Government of Karnataka

Department of Collegiate and Technical Education

GOVERNMENT COLLEGE (AUTONOMOUS)

DEPARTMENT OF PHYSICS

STATE EDUCATION POLICY (SEP)

SYLLABUS

FOR

PHYSICS

BSc I AND II SEMESTER PROGRAMME

WITH EFFECT FROM ACADEMIC YEAR 2024-25

BOS RESOLUTION DATE

GOVERNMENT COLLEGE (AUTONOMOUS)
SEDAM ROAD, TALUKA & DISTRICT: KALABURAGI KARNATAKA, INDIA
PIN:585105

GOVERNMENT COLLEGE (AUTONOMOUS)-585105
DEPARTMENT OF PHYSICS

ಕರ್ನಾಟಕ ಸರಕಾರ
ಕಾಲೇಜು ಮತ್ತು ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ
ಸರಕಾರಿ ಮಹಾವಿದ್ಯಾಲಯ (ಸ್ವಾಯತ್ತ), ಕಲಬುರಗಿಕ
(ನ್ಯಾಕ್‌ನಿಂದ "ಬಿ+" ಶ್ರೇಣಿಯ ಮರುಮಾನ್ಯತೆ ಪಡೆದಿರುತ್ತದೆ.)
ಸೇಡಂ ರಸ್ತೆ, ಕಲಬುರಗಿ-585105
Phone: 08472-24564 www.gfgc.kar.nic.in/kalburgi/ email: govt.cleglb@gmail.com

-Course Matrix for Course Matrix for B.Sc. Basic Degree with 03 Majors under State Education Policy (with effect from AY 2024-25)

SEM	Course Category	Course Code	Title of the Paper	Marks			Teaching hours / week			Credits	Exams Hours
				SEE	IA	Total	L	T	P		
I	Language-1	MIL		80	20	100	4	-	-	3	3
	Language-2	MEL		80	20	100	4	-	-	3	3
	CC/CV	AECC	EVS **(B.A/B.Com)**/ Constitutional Values **(B.Sc)**	40	10	50	2	-	-	2	2
	DSC	DSC-T-1		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSC	DSC-P-1		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
Total Marks/ Credits for First Semester:				**560**	**140**	**700**				**23**	
II	Language-1	MIL		80	20	100	4	-	-	3	3
	Language-2	MEL		80	20	100	4	-	-	3	3

	CC/CV	AEC C	EVS **(B.Sc)**/ Constitutional Values **(B.A/B.Com)**	40	10	50	2	-	-	2	2
	DSC	DSC -T-2		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSC	DSC -P-2		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
Total Marks/ Credits for Second Semester:				**560**	**140**	**700**				**23**	
III	Language-1	MIL		80	20	100	4	-	-	3	3
	Language-2	MEL		80	20	100	4	-	-	3	3
	DSC	DSC -T-3		80	20	100	3	-	-	3	3
	DSC			80	20	100	3	-	-	3	3
	DSC			80	20	100	3	-	-	3	3
	DSE-1	OE	ELECTIVE-1	80	20	100	3	-	-	3	3
	DSC	DSC -P-3		40	10	50	-	-	4	2	2
	DSC			40	10	50	-	-	4	2	2
	DSC			40	10	50	-	-	4	2	2
Total Marks/ Credits for Third Semester:				**600**	**150**	**750**				**24**	
IV	Language-1	MIL		80	20	100	4	-	-	3	3
	Language-2	MEL		80	20	100	4	-	-	3	3
	DSC	DSC -T-4		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSC	-		80	20	100	3	-	-	3	3
	DSE-2	OE	ELECTIVE-2	80	20	100	3	-	-	3	3

	DSC	DSC -P-4		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
	DSC	-		40	10	50	-	-	4	2	2
Total Marks/ Credits for Fourth Semester:				**650**	**150**	**750**				**24**	
V	DSC	DSC - A(T)		80	20	100	3	-	-	3	3
		DSC - A(P)		40	10	50	-	-	2	1	2
		DSC - B(T)		80	20	100	3	-	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	DSC	DSC - A(T)		80	20	100	3	-	-	3	3
		DSC - A(P)		40	10	50	-	-	2	1	2
		DSC - B(T)		80	20	100	3	-	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	DSC	DSC - A(T)		80	20	100	3	-	-	3	3
		DSC - A(P)		40	10	50	-	-	2	1	2

