lepton and Muon number
	Day 73	Strangeness and Hypercharge
	Day 74	, Gelliman - Nishijima formula
	Day 75	Quark model, SU (2) and SU (3) Symmetries Parities of subatomic

Lesson plan (January-June: 2020)

Name of the Assistant/ Associate Professor: **Dr. Jitendra Gangwar**

Class: **M. Sc. Physics, Semester IV**

Section: **4A**

Subject: **Physics of Nano-materials**

Code : **PHY (H) - 402**

Week	Day No.	Topics	Remarks
1	Day 1	Unit I Introduction to syllabus	
16 Jan.	Day 2	Free electron theory	
-	Day 3	Qualitative idea of FET	
24 Jan.	Day 4	Features of FET	
	Day 5	Idea of band structure	
	Day 6	Metals, insulators and semiconductors	
	Day 7	Cont...	
2	Day 8	Density of states in bands	
27 Jan.	Day 9		
-	Day 10	Variation of density of states with energy	
31 Jan.	Day 11	Cont...	
	Day 12	Variation of density of states and band gap with size of crystal	
3	Day 13	Revision of Unit: I	
02 Feb.	Day 14	Unit ii introduction	
-	Day 15	Electron confinement in infinitely deep square well	
07 Feb.	Day 16	Cont...	
	Day 17	Cont...	
4	Day 18	Confinement in one dimensional well	
10 Feb.	Day 19	Cont...	
-	Day 20		
14 Feb.	Day 21	Confinement in two dimensional well	
	Day 22	Cont...	
5	Day 23	Idea of quantum well structure,	
17 Feb.	Day 24	Cont...	
-	Day 25	Class test: 01	
21 Feb.	Day 26	Quantum dots	
6	Day 27	Quantum wires	
24 Feb.	Day 28	Revision of Unit: II	
-	Day 29	First assignment	
28 Feb.	Day 30	Unit iii introduction	
	Day 31	Determination of particle size	

7	Day 32	Cont...	
02 Mar.	Day 33	Cont...	
-	Day 34	Increase in width of XRD peaks of nanoparticles	
06 Mar.	Day 35	Cont...	
	Day 36	Cont...	
8	Day 37	Shift in photoluminescence peaks	
09 Mar.	Day 38	Cont...	
-	Day 39	Cont...	
13 Mar.	Day 40	Variations in Raman spectra of nanomaterials	
		Holi	
9	Day 41	Cont...	
16 Mar.	Day 42	Cont...	
-	Day 43	Cont...	
20 Mar.	Day 44	Cont...	
	Day 45	Revision of Unit: III	
10	Day 46	Unit iv introduction	
23 Mar.	Day 47	Different methods of preparation of nanomaterials	
-	Day 48	Second assignment	
27 Mar.	Day 49	Bottom up	
	Day 50	Class test: 02	
11	Day 51	Cont...	
30 Mar.	Day 52	Cluster beam evaporation	
-	Day 53	Cont...	
03 Apr.		Ram navmi	
	Day 54	Ion beam deposition	
12	Day 55	Cont...	
06 Apr.	Day 56	Chemical bath deposition with capping techniques	
-	Day 57	Cont...	
10 Apr.	Day 58	Cont...	
	Day 59	Top down	
13	Day 60	Ball milling	
13 Apr.	Day 61	Cont...	
-	Day 62	Cont...	
17 Apr.	Day 63	Cont...	
	Day 64	Cont...	

Lesson plan (January-June: 2020)

Name of the Assistant/ Associate Professor: **Dr. Jitendra Gangwar**

Class: **M. Sc. Physics, Semester IV**

Section: **4B**

Subject: **Physics of Nano-materials**

Code : **PHY (H) - 402**

Week	Day No.	Topics	Remarks
1	Day 1	Unit I Introduction to syllabus	
16 Jan.	Day 2	Free electron theory	
-	Day 3	Qualitative idea of FET	
24 Jan.	Day 4	Features of FET	
	Day 5	Idea of band structure	
	Day 6	Metals, insulators and semiconductors	
	Day 7	Cont...	
2	Day 8	Density of states in bands	
27 Jan.	Day 9		
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31 Jan.	Day 11	Cont...	
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02 Feb.	Day 14	Unit ii introduction	
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07 Feb.	Day 16	Cont...	
	Day 17	Cont...	
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10 Feb.	Day 19	Cont...	
-	Day 20		
14 Feb.	Day 21	Confinement in two dimensional well	
	Day 22	Cont...	
5	Day 23	Idea of quantum well structure,	
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21 Feb.	Day 26	Quantum dots	
6	Day 27	Quantum wires	
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-	Day 29	First assignment	
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	Day 31	Determination of particle size	

7	Day 32	Cont...	
02 Mar.	Day 33	Cont...	
-	Day 34	Increase in width of XRD peaks of nanoparticles	
06 Mar.	Day 35	Cont...	
	Day 36	Cont...	
8	Day 37	Shift in photoluminescence peaks	
09 Mar.	Day 38	Cont...	
-	Day 39	Cont...	
13 Mar.	Day 40	Variations in Raman spectra of nanomaterials	
		Holi	
9	Day 41	Cont...	
16 Mar.	Day 42	Cont...	
-	Day 43	Cont...	
20 Mar.	Day 44	Cont...	
	Day 45	Revision of Unit: III	
10	Day 46	Unit iv introduction	
23 Mar.	Day 47	Different methods of preparation of nanomaterials	
-	Day 48	Second assignment	
27 Mar.	Day 49	Bottom up	
	Day 50	Class test: 02	
11	Day 51	Cont...	
30 Mar.	Day 52	Cluster beam evaporation	
-	Day 53	Cont...	
03 Apr.		Ram navmi	
	Day 54	Ion beam deposition	
12	Day 55	Cont...	
06 Apr.	Day 56	Chemical bath deposition with capping techniques	
-	Day 57	Cont...	
10 Apr.	Day 58	Cont...	
	Day 59	Top down	
13	Day 60	Ball milling	
13 Apr.	Day 61	Cont...	
-	Day 62	Cont...	
17 Apr.	Day 63	Cont...	
	Day 64	Cont...	