DEPARTMENT OF PHYSICS
GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
Approved syllabus for M.Sc. (PHYSICS) by the members of Board of Studies
For the Session 2020-21
The syllabus with the paper combinations is as under

Semester I:

Paper I: MATHEMATICAL PHYSICS	**Paper II: CLASSICAL MECHANICS**
Paper III: QUANTUM MECHANICS	**Paper IV: ELECTRONIC DEVICES**
Paper V: Lab Course A(GENERAL)	

*** Applicable for the concerned subjects**
The syllabus for M.Sc. (PHYSICS) is hereby approved for the session 20120-21

Name and Signatures

V.C. Nominee …….. **Subject Expert ……..** **Subject Expert……..……** **Alumni (member)…….** **Prof. from other Dept. of Sc. Faculty …….** **Specialist from Industry……**	**Departmental members** **1. H.O.D/Dr. Purna Bose……** **2. Dr. Jagjeet Kaur Saluja……..** **3. Dr. R. S. Singh ……..** **4. Dr. Anita Shukla…….** **5. Mrs. Siteshwari Chandrakar……** **6. Dr. Abhishek Kumar Misra……**

Syllabus and Marking Scheme for First Semester
Session 2020-21

-- 21Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment	
		Max	Min	Max.	Min.
I	MATHEMATICAL PHYSICS	80	16	20	04
II	CLASSICAL MECHANICS	80	16	20	04
III	QUANTUM MECHANICS	80	16	20	04
IV	ELECTRONIC DEVICES	80	16	20	04
V	Lab Course I A(GENERAL)	200	66		
	Total	520		80	

04 Theory papers	-	320
04 Internal Assessments	-	80
Practical	-	200
Total Marks	-	600

Name and Signatures

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The scheme of internal assessment
Session 2020-21
Semester I

S.No.	Paper	Test Marks I	Home Assignment II	Total
1.	MATHEMATICAL PHYSICS	20 Marks	20 Marks	Average of I & II (20 Marks)
2.	CLASSICAL MECHANICS	20 Marks	20 Marks	Average of I & II (20 Marks)
3.	QUANTUM MECHANICS	**Only one seminar (20 marks)** Presentation (10 marks) **Viva (10 marks)**		20 Marks
4.	ELECTRONIC DEVICES	20 Marks	20 Marks	Average of I & II (20 Marks)

Note: Compulsory submits one hardcopy and softcopy of ppt before presentation.

- In Semester II the scheme will be similar only the seminar will be based on paper III.
- The internal assessment in semester I paper IV semester II paper IV but in semester III, seminar will be based on paper III and for semester IV it will be based on paper I respectively.
- The seminar is in of internal test and home assignment in respective paper.

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GOVT.V.Y.T. P G AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-I
Paper-I - MATHEMATICAL PHYSICS

Min.Marks: 16 **M.M: 80**

UNIT-I Basic idea of Group, Finite and infinite group, Identity element, Groups of Vector, Ordered set of numbers, Linear dependence and independence of Vector, Properties of linearly independent and dependent System, subspace
Subspace of n- Vector s, Vector field, orthonormal vectors, orthonormalzation by Scmidts orthogolization method linear transformation of the space, Vector space of n-tuplets, Inner product space, linear transformation, homogeneous and non homogeneous transformation. full linear transformation of a quadratic form,

UNIT-II **MATRICES –** Real, symmetric and hermition matrices. matrices with polynomial elements the inverse matrix, orthogonal matrix, independent element of an orthogonal matrix, unitary matrix, independent element of a unitary matrix, Eigen Values and eigen vectors, Digonalization of matrix. Linear equation, Solution of linear equation by Cramer's rule.

UNIT-III **Special Functions-** Solution of second order linear differential equation with constant coefficients, Second orders linear ODEs with variable coefficient, Series intregation method of the solution of linear differential equation(Frobenius method), Solution by series expansion and Legendre, Bessel's, Hermite and Lagurre equation, Physical applications, Generating Functions, recurrence formulae, orthogonality, Rodrigueues formula of Legendre, Hermite and Laguerre polynomials.

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UNIT-IV **Integral Transform –** Laplace's Transformation - Definition of Laplace's transform sectional or piecewise continuity, functions of exponential order, sufficient condition for existence of Laplaces transfrom, first and second shifting theorem,change of scale property, LT of derivatives and LT of integrals, Inverse LT definition and properties, Inverse LT by Partial fraction, Fourier series, Fourier Transform definition properties linearty theorem similarty theorem and Conjugate theorem, Fourier Transform of derivatives.

REFERENCES **:**

1. Laplaces Transfrom by Murray R.S.Spiegel
2. Special function by J.N.Sharma
3. Matrix & Tensors in Physics by R.K.Gupta , A.W.Joshi
4. A.Text book of Matrices by Shanti Narayana.
5. Mathematical method for engineering and physicist. By A.K.Mukhopadhyay.
6. Introduction to mathematical physics by Charlie Harper.
7. Advanced Engineering Mathematics by Jain and Iyenger.
8. Higher Engineering Mathematics by H.K. Das.

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Question Paper Format and Distribution of Marks for PG Semester Examination

Question paper format for the Post-Graduate Examination has been revised from the Session 2018-19. The revised format will be applicable for all the question papers of Semester I, II, III & IV. The following are the main points of the new format:

1. The question paper will be of **80 marks** (as before)
2. Questions will be asked Unit-wise in each question paper.
3. From each Unit, the questions will be asked as follows :
   - Q.1 Very short answer type question **(Answer in one or two sentences)** **(02 Marks)**
   - Q.2 Very short answer type question **(Answer in one or two sentences)** **(02 Marks)**
   - Q.3 Short answer type question **(Answer in 200-250 words)** **(04 Marks)**
   - Q.4 Long answer type questions **(Answer in 400-450 words)** **(12 Marks)**

Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

Note:

1. Question no. 1 and Question 2 will be compulsory.
2. Question no. 3 and 4 will consist of 2 optional questions of which one has to be attempted.