		DSC - B(T)		80	20	100	3	- -	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	SEC	-	SEC related to any one of the DSC (Syllabus includes at least 1 unit on Research Methodology)	40	10	50	2	-	-	2	2
Total Marks/ Credits for Fifth Semester				**760**	**190**	**950**				**26**	
VI	DSC	DSC - A(T)		80	20	100	3	-	-	3	3
		DSC - A(P)		40	10	50	-	-	2	1	2
		DSC - B(T)		80	20	100	3	-	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	DSC	DSC - A(T)		80	20	100	3	-	-	3	3
		DSC - A(P)		40	10	50	-	-	2	1	2
		DSC - B(T)		80	20	100	3	- -	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	DSC	DSC - A(T)		80	20	100	3	-	-	3	3

		DSC - A(P)		40	10	50	-	-	2	1	2
		DSC - B(T)		80	20	100	3	- -	-	3	3
		DSC - B(P)		40	10	50	-	-	2	1	2
	SEC	-	Project/Dissertation/Internship/KJK	40	10	50	2	-	-	2	2
		Total Marks/ Credits for Sixth Semester:		**760**	**190**	**950**				**26**	
		Total Marks/ Credits for the Course		**3120**	**780**	**4850**				**146**	

NOTE:

Course and paper; CC/CV: Compulsory Course/ Constitutional Value.
DSC: Discipline Specific Core Course.
SEC: Skill Enhancement Course.
DSE: Discipline Specific Elective.
SEC: Skill Enhancement Courses.
ABC: Activity Based Courses, (L= Lecture; T=Tutorial; P= Practical);
MIL: Modern Indian Language, MEL – Modern European language

Distribution of Courses/Papers in Undergraduate Program I to VI Semester as per State Education Policy (SEP) for the Degree in B.Sc. Courses

Semester	Course code	Course Type	Course Title	Credits	Teaching per week	Total credits
I	DSC-1	DSC-PHY 104T	Mechanics and Properties of Matter	3	3	3
		DSC-PHY 104P	Mechanics and Properties of Matter Practical-1	2	4	2
II	DSC-2	DSC-PHY 204T	Electricity and Magnetism	3	3	3
		DSC-PHY 204P	Electricity and Magnetism Practical-2	2	4	2
III	DSC-3	DSC-PHY 304T	Thermal Physics and Statistical Mechanics	3	3	3
		DSC-PHY 304P	Thermal Physics and Statistical Mechanics-Practical-3	2	4	2
IV	DSC-4	DSC-PHY 404T	Waves and Optics	3	3	3
		DSC-PHY 404P	Waves and Optics-Practical-4	2	4	2
V	DSE-5	DSEA-PHY 504T1	Solid State Physics	3	3	3
		DSEA-PHY 504P1	Solid State Physics-Practical-5	1	2	1
		DSEB-PHY-T	Atomic & Molecular Physics	3	3	3

		DSEB-PHY-P	Atomic and Molecular Physics Practical-6	1	2	1
		SEC	Physics-SEC	2	2	2
VI	DSE-6	DSEA-PHY-T 604T1	Nuclear and Particle Physics	3	3	3
		DSEA-PHY-P 604P1	Nuclear and Particle Physics Physics-Practical-7	1	2	1
		DSEB-PHY-T	Modern Physics	3	3	3
		DSEB-PHY-P	Modern Physics Practical-VI	1	2	1
		SEC	Project/Dissertation/ Internship/KJK	2	2	2
			Total	40	52	40

The Course structure offered for B.Sc. Course with **Physics** as per SEP at Government College (Autonomous) Kalaburagi from the academic year 202425.

Semester	Course	Course code	Course title	Credits L+P	Teaching hours/week L+P= Total
I	Core Courses	DSC1-PHY104T	Mechanics and Properties of Matter	3+2=5	3+4=7
		DSC1-PHY104P	Mechanics & Properties of Matter Practical-I		
II		DSC1-PHY204T	Electricity and Magnetism	3+2=5	3+4=7
		DSC1-PHY204P	Electricity and Magnetism Practical -II		
III		DSC1-PHY304T	Thermal Physics & Statistical Mechanics	3+2=5	3+4=7
		DSC1-PHY304P	Thermal Physics & Statistical Mechanics Practical-III		
	Open Elective	DSE1	PHYSICS-OET1	3+0	3+0=3
IV	Core Courses	DSC1-PHY404T	Waves and Optics	3+2=5	3+4=7
		DSC1-PHY404P	Waves and Optics Practical-IV		
	Open Elective	DSE2	PHYSICS-OET2	3+0	3+0=3

