



SES COLLEGE SREEKANDAPURAM

(Accredited by NAAC with 'B+' Grade) Affiliated to Kannur University



Criterion 2 Teaching- Learning and Evaluation

2.5. Evaluation Process and Reforms

2.5.1 Mechanism of internal assessment is transparent and robust in terms of frequency and mode

S.E.S. COLLEGE, SREEKANDAPURAM

INTERNAL MARK SHEET

10

Programme : BSc Physics

Semester : II

Subject : QBC2 PHY MATHEMATICAL PHYSICS AND ERROR ANALYSIS

Sl.No.	Reg.No.	Name	Exam (5)	Assignment (5)	Attendance (2.5)	Total (10)	Remarks	Signature
1	SE22CPHRC1	Sreeraj V P	5	4		9		
2	" 02	Avani M P	5	4		9		
3	" 03	Niyaraj K R	6	4		10		
4	" 04	Theerthha Prakash MV	4	4		8		
5	" 05	Aarora K V	1	4		5		
6	" 06	Uththik K P	1	3		4		
7	" 07	Ananya T V	6	4		10		
8	" 08	Devananda T P	2	4		6		
9	" 09	Maha K P	3	4		7		
10	" 10	Nihara K	2	3		5		
11	" 11	Shama lulu ck	6	4		10		
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Prepared by

Dr. Rejith P. P.

Dr. Dhanya. A.G
 Assistant Professor & HOD
 Department of Physics
 SES College Sreekanthapuram
 K. P. O. 70631

S.E.S. COLLEGE, SREEKANDAPURAM

INTERNAL MARK SHEET

12

Programme : BSc. Physics

Semester : II

Subject : 2602 MAT. PH. MATHEMATICS FOR PHYSICS II

Sl.No.	Reg.No.	Name	Exam (5)	Assignment (2.5)	Attendance (2.5)	Total (10)	Remarks	Signature
1	SE22CPH01	Sreerag. V. P	4	5		9		
2	" 02	Avani M P	3	5		8		
3	" 03	Niyaraj K R	5	5		10		
4	" 04	Theertha Prakash MV	4	5		9		
5	" 05	Arma k. V	1	5		6		
6	" 06	Hridhile K.P	1	5		6		
7	" 07	Ananya T.V	5	5		10		
8	" 08	Devananda T. P.	2	5		7		
9	" 09	Neha K. P	3	5		8		
10	" 10	Nihara k.	2	5		7		
11	" 11	Shama lulu C.k	5	5		10		
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Prepared by *[Signature]*
silja.c

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Dr. Dhanya. A.C
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Kannur-670631

SES COLLEGE SREEKANDAPURAM
VI Semester BSc Degree Internal Examination-1, February 2023
6B10 PHY : SOLID STATE PHYSICS & SPECTROSCOPY

Time: 1hour

Total Marks: 20

SECTION-A

(Answer all questions each carry FIVE marks)

1. Explain diatomic vibrating rotator

(5X1=5)

SECTION-B

(Answer any FIVE each carry 3 marks)

2. Explain the energy of HCL molecule.
3. Explain zeropoint energy and draw vibrational spectra of a simple harmonic oscillator.
4. What is an anharmonic oscillator and draw energy level diagram of it.
5. What are overtones , Explain different types.
6. Explain vibration rotation spectrum of Carbon Monoxide.
7. The spacing between the vibrational levels is of the order 10^3 cm⁻¹. Find the population at room temperature.

(5X3=15)

S E S COLLEGE, SREEKANDAPURAM
VI SEMESTER MODEL EXAMINATION – MARCH 2023
6B10 PHY : SOLID STATE PHYSICS & SPECTROSCOPY

Time: 3 hours

Max Marks: 40

Section A: Answer ALL questions **Short answer type**, Each question carries 1 mark)

1. Define the term space lattice
2. What is mean by symmetry operation ?
3. What is mean by Bragg's plane ?
4. Write the selection rule of a rigid diatomic molecule.
5. What are linear molecules?
6. Explain moment of inertia in spherical tops

(6 x 1 = 6)

Section B: Answer any SIX questions (**Short Essay type**-Each question carries 2 marks)

7. Which are electromagnetic radiations?
8. How food is being cooked within a microwave oven?
9. Explain degeneracy in spectroscopy.
10. Define a unit cell
11. Write a note on reflection symmetry in cubic crystal.
12. What is mean by Coordination number ? What is the coordination number of a simple cube ?
13. Explain Bragg's law
14. Describe the importance of Miller indices of Crystal planes.