3. As mentioned above, two compulsory very short answer type questions (2+2 marks), one short answer type question with internal choice (4 marks) and one long answer type question with internal choice (12 marks) will be asked from each unit.

   Thus there will be questions of 20 marks from each unit and of total 80 marks from all the four units of the syllabus/syllabi.
4. Some papers of English Literature consist of Literary Text. In such question papers, one annotation of 4 marks from each unit will be asked instead of short answer type question. The papers which do not contain literary texts the question paper format and marking scheme will remain the same.
5. For Hindi Literature, refer the Hindi version.
6. Internal Assessment Examination will be as follows :
   i. Internal Test in each paper (20 marks)
   ii. Seminar (Power point presentation) in any one of the paper (20 marks)
   iii. Assignment in each of the remaining papers (excluding the paper of Seminar. (20 marks)
   iv. Average of marks obtained in internal test + seminar in any one paper and marks obtained in internal test + assignment in rest of the papers will be calculated and taken into consideration.

LukrdkŸkj leLVj ijh{kk d fy, i"ui= dk ik:i ,o vd foHkktu

l= 2018&19 l Lo"kklh LukrdkŸkj ijh{kkvk d fy, i"ui= d ik:i e l"kk/ku fd;k x;k gA l"kkf/kr ik:i iFke] f}rh;] rrh; ,o prFk leLVj d lHkh i"ui=k d fy, ykx gkxkA u, ik:i d e[; fcn fuEukulkj g &

i. ç"ui= ioor 80 vdk dk gkxkA
ii. iR;d i"ui= e bdkbokj i"u iN tk,A
iii. iR;d bdkb l fuEukulkj i"u gku pkfg, &

ç"u 1- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 2- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 3- y?kŸkjh i"u ½200 l 250 "kCnk e mŸkj½ 04 vd
ç"u 4- nh?k mŸkjh i"u ¼400 l 450 "kCnk e mŸkj½ 12 vd

	bdkb&I	bdkb&II	bdkb&III	bdkb&IV
vfry?kŸkjh ½2 i"u½ vf/kdre 2 okD;	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd
y?kŸkjh ¼1 i"u½ 200&250 "kCn	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd
nh?k mŸkjh ¼1 i"u½ 400&450 "kCn	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd

ukV %

1- i"u Øekd 1 rFkk i"u Øekd 2 d i"u vfuok; gkxA

2- ç”u Øekd 3 rFkk ç”u Øekd 4 d vrxr nk odfYid i”u gkx ftue l ,d dk gy djuk gkxkA

3- mijkDrkulkj iR;d bdkb l nk vfuok; vfr y?kŸkjh i”u ¼2$2 vd½] ,d vkrfjd fodYi;Dr y?kŸkjh i”u ¼4 vd½ rFkk ,d vkrfjd fodYi ;Dr nh?k mŸkjh i”u ¼12 vd½ iN tk,xA bl rjg iR;d bdkb l 20 vd rFkk ikB;Øe dh pkj bdkb;k l dy 80 vd d i”u gkxA

4- vxth lkfgR; d dN i”ui=k e lkfgfR;d ikB ¼Literary texts½ lfEefyr gA bu i”ui=k e y?kŸkjh i”u d :i e 04 vdk dk ,d 0;k[;kijd i”u ¼annotation½ iR;d bdkb l iNk tk,xkA ftu i”ui=k e lkfgfR;d jpukvk dk ikB “kkfey ugh g] mud fy; i”ui= ik:i rFkk vd foHkktu ;Fkkor jgxkA

5- fgnh lkfgR; d ftu i”ui=k dh ikB;oLr e lkfgfR;d Ñfr;k d ikB lfEefyr g] mue Hkh y?kŸkjh i”u d LFkku ij iR;d bdkb l ,d 0;k[;kRed i”u gkxk] fdUr vd foHkktu fuEukulkj gkxk &

i”u 1-	vfr y?kÙkjh i”u ¼,d ;k nk okD;k e mÙkj½	2 vd
i”u 2-	vfr y?kÙkjh i”u ¼,d ;k nk okD;k e mÙkj½	2 vd
i”u 3-	0;k[;kRed i”u ¼200 l 250 “kCnk e mÙkj½	6 vd
i”u 4-	vkykpukRed i”u ¼400 l 450 “kCnk e mÙkj½	10 vd

6- vkrfjd eY;kdu ijh{kk ;Fkkor fuEukulkj gkxh &

i. iR;d i”u i= e vkrfjd tkp ijh{kk ¼20 vd½

ii. fdlh ,d i”u i= e lehukj d vrxr ikoj ikb.V iLrfr ¼20 vd½

iii. lehukj oky i”ui= dk NkMdj “k’k lHkh i”ui=k e l iR;d e l=h; dk; ¼20 vd½

iv. fdlh ,d ç”u i= e vkrfjd tkp ijh{kk $ lehukj rFkk “k’k i”u i=k e vkrfjd tkp ijh{kk $ l=h; dk; d fy; ijh{kkFkh d ikIrkdk d vklr dh x.kuk dj ml ekU; fd;k tk,xkA

GOVT.V.Y.T. P.G. AU TONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-I
Paper- II - CLASSICAL MECHANICS

Min.Marks: 16 **Max..Marks.:80**

UNIT- Preliminaries, Newtonian mechanics of one and many particle system; conservation laws. Working theorem, Constraints, their classification principle of virtual work, The basic problem with constraint forces. D'Alemberts principle, degree of freedom, generalized coordinates.