V	Discipline Specific Elective	DSE1-PHY505T1 DSE1-PHY505P1 DSE1-	Solid State Physics Solid State Physics Practical- V	 3+1=4	 3+2=5
		PHY505T2 DSE1-PHY505P2	Atomic and Molecular Physics Atomic and Molecular Physics Practical-V	3+1=4	3+2=5
	Skill Enhancement Course	SEC	Physics-SEC	2+0=2	2+0=2
VI	Discipline Specific Elective	DSE1-PHY605T1 DSE1-PHY605P1	Nuclear and Particle Physics Nuclear and Particle Physics Practical-VI	3+1=4	3+2=5
		DSE1-PHY605T2 DSE1-PHY605P2	Modern Physics Modern Physics Practical-VI	3+1=4	3+2=5
Total Credits for Physics Course				**44**	56

L: Lecture, P: Practical

GOVERNMENT COLLEGE (AUTONOMOUS) KALABURAGI
B.Sc Physics (SEP) Syllabus (Semester Scheme): Effective from 2024-25

Teaching and Evaluation Scheme

S.No.	Title of the Paper	Credits	Semester End Examination Duration	Max. Marks	Internal Assessment Duration	Max. Marks	Total Max. marks
1	Mechanics and Properties of Matter	3	3.hrs	80	1hr	20	100
	Mechanics and Properties of Matter Practical-1	2	2. hrs	40	1hr	10	50
2	Electricity and Magnetism	3	3.hrs	80	1hr	20	100
	Electricity and Magnetism Practical-2	2	2. hrs	40	1hr	10	50
3	Thermal Physics and Statistical Mechanics	3	3.hrs	80	1hr	20	100
	Thermal Physics and Statistical Mechanics-Practical-3	2	2. hrs	40	1hr	10	50
4	Physics-OET	3	3.hrs	80	1.hr	20	100
5	Waves and Optics	3	3.hrs	80	1hr	20	100
	Waves and Optics-Practical-4	2	2 hrs	40	1hr	10	50
6	Physics-OET	3	3.hrs	80	1.hr	20	100
7	Solid State Physics	3	3hrs	80	1hr	20	100
	Solid State Physics-Practical-5	1	3 hrs	40	1hr	10	50
	Atomic and Molecular Physics	3					
	Atomic and Molecular Physics Practical-V	1	2.hrs	40	1.hr	10	50
	SEC-Physics	2	3.hrs	40	1hr	10	50
8	Nuclear and Particle Physics	3	3.hrs	80	1hr	20	100
	Nuclear and Particle Physics-Practical-6	1	2.hrs	40	1hr	10	50
	Modern Physics	3	3.hrs	80	1 hr	20	100
	Modern Physics Practical-VI	1					
9	Project/Dissertation/Internship/KJK	2	3.hrs	40	1hr	10	50

I SEMESTER

PHYSICS

DSC1-PHY104T: MECHANICS AND PROPERTIES OF MATTER

(Credits: Theory-03) 48 Hrs

Course Learning Objectives

a) To understand the mechanics in space, relative motion.

b) To understand mechanics of particles, rockets-mass varying systems

c) To acquire the knowledge about the influence of gravitational force on rigid bodies

d) To understand the earth's gravitational field, gravity, orbits of satellite, central force and navigational system.

e) To study the elasticity, plasticity, moduli, surface tension and viscous force

Course Outcome: On successful completion of the course, the student will able to:

a) Study the mechanics in space w.r.t stationary and moving frame of references.

b) Acquire the knowledge about mechanics of constant and varying mass, rocket and Indian Space Sciences and Technology.

c) Gain the knowledge about gravitational force affect and acceleration due to gravity on orbits, satellites and GPS-navigational role.

d) Acquaint with properties of materials -elastic moduli, liquids in terms of surface tension and viscous forces.

UNIT-1 **(12 hrs)**

FRAME OF REFERENCE: Inertial, non-inertial and rotating frame of reference (illustrate with examples), Galilean transformation equations (derivation), invariance of laws of Newton's, conservation of momentum and energy under Galilean transformation, fictitious force (in brief), Coriolis force, its expression and applications.

DYNAMICS OF SYSTEM OF PARTICLES: Centre of mass – general expression; Newton's law for a system of particles; linear momentum for a particle and a system of particles. elastic and Inelastic collisions, conservation of linear momentum.