(6 x 2 = 12)

Section C: Answer any FOUR questions (**Problem type**-Each question carries 3 marks)

15. Show that Five fold rotation axis is not compatible with a lattice.
16. The rotation spectrum of Carbon Monoxide is 3.84235 cm^{-1} . Calculate the moment of inertia and bond length of the same.
17. Explain the working of Bragg's X-ray Spectrometer

8. Which are the classification of molecules according to their principal moments of inertia.
9. Explain the effect of isotopic substitution in a rigid diatomic molecule.
20. Draw the degenerate orientations of rotational angular momentum vector for a molecule with $J=1$, $J=2$, $J=3$.

(4 X 3 = 12)

Section D: Answer any TWO question (Long essay type-Each question carries 5 marks)

21. Discuss the BCC and FCC structures
22. Explain hexagonal Close Packed Structure
23. With proper diagrams explain a diatomic vibrating Rotator.
24. What is Raman effect? Explain classical and Quantum explanations of it.

(2 X 5 = 10)

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VI SEMESTER INTERNAL MARK

6B10 PHY : SOLID STATE PHYSICS & SPECTROSCOPY

Reg number	Name	CT1(20)	Model (40)
SE 20K P14R01	Arjun Rajeev K V	10	12
SE 20K P14R02	Prathyush V C	9	14
SE 20K P14R03	Sagar P	16	13
SE 20K P14R04	Sharmal Chandran	10	11
SE 20K P14R05	Suraj P	6	13
SE 20K P14R06	Anjana T K	18	15
SE 20K P14R07	Gopika R	10	16
SE 20K P14R08	Himansu N P	9	24
SE 20K P14R09	Sreya Padman	1	16
SE 20K P14R10	Abhinav A	4	6
SE 20K P14R11	Anand K K	16	15
SE 20K P14R12	Nikhil P	6	8
SE 20K P14R13	Saran P	7	6
SE 20K P14R14	Sayanth K	4	12
SE 20K P14R15	Sourav C	11	21
SE 20K P14R16	Sreethan Ramesh	10	10
SE 20K P14R17	Vishnu K	10	4
SE 20K P14R18	Vishnu M V	1	14
SE 20K P14R19	Adarsha S P	9	11
SE 20K P14R20	Aradhita P	11	11
SE 20K P14R21	Musitha P P	3	15
SE 20K P14R22	Radhika S K	10	10
SE 20K P14R24	Shruti P	1	11

SES COLLEGE SREEKANDAPURAM

KANNUR

Name of Examination : First Semester Model Examination 2023
(Course & Year)

Subject : Physics

Code : _____

Date

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DATE MONTH YEAR

No. of Booklets used

3



Question No.	Mark	Question No.	Mark
1	1	31	
2	1	32	
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4	1	34	
5	1	35	
6	2	36	
7	2	37	
8	1 1/2	38	
9	2	39	
10		40	
11	2	41	
12	1	42	
13	3	43	
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15	2 1/2	45	
16		46	
17	4 1/2	47	
18	4 1/2	48	
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Register No.

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Name of Examination

(Course & Year)

First Semester Model

Examination January 2023

Subject Physics

Paper Mechanics

Code _____

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Booklet No

4517

SES COLLEGE SREEKANDAPURAM

KANNUR

Name of Examination : 3rd Sem Model Examination
(Course & Year)

Subject : Optics & Photonics

Code : 3C03 PHY

Date

2	9	11	2	0	2	2
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No. of Booklets used



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1	1	31	
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Register No.

SE21CMSR09

Name of Examination

(Course & Year)

3rd Sem model examination

Subject Optics and Photonics

Paper _____

Code 3C03 PHY

Ahatya

Signature of the Candidate

[Signature]

Signature of the Invigilator

Booklet No.