UNIT-II Lagrange's equations, Jacobi integral Generalized moment and energy. Gauge function for Lagrangian integrals of motion, concept of symmetry, symmetries of space and time with conservation laws, invariance under Galilean transformation, Special theory of relativity- Lorentz transformations, relativistic kinematics and mass–energy equivalence.

UNIT-III Rotating frames, inertial forces, Electromagnetic analogy of the inertial forces terrestrial and astronomical applications of carioles force.
Central force. Two body problem, stability of orbit, conditions for closure, Kepler 's equation, orbits of artificial satellites.

UNIT- IV Principle of least action, Hamilton's Principle and characteristic function H-J (Hamilton Jacobi) equation canonical Transformation, Generating Function, Poisson bracket, Poisson theorem, Study of small oscillations using generalized coordinates.

REFERENCES:

1. Classical Mechanics by H.Goldestein
2. Classical Mechanics by N. C.Rana & P.S. Joag
3. Classical Mechanics by J. C. Upadhyaya
4. Classical Mechanics by Gupta Kumar
5. Classical Mechanics by Pouranic

Name and Signatures

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   (Answer in one or two sentences) **(02 Marks)**

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l= 2018&19 l Lo"kkl h Lukrdk Ÿkj ijh{kkvk d fy, i"ui= d ik:i e l"kk/ku fd;k x;k gA l"kkf/kr ik:i iFke] f}rh;] rrh; ,o prFk leLVj d lHkh i"ui=k d fy, ykx gkxkA u, ik:i d e[; fcn fuEukulkj g &

i. ç"ui= ioor 80 vdk dk gkxkA
ii. iR;d i"ui= e bdkbokj i"u iN tk,A
iii. iR;d bdkb l fuEukulkj i"u gku pkfg, &

ç"u 1- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 2- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 3- y?kŸkjh i"u ½200 l 250 "kCnk e mŸkj½ 04 vd
ç"u 4- nh?k mŸkjh i"u ¼400 l 450 "kCnk e mŸkj½ 12 vd

	bdkb&I	bdkb&II	bdkb&III	bdkb&IV
vfry?kŸkjh ¼2 i"u½ vf/kdre 2 okD;	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd
y?kŸkjh ¼1 i"u½ 200&250 "kCn	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd
nh?k mŸkjh ¼1 i"u½ 400&450 "kCn	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd

ukV %

1- i"u Øekd 1 rFkk i"u Øekd 2 d i"u vfuok; gkxA
2- ç"u Øekd 3 rFkk ç"u Øekd 4 d vrxr nk odfYid i"u gkx ftue l ,d dk gy djuk gkxkA
3- mijkDrkulkj iR;d bdkb l nk vfuok; vfr y?kŸkjh i"u ¼2$2 vd½] ,d vkrfjd fodYi;Dr y?kŸkjh i"u ¼4 vd½ rFkk ,d vkrfjd fodYi ;Dr nh?k mŸkjh i"u ¼12 vd½ iN tk,xA bl rjg iR;d bdkb l 20 vd rFkk ikB;Øe dh pkj bdkb;k l dy 80 vd d i"u gkxA
4- vxth lkfgR; d dN i"ui=k e lkfgfR;d ikB ¼Literary texts½ lfEefyr gA bu i"ui=k e y?kŸkjh i"u d :i e 04 vdk dk ,d 0;k[;kijd i"u ¼annotation½ iR;d bdkb l iNk tk,xkA ftu i"ui=k e lkfgfR;d jpukvk dk ikB "kkfey ugh g] mud fy; i"ui= ik:i rFkk vd foHkktu ;Fkkor jgxkA

5- fgnh lkfgR; d ftu i"ui=k dh ikB;oLr e lkfgfR;d Ñfr;k d ikB lfEefyr g] mue Hkh y?kŸkjh i"u d LFkku ij iR;d bdkb l ,d 0;k[;kRed i"u gkxk] fdUr vd foHkktu fuEukulkj gkxk &

i"u 1-	vfr y?kÙkjh i"u ¼,d ;k nk okD;k e mÙkj½	2 vd
i"u 2-	vfr y?kÙkjh i"u ¼,d ;k nk okD;k e mÙkj½	2 vd
i"u 3-	0;k[;kRed i"u ¼200 l 250 "kCnk e mÙkj½	6 vd
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i. iR;d i"u i= e vkrfjd tkp ijh{kk ¼20 vd½

ii. fdlh ,d i"u i= e lehukj d vrxr ikoj ikb.V iLrfr ¼20 vd½

iii. lehukj oky i"ui= dk NkMdj "k'k lHkh i"ui=k e l iR;d e l=h; dk; ¼20 vd½

iv. fdlh ,d ç"u i= e vkrfjd tkp ijh{kk $ lehukj rFkk "k'k i"u i=k e vkrfjd tkp ijh{kk $ l=h; dk; d fy; ijh{kkFkh d ikIrkdk d vklr dh x.kuk dj ml ekU; fd;k tk,xkA

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GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-I
Paper-III-QUANTUM MECHANICS
M.M.:80

UNIT-I **Inadequacies of Classical Mechanics**- Black body radiation and Planck's radiation law.

Old quantum theory- Bohr- Sommerfeld quantization rules,practical difficulties, conceptual difficulties, quantum mechanical viewpoint.

Interpretation of wave function- Statistical interpretation, normalization of wave function, probability current density, expection value, Ehrenfest's theorem.