SYSTEM WITH VARYING MASS: Motion of rockets; velocity and acceleration of single-stage rocket and multi-stage rockets (qualitative), history of rocketry and indigenous technology in India.

UNIT-2 **(12 hrs)**

RIGID BODIES

Rotational motion about an axis, angular momentum, relation between torque and angular momentum, rotational energy. Moment of inertia perpendicular and parallel axis theorems. Moment of inertia of lamina, disc, circular ring, and fly wheel, Theory of compound and Kater's pendulum and determination of "g". Problems.

UNIT-3 **(12 hrs)**

GRAVITATION: Newton's law of gravitation. Kepler's laws with derivation. Satellites in a circular orbit (compare elliptical orbit) and applications. Geosynchronous orbits, weightlessness. Global positioning system (GPS) and Navigation with Indian Constellation (NaVIC), its applications. GAGAN.

ELASTICITY: Hooks law, Stress-strain diagram-elastic moduli-relation between elastic constants-Poisons ratio-expression for Poisson's ratio in terms of elastic constants-work done in stretching and work done in twisting a wire-twisting couple on cylinder-Determination of rigidity modulus by static torsion-Torsional pendulum.

UNIT-4 **(12 hrs)**

SURFACE TENSION: Review of basics of surface tension. Pressure difference across a liquid surface: Excess pressure inside a spherical liquid drop and excess pressure inside a soap bubble. Derivation of the relation between radius of curvature, Pressure and surface tension. Angle of contact.

VISCOSITY: Viscosity of a liquid, fluid (illustrate with examples), expression for co-efficient of viscosity, expression for critical velocity, significance of Reynolds's number. Derivation of Poiseuille's equation. experimental determination of co-efficient of viscosity for a liquid by Poiseuille's method, Motion of a spherical body in a viscous medium: expression for co-efficient of viscosity from Stoke's law.

REFERENCE BOOKS

1. Mechanics by D S Mathur
2. Mechanics by J C Upadhaya
3. Properties of matter by D S Mathur
4. Properties of matter by Brijilal and Subramanyam

DSC1P: MEACHANICS AND PROPERTIES OF MATTER -PRACTICAL-I

(Credits: Practicals-02) 24 Hrs

Note

- **Each experiment is of 2 hrs duration**
- **Two practical sessions per week**
- **Minimum of 10 experiments are to be carried out**

LAB EXPERIMENTS

1. Measurements of length (or diameter) using Vernier callipers, screw gauge and travelling microscope.
2. Determine the height of a building using sextant.
3. Determine the moment of inertia of flywheel.
4. Determine the young's modulus by uniform bending method.
5. Determine the modulus of rigidity of a wire by Maxwell's needle.
6. Determine the elastic constants of a wire by Searl's method.
7. Determine g by bar pendulum (L Vs T).
8. Determine g by bar pendulum (L Vs LT).
9. Determine g by Katers pendulum.
10. Verification of parallel axis theorem.
11. Study the motion of spring and calculate (a) spring constant (b) value of g.
12. Verification of perpendicular axis theorem.
13. Moment of inertia of a Irregular body.
14. Young's modulus by cantilever – load Vs depression graph.
15. Interfacial surface tension.
16. Co-efficient of viscosity by Stoke's method.
17. Surface tension by capillary rise method.
18. Co-efficient of Viscosity by Poiseuille's method.
19. Assignment 1
20. Assignment 2
21. Assignment 3
22. Assignment 4
23. Assignment 5

REFERENCE BOOKS:

1. Experimental physics- M A Hippargi
2. Experimental physics- Gadad and Hiregoudar
3. Practical physics- C L Arora
4. Advanced practical physics- Worsnop and flint
5. Practical physics- Gupta and kumar vol1 and vol2

II-Semester

Physics

DSC2-PHY204T: Electricity and Magnetism

(Credits: Theory-03) 48 Lectures

Course Learning Objectives

a) To understand scalar and vector physical quantities.

b) To understand the force and energy from static electric charges.

c) To acquire knowledge of magnetic materials and magnetization.

d) To understand the electricity and magnetism as a vice-versa phenomena and geomagnetic field.

e) To understand the influence of magnetic field on conducting (metals) and semiconductors.

f) To study the DC circuits and network theorems in terms of voltage and currents.

g) To understand the capacitance C, RC, LCR circuit and its application.