3513

GB10 PHY: Solid State Physics

Speechscopy

C. T + Model = 6
 Assignment - 4
 Total

Sl No.	Reg. No.	Name	CT1 (20)	Model (40)	Assignment	Internal Distribution	Total +0.5	Final
1	SE20CPHR01	Ajman Rajeev.K.V	10	12	4	$3.0 + 4 = 7.0$	7.5	8.0
2	11 02	Prathyush.V.C	09	14	4	$2.7 + 4 = 6.7$	7.2	7.0
3	11 03	Sagar.P	16	33	4	$5.0 + 4 = 9.0$	9.5	10
4	11 04	Shamal Chandan	10	11	4	$3.0 + 4 = 7.0$	7.5	8
5	11 05	Swag.P	06	33	4	$5.0 + 4 = 9.0$	9.5	10
6	11 06	Anjana.T.K	18	35	4	$5.3 + 4 = 9.3$	9.8	10
7	11 07	Aopika.R	10	16	4	$3.0 + 4 = 7.0$	7.5	8
8	11 08	Havana.N.P	09	24	4	$3.6 + 4 = 7.6$	8.1	8
9	11 09	Sreya Padmam	03	16	4	$2.4 + 4 = 6.4$	6.9	7
10	11 10	Abhinav.A	04	06	4	$1.2 + 4 = 5.2$	5.7	6
11	11 11	Anand K.K	16	35	4	$5.3 + 4 = 9.3$	9.8	10
12	11 12	Nikhil.P	06	08	4	$1.8 + 4 = 5.8$	6.3	6
13	11 13	Saran.P	07	06	4	$2.1 + 4 = 6.1$	6.6	7
14	11 14	Sayanth.K	04	12	4	$1.8 + 4 = 5.8$	6.3	6
15	11 15	Somav.C	11	21	4	$3.2 + 4 = 7.3$	7.8	8
16	11 16	Sreehari Ramesh	10	10	4	$3.0 + 4 = 7.0$	7.5	8
17	11 17	Vishnu.K	10	08	4	$3.0 + 4 = 7.0$	7.5	8
18	11 18	Vishnu M.V	09	14	4	$2.7 + 4 = 6.7$	7.2	7
19	11 19	Adwaita.S.P	09	37	4	$5.6 + 4 = 9.6$	10.0	10
20	11 20	Arshitha.P	11	32	4	$4.8 + 4 = 8.8$	9.3	9
21	11 21	Mustika.P.P	06	13+2	4	$4.8 + 4 = 8.8$	9.3	9
22	11 22	Rohana.C.K				$2.3 + 4 = 6.3$	6.8	7
23	11 24	Shilpa.P.	03	19	4	$2.9 + 4 = 6.9$	7.4	7

PHYSICS ASSIGNMENT


Date
21/3/2023

SE22CCHR12
Sivaganga V.P
Roll no: 9
BSc. chemistry
1st year.

Find the change in internal energy of a gas if its volume increases from 3.5 to 4.2 litre at a constant pressure of one atmosphere receiving 320 J of heat.

$$\text{change in volume of the gas, } dv = 0.7 \text{ litre} \\ = 0.7 \times 10^{-3} \text{ m}^3$$

$$\text{Pressure } P = 1 \text{ atmosphere} = 1.013 \times 10^5 \text{ Nm}^{-2}$$

$$\text{work done } dw = -Pdv \\ = -1.013 \times 10^5 \times 0.7 \times 10^{-3} \\ = -70.91 \text{ J}$$

Negative sign indicates that work is done by the gas.

$$\text{Heat given to the gas } dq = 320 \text{ J}$$

$$\text{change in internal energy } du = dq - Pdv \\ = 320 - 70.91 = \underline{249.09 \text{ J}}$$

calculate the change in internal energy when the temperature of 0.0045 kg of gas is raised from 27°C to 29.4°C at constant volume. Given specific heat capacity of the gas at constant volume

$$712.3 \text{ J kg}^{-1} \text{ K}^{-1}$$

$$\text{Mass of the gas} = 0.0045 \text{ kg}$$

$$\text{Initial temperature, } T_1 = 27^\circ\text{C} = 300 \text{ K}$$

$$\text{Final temperature, } T_2 = 29.4^\circ\text{C} = 302.4 \text{ K}$$

$$\text{Heat absorbed by the gas } dq = MC_v (T_2 - T_1)$$

$$= 0.0045 \times 712.3 \times 2.4 = 7.693 \text{ J}$$

$P V^\gamma = \text{constant}$

$$P_i V_i^{\gamma-1} = P_f V_f^{\gamma-1}$$

$$\frac{P_i}{T_i^\gamma} = \frac{P_f}{T_f^\gamma}$$

$$T_i^\gamma \frac{(32P)^{\gamma-1} \times 300^\gamma}{P^{\gamma-1}} = \frac{32^{\gamma-1} P^{\gamma-1} \times 30^\gamma}{P^{\gamma-1}} \Rightarrow T_f^\gamma = 32^{\gamma-1} \times 300^\gamma$$

$$T_f = 300 \times 32^{\frac{\gamma-1}{\gamma}} = 300 \times 32^{2/5} \Rightarrow 300 \times 4 = \underline{\underline{1200 \text{ K}}}$$

$$W = \frac{nR}{\gamma-1} [T_i - T_f] \Rightarrow \frac{8.3}{2/3} [300 - 1200]$$

$$= \frac{8.3}{2/3} [-900] \rightarrow 12.45 \times -900 = \underline{\underline{-11205 \text{ J}}}$$