Uncertainty principle- The uncertainty relation in position and momentum, complementary principle, limitation on experiment, discussion of experiment –localization experiment.

General formalism of wave mechanics, development of wave equation, commutation relations, representation of states and dynamical variables, completeness of Eigen functions.

UNIT-II One dimensional potential well, Dirac's delta function, Momentum wave function, Significance of wave function, Box normalization, momentum wave function, Particle in a box, The finite potential step, rectangular potential barrier, Basic idea of Hilbert space, Dirac's Bra- Ket notation, equation of motion in matrix form unitary transformation, Change of basis, Significance of unitary transformation, Schrodinger, Heisenberg & Interaction pictures, Linear Harmonic Oscillator solution using Schrodinger picture and Heisenberg picture (Matrix mechanics)..

UNIT-III Basic idea of **s**ymmetry in space and time, Angular momentum and infinitesimal rotations, angular momentum operators and their commutation relations, Eigen value and eigen function of angular momentum, Spherical harmonics, Angular momentum matrices, Angular momentum matrices for j = ½; Pauli spin matrices, Addition of angular momenta, Clebsch-Gordon coefficients for j_1 = ½ and j_2 = ½.

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UNIT-IV Hydrogen atom : asymptotic solution, eigevalues and eigenfunctions, degeneracy; Laguerre polynomials, Time independent perturbation theory : non-degenerate and degenerate cases, removal of degeneracy; applications to (i) harmonic oscillator, (ii) first order Stark effect in hydrogen and (iii) Zeeman effect without electron spin.

REFERENCES:

1. Principles of Quantum Mechanics by P. A. M. Dirac
2. Introduction to Quantum Mechanics by David J. Griffiths
3. Introduction to Quantum Mechanics by L. Pauling & E. B. Wilson
4. Quantum Mechanics by Eugen Merzbacher
5. Quantum Mechanics by L. I. Schiff
6. Quantum Mechanics – Concepts & Applications by Nouredine Zettili
7. Quantum Mechanics - Non-relativistic Theory by L. D. Landau & E.M. Lifshitz
8. Quantum Mechanics by Amit Goswami
9. Quantum Mechanics by Ghatak & Loknathan

Name and Signatures

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   - Q.2 Very short answer type question **(Answer in one or two sentences)** **(02 Marks)**
   - Q.3 Short answer type question **(Answer in 200-250 words)** **(04 Marks)**
   - Q.4 Long answer type questions **(Answer in 400-450 words)** **(12 Marks)**

Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

Note:

1. Question no. 1 and Question 2 will be compulsory.
2. Question no. 3 and 4 will consist of 2 optional questions of which one has to be attempted.

3. As mentioned above, two compulsory very short answer type questions (2+2 marks), one short answer type question with internal choice (4 marks) and one long answer type question with internal choice (12 marks) will be asked from each unit.

Thus there will be questions of 20 marks from each unit and of total 80 marks from all the four units of the syllabus/syllabi.

4. Some papers of English Literature consist of Literary Text. In such question papers, one annotation of 4 marks from each unit will be asked instead of short answer type question. The papers which do not contain literary texts the question paper format and marking scheme will remain the same.
5. For Hindi Literature, refer the Hindi version.
6. Internal Assessment Examination will be as follows :

i. Internal Test in each paper (20 marks)
ii. Seminar (Power point presentation) in any one of the paper (20 marks)
iii. Assignment in each of the remaining papers (excluding the paper of Seminar. (20 marks)
iv. Average of marks obtained in internal test + seminar in any one paper and marks obtained in internal test + assignment in rest of the papers will be calculated and taken into consideration.

LukrdkŸkj leLVj ijh{kk d fy, i"ui= dk ik:i ,o vd foHkktu

l= 2018&19 l Lo"kklh LukrdkŸkj ijh{kkvk d fy, i"ui= d ik:i e l"kk/ku fd;k x;k gA l"kkf/kr ik:i iFke] f}rh;] rrh; ,o prFk leLVj d lHkh i"ui=k d fy, ykx gkxkA u, ik:i d e[; fcn fuEukulkj g &

i. ç"ui= ioor 80 vdk dk gkxkA
ii. iR;d i"ui= e bdkbokj i"u iN tk,A
iii. iR;d bdkb l fuEukulkj i"u gku pkfg, &

ç"u 1- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 2- vfr y?kŸkjh i"u ¼,d ;k nk okD;k e mŸkj½ 02 vd
ç"u 3- y?kŸkjh i"u ¼200 l 250 "kCnk e mŸkj½ 04 vd
ç"u 4- nh?k mŸkjh i"u ¼400 l 450 "kCnk e mŸkj½ 12 vd

	bdkb&I	bdkb&II	bdkb&III	bdkb&IV
vfry?kŸkjh ¼2 i"u½ vf/kdre 2 okD;	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd	2 x 2 = 4 vd
y?kŸkjh ¼1 i"u½ 200&250 "kCn	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd	1 x 4 = 4 vd
nh?k mŸkjh ¼1 i"u½ 400&450 "kCn	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd	1 x 12 = 12 vd

ukV %

1- i"u Øekd 1 rFkk i"u Øekd 2 d i"u vfuok; gkxA

2- ç”u Øekd 3 rFkk ç”u Øekd 4 d vrxr nk odfYid i”u gkx ftue l ,d dk gy djuk gkxkA

3- mijkDrkulkj iR;d bdkb l nk vfuok; vfr y?kŸkjh i”u ¼2$2 vd½] ,d vkrfjd fodYi;Dr y?kŸkjh i”u ¼4 vd½ rFkk ,d vkrfjd fodYi ;Dr nh?k mŸkjh i”u ¼12 vd½ iN tk,xA bl rjg iR;d bdkb l 20 vd rFkk ikB;Øe dh pkj bdkb;k l dy 80 vd d i”u gkxA

4- vxth lkfgR; d dN i”ui=k e lkfgfR;d ikB ¼Literary texts½ lfEefyr gA bu i”ui=k e y?kŸkjh i”u d :i e 04 vdk dk ,d 0;k[;kijd i”u ¼annotation½ iR;d bdkb l iNk tk,xkA ftu i”ui=k e lkfgfR;d jpukvk dk ikB “kkfey ugh g] mud fy; i”ui= ik:i rFkk vd foHkktu ;Fkkor jgxkA

5- fgnh lkfgR; d ftu i”ui=k dh ikB;oLr e lkfgfR;d Ñfr;k d ikB lfEefyr g] mue Hkh y?kŸkjh i”u d LFkku ij iR;d bdkb l ,d 0;k[;kRed i”u gkxk] fdUr vd foHkktu fuEukulkj gkxk &

i”u 1-	vfr y?kÙkjh i”u ¼,d ;k nk okD;k e mÙkj½	2 vd
i”u 2-	vfr y?kÙkjh i”u ¼,d ;k nk okD;k e mÙkj½	2 vd
i”u 3-	0;k[;kRed i”u ¼200 l 250 “kCnk e mÙkj½	6 vd
i”u 4-	vkykpukRed i”u ¼400 l 450 “kCnk e mÙkj½	10 vd

6- vkrfjd eY;kdu ijh{kk ;Fkkor fuEukulkj gkxh &

i. iR;d i”u i= e vkrfjd tkp ijh{kk ¼20 vd½

ii. fdlh ,d i”u i= e lehukj d vrxr ikoj ikb.V iLrfr ¼20 vd½

iii. lehukj oky i”ui= dk NkMdj “k’k lHkh i”ui=k e l iR;d e l=h; dk; ¼20 vd½

iv. fdlh ,d ç”u i= e vkrfjd tkp ijh{kk $ lehukj rFkk “k’k i”u i=k e vkrfjd tkp ijh{kk $ l=h; dk; d fy; ijh{kkFkh d ikIrkdk d vklr dh x.kuk dj ml ekU; fd;k tk,xkA

V.C. Nominee …….. **Subject Expert ……..** **Subject Expert……..……** **Alumni (member)…….** **Prof. from other Dept. of Sc. Faculty …….** **Specialist from Industry……**	**Departmental members** **1. H.O.D/Dr. Purna Bose……** **2. Dr. Jagjeet Kaur Saluja……..** **3. Dr. R. S. Singh …….....** **4. Dr. Anita Shukla…….** **5. Mrs. Siteshwari Chandrakar……** **6. Dr. Abhishek Kumar Misra……**

GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR 2020-21
M.Sc. (Physics)
Semester-I
Paper-IV ELECTRONIC-DEVICES AND DIGITAL ELECTRONICS

Min.Marks: 16 **Max..Marks.:80**

Unit-I

Transistors: - BJT, JFET, MOSFET and MESFET: Structure working, Derivation of the equation for I-V characteristics under different condition.

Microwave Devices: - Gunn diode (Transferred Electron Devices), Transit time devices—IMPATT diodes, TRAPATT Diode.

Unit-II

Photonic Devices - Radiative and non-radiative transition, optical Absorption bulk and thin flim, photo conductive device (LDR), Photo detectors, solar cell open circuit voltage and short circuit current LED (high frequency limit effect of surface and indirect recombination current, operation of LED) laser condition for population inversion in active region, light confinement factor, optical gain.

Unit-III

Digital Electronic Devices: Logic gates: OR, AND, NOT, NAND, NOR, Ex-OR, Ex-NOR GATES, Number system: binary numbers, binary to decimal conversion, decimal to binary conversion, binary addition, binary subtraction, 1's compliment, 2s compliments, binary multiplication and division, octal and hexadecimal numbers, BCD code and gray code. Boolean Algebra: De Morgen's theorem, laws and theorems of Boolean algebra, sum of product and product of sums simplification, Karnaugh map simplification.

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Unit-IV

Memory Devices: RAM, ROM, PROM, EPROM, A/D and D/A converters, Static and dynamic random access memories (SRAM and DRAM), NMOS and CMOS, charge coupled devices (CCD) Microprocessor: introduction to a microprocessor. INTEL 8085 Architecture and pin diagram, CPU, Instruction set for 8085 microprocessor and programs.

Text and reference books

- Handbook of Electronics by Kumar & Gupta
- Principles of Electronics by V.K. Mehta
- Fundamental; of Digital Circuit by A. Anand Kumar
- Digital Electronics by R.P. Jain
- Microprocessor by Vibhute.
- 8085 microprocessor by Ramesh Gaonkar
- Microwave devices and circuits by Samuel Y. liao
- Microwave & Radar Engineering by M. Kulkarni

Name and Signatures

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Question Paper Format and Distribution of Marks for PG Semester Examination

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1. The question paper will be of **80 marks** (as before)
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   Q.1 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.2 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.3 Short answer type question **(Answer in 200-250 words)** **(04 Marks)**

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Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
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GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester- I

LAB-COURSE----A (GENERAL)

Min.Marks: 16 **Max..Marks.:80**

Scheme of Marks:

Max. Marks: 200 marks
Expt : 140 marks
Sessional: 20 marks
Viva: 40 marks

List of Experiments

The following experiments or similar experiments of equal standard are to be performed