One mole of Nitrogen expands isothermally at 20°C from a volume of 10 litres to 20 litres: Assuming nitrogen to be ideal gas, find how much heat must be supplied to keep the temperature from dropping.

$$T = 20^\circ\text{C} = 293 \text{ K}$$

$$V_1 = 10 \text{ L}$$

$$V_2 = 20$$

Work done in isothermal process.

$$W = nRT \ln \left[\frac{V_f}{V_i} \right]$$

$$= 8.31 \times 293 \ln \left[\frac{20}{10} \right]$$

$$= 8.31 \times 293 \ln[2] \Rightarrow 8.31 \times 293 \times 0.6931$$

$$= \underline{\underline{1687.6 \text{ J}}}$$

PHYSICS ASSIGNMENT

NAME: HARIPRIYA
DEPT: BSC CHEMISTRY
REG NO: ~~SECCCHRO3~~
SE22CCHRO3

~~5/13/2023~~

1) Find the change in internal energy of a gas if its volume increases from 35 to 42 litre at constant pressure of one atmosphere on giving 320 J of heat

sol. Pressure $P = 1 \text{ atm} = 1.013 \times 10^5 \text{ Nm}^{-2}$
Change in volume of the gas, $dV = 0.7 \text{ litre}$
 $= 0.7 \times 10^{-3} \text{ m}^3$

$$\begin{aligned} \text{work done } dW &= -PdV \\ &= 1.013 \times 10^5 \times 0.7 \times 10^{-3} \\ &= \underline{\underline{-70.91 \text{ J}}} \end{aligned}$$

Negative sign indicates that work is done by the gas
Heat given to gas $dQ = 320 \text{ J}$

$$\begin{aligned} \text{change in internal energy } dU &= dQ - PdV \\ &= 320 - 70.91 = \underline{\underline{249.09 \text{ J}}} \end{aligned}$$

2) Calculate the change in internal energy when temperature of 0.0045 kg of gas is raised from 27°C to 29.4°C at constant volume. Given specific heat capacity of gas at constant volume $712.3 \text{ kg}^{-1} \text{ K}^{-1}$

sol. Mass of the gas = 0.0045 kg

$$\text{Initial temperature} = T_1 = 27^\circ\text{C} = 300 \text{ K}$$

$$\text{Final temperature} = T_2 = 29.4^\circ\text{C} = 302.4 \text{ K}$$

$$\text{Heat absorbed by the gas } dQ = MC_v (T_2 - T_1)$$

$$= 0.0045 \times 712.3 \times 2.4 = 7.693 \text{ J}$$

$$\text{work done } dW = 0$$

$$\text{change in internal energy } dU = dQ + dW = \underline{\underline{7.693 \text{ J}}}$$

S E S COLLEGE SREEKANDAPURAM

VI SEMESTER INTERNAL MARK

6B10 PHY : SOLID STATE PHYSICS & SPECTROSCOPY

Reg. number	Name	CT1(20)	Model (40)
SE20CPHR01	Arjun Rajeev K V	10	12
SE20CPHR02	Prathyush V C	9	14
SE20CPHR03	Sagar P	16	33
SE20CPHR04	Shamal Chandran	10	11
SE20CPHR05	Surag P	6	33
SE20CPHR06	Anjana T K	18	35
SE20CPHR07	Gopika R	10	16
SE20CPHR08	Hasana N P	9	24
SE20CPHR09	Sreya Padmam	3	16
SE20CPHR10	Abhinav A	4	6
SE20CPHR11	Anand K K	16	35
SE20CPHR12	Nikhil P	6	8
SE20CPHR13	Saran P	7	6
SE20CPHR14	Sayanth K	4	12
SE20CPHR15	Sourav C	11	21
SE20CPHR16	Sreehari Ramesh	10	10
SE20CPHR17	Vishnu K	10	8
SE20CPHR18	Vishnu M V	9	14
SE20CPHR19	Adwaita S P	9	37
SE20CPHR20	Arshitha P	11	32
SE20CPHR21	Musliha P P	6	15
SE20CPHR22	Rishana C K	AB	AB
SE20CPHR24	Shilpa P	3	19

Seminar taken by students