1. Study of temperature dependence of resistivity of a semiconductor by four probe method.
2. Determination of Lande's factor of DPPH using Electron Spin Resonance (ESR) Spectrometer.
3. Measurement of Hall Co-efficient to identify p or n type semiconductors.
4. Determination of Young's modulus "Y" by Newton's Rings.
5. Determination of Young's modulus "Y" by Carno's method.
6. Determination of "e/m" by Millican's oil drop method.
7. Calibration of drum of a Constant Deviation Spectrometer.
8. Verification of Fresnel's formula.
9. Study of characteristics of negative temperature coefficient Thermister.
10. Analysis of elliptically polarized light by Babinet's Compensator.
11. Determination of refractive index of a liquid Abbe's refractometer.
12. Determination of numerical aperture and bending loss of an Optical fiber.
13. Photoconductivity rise and decay studies and determination of photoconductivity gain.
14. Photo diode characteristics.
15. Photo Transistor characteristics.
16. Determination of Planck Constant with the help of a photo cell.
17. To determine the dielectric constant and permittivity of a solid by resonance method.

Name and Signatures

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DEPARTMENT OF PHYSICS
GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
Approved syllabus for M.Sc. (PHYSICS) by the members of Board of Studies
For the Session 2020-21
The syllabus with the paper combinations is as under

Semester II:

Paper I: QUANTUM MECHANICS	**Paper II: STATISTICAL MECHANICS**
Paper III: E.D. & PLASMA PHYSICS	**Paper IV: ATOMIC AND MOLECULAR PHYSICS**
Paper V: Lab Course B(ELECTRONICS)	

*** Applicable for the concerned subjects**
The syllabus for M.Sc. (PHYSICS) is hereby approved for the session 2020 -21.

Name and Signatures

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Syllabus and Marking Scheme for Second Semester
Session 2020-21

Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment		
		Max	Min	Max.	Min.	
I	QUANTUM MECHANICS	80	16	20	04	
II	STATISTICAL MECHANICS	80	16	20	04	
III	E.D. & PLASMA PHYSICS	80	16	20	04	
IV	ATOMIC AND MOLECULAR PHYSICS	80	16	20	04	
V	Lab Course I A(GENERAL)	200	66			
	Total	520		80		

04 Theory papers	-	320
04 Internal Assessments	-	80
Practical	-	200
Total Marks	-	600

Name and Signatures

V.C. Nominee ……..	Departmental members
Subject Expert ……..	1. H.O.D/Dr. Purna Bose……
Subject Expert……	2. Dr. Jagjeet Kaur Saluja……..
Alumni (member)…….	3. Dr. R. S. Singh …….....
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The scheme of internal assessment

Session 2020-21

Semester II

S.No.	Paper	Test Marks I	Home Assignment II	Total
1.	QUANTUM MECHANICS	20 Marks	20 Marks	Average of I & II (20 Marks)
2.	STATISTICAL MECHANICS	Only One Seminar (20 marks) Presentation (10 marks) Viva (10 marks)		20 Marks
3.	E.D. & PLASMA PHYSICS	20 Marks	20 Marks	Average of I & II (20 Marks)
4.	ATOMIC AND MOLECULAR PHYSICS	20 Marks	20 Marks	Average of I & II 20 Marks

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GOVT.V.Y.T.AUTO.PG COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-II
Paper-I - QUANTUM MECHANICS

Min.Marks: 16 **Max..Marks.:80**

UNIT- I Time dependent perturbation theory, Harmonic perturbation, Fermi's golden rule. Variational method and its application to calculate expectation value of the energy, WKB approximation theory and its application, adiabatic and sudden approximations.

UNIT- II Collision in-3 D and scattering, laboratory and center of mass reference frames, scattering amplitude, differential scattering cross section and total scattering cross section. Spherically symmetric potentials, partial wave analysis and phase shifts, scattering by perfectly rigid sphere and by square well potential, Born approximation, validity of Born approximation**.**

UNIT-III Identical particles, Physical meaning of identity, Symmetric and anti symmetric wave functions, Distinguishability of identical particles, Pauli's exclusion principle, Connection with Statistical mechanics, Spin angular momentum, Connection between spin and statistics, Spin matrices and eigenfunctions, Collision of identical particles, Electron spin function, Effect of identity and spin.

UNIT-IV Hamiltonian and interaction term in the semi-classical theory of radiation, transition probability for absorption and induced emission, electric dipole transition, forbidden transition, Spontaneous and stimulated emission, Plank's distribution formula, line width, selection rules, Polarization of emitted radiation; quantization of electromagnetic field, creation and annihilation operators, transition rates for absorption and emission of radiation, Dipole approximation – transition rates, electric dipole selection rules, spontaneous and stimulated emission.

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REFERENCES:

1. Quantum Mechnics by David J. Griffith
2. Introduction to Quantum Mechanics by L. Pauling & E. B. Wilson
3. Quantum Mechanics by Eugen Merzbacher
4. Quantum Mechanics by L.I.Shiff (Mc Graw-Hill)
5. Quantum Mechanics - Non-relativistic Theory by L. D. Landau & E.M. Lifshitz
6. Principles of Quantum Mechanics by P. A. M. Dirac
7. Quantum Mechanics – Concepts & Applications by Nouredine Zettili
8. Modern Quantum Mechanics by J.J.Sakurai.
9. Quantum Mechanics by Amit Goswami
10. Quantum Physics by Locknathan and Ghatak.
11. Quantum Mechanics by J.D.Powell & B.Craseman (Adision Weley)
12. Quantum Mechanics by A.P.Messiah.
13. Quantum Mechnics by Mathews and Venkatesan.
14. Adanced Quantum Mechnics by Satya Prakash.

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3. From each Unit, the questions will be asked as follows :

   Q.1 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.2 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.3 Short answer type question **(Answer in 200-250 words) (04 Marks)**

   Q.4 Long answer type questions **(Answer in 400-450 words)** **(12 Marks)**

Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

Note:

1. Question no. 1 and Question 2 will be compulsory.
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SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-II
Paper-II-STATISTICAL MECHANICS

Min.Marks: 16 **Max.Marks.:80**

UNIT-I **Foundation of statistical mechanics** – Specification of the state of a system statistical ensemble, contact between statistical and thermo dynamical quantities, Micro canonical ensemble, perfect gas in micro canonical ensemble, partition function and its correlation with thermodynamic quantities nature of probability function partition function for canonical ensemble thermodynamic functions for canonical ensemble. Perfect mono atomic gas in canonical ensemble, Grand canonical ensemble: Partition function and thermo dynamic function for grand canonical ensemble, Perfect gas in grand canonical ensemble.

UNIT-II Classical ideal gas entropy of mixing, Gibbs's paradox, Phase space Liouvelle's theorem, Maxwellian distribution from canonical distribution, Transition from classical statistical mechanics to quantum statistical mechanics, indistinguishability and quantum statistics . The density matrix, condition for statistical equilibrium, B.E., F.D. & M.B. statistics evaluation of constant α and β , Result of three statistics, Properties of ideal Bose gas, gas degeneracy, B.E. condensation, ideal fermi dirac gas – energy & pressure of gas & light and strong degeneracy.

UNIT-III **Theory of imperfect gases** – Virial equation of state Virial coefficients, cluster expansion for a classical gas. The Ising model in one dimension, exact solution of Ising model in one dimensions Phase transition, Phase transition of first and second kind, Landau's Phenomenological theory of phase transition.

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UNIT-IV **Fluctuations** – Thermo dynamic fluctuations spatial correlation in a fluid, The Langevin's theory of the Brownian motion, Einstein Relation and Expression for mobility(Nernst relation) Fokker – Planck equation, Fluctuation dissipation theorem.

REFERENCES:

1. Statistical and thermal Physics by F.Reif.
2. Statistical Mechanics by K.Huang.
3. Statistical Mechanics by R.K.Patharia.
4. Statistical Mechanics by Landau & Lifshiz.
5. Statistical Mechanics by Bhattacharya.

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Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
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Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

Note:

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3. As mentioned above, two compulsory very short answer type questions (2+2 marks), one short answer type question with internal choice (4 marks) and one long answer type question with internal choice (12 marks) will be asked from each unit.

Thus there will be questions of 20 marks from each unit and of total 80 marks from all the four units of the syllabus/syllabi.

4. Some papers of English Literature consist of Literary Text. In such question papers, one annotation of 4 marks from each unit will be asked instead of short answer type question. The papers which do not contain literary texts the question paper format and marking scheme will remain the same.
5. For Hindi Literature, refer the Hindi version.
6. Internal Assessment Examination will be as follows :

   i. Internal Test in each paper (20 marks)
   ii. Seminar (Power point presentation) in any one of the paper (20 marks)
   iii. Assignment in each of the remaining papers (excluding the paper of Seminar. (20 marks)

iv. Average of marks obtained in internal test + seminar in any one paper and marks obtained in internal test + assignment in rest of the papers will be calculated and taken into consideration.

GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-II
Paper-III- E.D. & PLASMA PHYSICS

Min.Marks: 16 **Max..Marks.:80**

UNIT-I Review of four vectors, Lorentz transformation of space and time in four-vector form. Maxwell's field equations in terms of four vectors, electromagnetic field tensor, Maxwell's equations in covariance four tensor form, Lorentz Transformation of electric and magnetic Fields, The invariants of the electromagnetic field, Lienard -Wiechert Potential.

UNIT-II Electric and Magnetic fields due to a uniformly moving charge, variation of accelerated charge at low velocity - Larmour's formula, relativistic generalization of Larmour's formula, Bremrstrahlung radiation, Synchrotron Radiation, Cerenkev radiation, Angular distribution of radiation emitted by an accelerated charge, radiation damping- Abraham-Lorentz formula.

UNIT-III Plasma Production, Particle interaction and collative effects, Criteria for the definition of Plasma-Macroscopic Neutrality, Debye shielding, the plasma frequency, plasma oscillations, plasma parameters. The occurance of plasma in nature-The Sun and its Atmosphere, the Solar Wind, the Magnetosphere, the ionosphere, Plasma beyond the Solar system, Applications of Plasma Physics- Controlled thermonuclear fusion, gaseous discharge, the magnatohydrodynamic generator, Plasma propulsion, other Plasma devices, Theoritical description of Plasma phenomena-general considerations.

Motion of charged particles in E-M field- uniform electrostatic field and uniform magnetostatic field; uniform electrostatic and magnetostatic fields (formal solution of the equation of motion); Nonuniform E field, nonuniform B field Adiabatic invariant-First, second and third invariants Elementary Concepts.

V.C. Nominee ……..	**Departmental members**
Subject Expert ……..	**1. H.O.D/Dr. Purna Bose……**
Subject Expert……..……	**2. Dr. Jagjeet Kaur Saluja……..**
Alumni (member)…….	**3. Dr. R. S. Singh …….....**
Prof. from other Dept. of Sc. Faculty …….	**4. Dr. Anita Shukla…….**
Specialist from Industry……	**5. Mrs. Siteshwari Chandrakar……**
	6. Dr. Abhishek Kumar Misra……

UNIT-IV Elements of Plasma Kinetic Theory- Phase Space, Single particle and many particle phase space, volume elements, distribution function number density and average velocity.
Boltzman Equation- Collisionless Boltzman equation, The Vlasov equation,
Degree of Ionization in Equillibrium- The Saha ionization equation.
Macroscopic Transport Equation- General Transport Equation, derivation of continuity equation.
Electromagnetic waves in free space-The wave equation, solution in plane waves, phase velocity, wave packets and group velocity.

REFERENCES :

1. Classical Electricity & Magnetism by Panoisdy & Phillips.
2. Classical Electrodynamics by J.D. Jackson.
3. Plasma physics : Biltten Court.
4. Plasma Physics : F.F.Chen

Name and Signatures

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Question Paper Format and Distribution of Marks for PG Semester Examination

Question paper format for the Post-Graduate Examination has been revised from the Session 2020-21. The revised format will be applicable for all the question papers of Semester I, II, III & IV. The following are the main points of the new format:

1. The question paper will be of **80 marks** (as before)
2. Questions will be asked Unit-wise in each question paper.
3. From each Unit, the questions will be asked as follows :

   Q.1 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.2 Very short answer type question
   (Answer in one or two sentences) **(02 Marks)**

   Q.3 Short answer type question **(Answer in 200-250 words)** **(04 Marks)**

   Q.4 Long answer type questions **(Answer in 400-450 words)** **(12 Marks)**

Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

Note:

1. Question no. 1 and Question 2 will be compulsory.
2. Question no. 3 and 4 will consist of 2 optional questions of which one has to be attempted.
3. As mentioned above, two compulsory very short answer type questions (2+2 marks), one short answer type question with internal choice (4 marks) and one long answer type question with internal choice (12 marks) will be asked from each unit.

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4. Some papers of English Literature consist of Literary Text. In such question papers, one annotation of 4 marks from each unit will be asked instead of short answer type question. The papers which do not contain literary texts the question paper format and marking scheme will remain the same.
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GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-II
Paper-IV-ATOMIC AND MOLECULAR PHYSICS

Min.Marks: 16 **Max..Marks.:80**

UNIT-1 Stationary energy states, radiation terms, continuous spectra, quantum numbers of the individual electrons the Pauli's Principle, quantum theoretical addition of angular momentum vectors, quantum numbers and angular momentum of the whole atom, term Symbols, influence of a magnetic or electric field, selection rules, nuclear spin.

UNIT-II Atomic Orbital, Hydrogen Spectrum (Bohr theory, Sommerfeld theory and Sommerfeld Relativistic Correction) , Spectrum of alkali elements Different Series of Alkali atoms , spin orbit interaction & fine Structure in alkali spectra , Normal and anomalous Zeeman effect, Paschen Back effect, Stark effect, Two electron system, Interaction energy in LS and JJ coupling.

UNIT-III The rigid rotator – The molecules as a rigid rotator, energy eigen values, Eigen function, spectrum.
The non-rigid rotator energy levels,
The diatomic moleculeas as symmetric to, asymmetric top and spherical top molecule, angular momenta, energy levels, Eigen functions, infrared spectrum.

UNIT-IV The diatomic molecule as anharmonic oscillator, energy levels, Eigen functions, spectrums. Molecules as Vibrating rotator, Vibration spectrum of diatomic molecule, P, Q and R branches, Applications of vibrational spectroscopy.
Infra red spectrum, general experimental arrangement for studying infrared spectra.

V.C. Nominee …….. **Subject Expert ……..** **Subject Expert…….……** **Alumni (member)…….** **Prof. from other Dept. of Sc. Faculty …….** **Specialist from Industry……**	**Departmental members** **1. H.O.D/Dr. Purna Bose……** **2. Dr. Jagjeet Kaur Saluja……..** **3. Dr. R. S. Singh …….....** **4. Dr. Anita Shukla…….** **5. Mrs. Siteshwari Chandrakar……** **6. Dr. Abhishek Kumar Misra……**

REFERENCE:

1. Introduction to atomic spectra- H.E.White
2. Fundamental of spectroscopy – C.B.Banwell.
3. Spectra of diatomic molecules – Herzbeng
4. Molecular structure & Spectroscopy – G.Aruldhas.

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   - Q.1 Very short answer type question **(Answer in one or two sentences) (02 Marks)**
   - Q.2 Very short answer type question **(Answer in one or two sentences) (02 Marks)**
   - Q.3 Short answer type question **(Answer in 200-250 words) (04 Marks)**
   - Q.4 Long answer type questions **(Answer in 400-450 words) (12 Marks)**

Type of Question	Unit-I	Unit-II	Unit-III	Unit-IV
Very Short (2 Questions) (Maximum two sentences)	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**	**2 x 2 = 4 Marks**
Short (1 Question) 200-250 words	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**	**1 x 4 = 4 Marks**
Long answer (1 Question) 400-450 words	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**	**1 x 12 = 12 Marks**

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GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR (2020-21)
M.Sc. (Physics)
Semester-II

LAB-COURSE-B, ELECTRONICS

Scheme of Marks:
Max. Marks: 200 marks
Expt : 140 marks
Sessional: 20 marks
Viva: 40 marks

List of Experiments

Any 10 of the following or similar experiments of equal standard are to be performed.

1. Design of Regulated Power supply.
2. Design of C-E Amplifier.
3. Design & Study of Negative feed back amplifier. (Voltage & Current)
4. Design & Construction of Astable, Monostable, Bistable Multivibrators.
5. Characteristics & applications of S.C.R.
6. FET & MOSFET Characterization and Application as an Amplifier.
7. Study of UJT & its application.
8. Digital-I Basic logic Gates, T.T.L.NAND, NOR gates.
9. Digital-II Combinational Logic Gates.
10. Flip- Flop's : J K, RS
11. Application of Operational Amplifier (741)
12. Differential Amplifier.

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