Course Outcome

On successful completion of the course, the student will be able to-

a) Gaining knowledge of static charges and its physical parameters-field, forces, energy and applications.

b) Acquainting with magnetic field vector, steady current effect and geomagnetism

c) Acquainting with magnetic field influences on metals and semiconducting materials.

d) Gaining knowledge of electricity amd magnetism are vice-versa phenomena.

e) Acquiring the knowledge of $\vec{E}, \overrightarrow{D}, \overrightarrow{B}$, & $\vec{H}$, electric and magnetic field behaviour and characteristics.

f) Acquires the knowledge of DC circuits, network theorems, C, RC and LCR circuits.

AC-LCR circuits, construction, operation and applications.

UNIT-1: **(12 Hrs)**

VECTOR ANALYSIS: Review of vector algebra (Scalar and Vector product), gradient, divergence, curl and their significance. Qualitative approach on vector integration. Line, surface and volume integrals of vector fields. Gauss-divergence theorem and Stoke's theorem of vectors (statement only)

ELECTROSTATICS: Electric charges**,** Coulomb's law of forces**,** electrostatic potential and field, electric flux, Gauss's theorem, application-electric field due to point charge. Electric potential as line integral of electric field, potential due to a point charge, Capacitance of an isolated spherical conductor. Parallel plate and spherical condenser. Polarisation, displacement vector. Gauss's theorem in dielectrics. Parallel plate capacitor filled with dielectric**.**

UNIT-2 **(12 Hrs)**

MAGNETIC PROPERTIES OF MATERIALS: Brief Introduction of dia, para, and ferro magnetic materials. Magnetic intensity, magnetic induction, permeability, magnetic susceptibility, explanation of magnetic materials, paramagnetic susceptibility, Curie law. Hysteresis loss of energy.

MAGNETISM: Magnetostatics, Biot-Savart's law & its applications-straight conductor, circular coil, solenoid carrying current. Divergence and curl of magnetic field. Magnetic vector potential. Ampere's circuital law. Terrestrial or Geomagnetism. Earth Inductor and determination of geomagnetic field component B_H and Dip (Inclination- I).

MAGNETIC FIELD AND FORCE: Magnetic force on a current carrying conductor, Hall effect and expression for Hall effect.

UNIT-3 **(12 Hrs)**

ELECTROMAGNETIC INDUCTION: Faraday's laws of electromagnetic induction, Lenz's law, self (L) and mutual inductance (M), L of single coil, M of two coils. Energy stored in magnetic field**.**

MAXWELL'S EQUATIONS AND ELECTROMAGNETIC WAVE PROPAGATION: Equation of continuity of current. displacement current, Maxwell's equations, Poynting vector, energy density in electromagnetic field, electromagnetic wave propagation through vacuum, transverse nature of EM waves, polarization.

UNIT-4 **(12 Hrs)**

DC CIRCUIT ANALYSIS: Concept of current and voltage sources, Kirchoff's current and voltage law. Thevenin's theorem, superposition theorem, reciprocity theorem and maximum power transfer theorem.

TRANSIENT CURRENTS: Charging and discharging of capacitor**,** growth and decay of charge in RC circuit, Growth and decay of current in series LR circuit, decay of charge in series LCR circuit.

ALTERNATING CURRENTS: Review of basic definitions. LCR Series circuit to sinusoidal voltages, impedance, series resonance, Q factor and bandwidth – qualitative explanation of LCR parallel circuit.

REFERENCE BOOKS:

1. Electricity and Magnetism, D.C. Tayal, 1988, Himalaya Publishing House.
2. Introduction to Electrodynamics, D.J Griffiths, 3rd Edn, 1998. Benjamin Cummings.
3. Electric networks by B.L. Theraja
4. Electricity and Magnetism, K.K. Tiwari
5. Electricity and Magnetism, by Brij Lal and N Subrahmanyam.
6. Electricity and Magnetism, by Khare and Srivastava.
7. Fundamentals of Magnetism and Electricity by D. N. Vasudeva: S Chand Publishing

DSC2-PHY204P: ELECTRICITY AND MAGNETISM-PRACTICAL-II

(Credits: Practical -2) 24 Hrs

Note:-

- **Each experiment is of 2hrs duration**
- **Two practical sessions per week**
- **Minimum of 10 experiments are to be carried out**

1. To use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current
2. Ballistic Galvanometer: Pointer galvanometer/Spot galvanometer
   i) Measurement of charge and current sensitivity
   ii) Measurement of CDR
   iii) Determine a high resistance by Leakage Method
   iv) To determine Self Inductance of a Coli by Rayleigh's Method.
3. To compare capacitances using De'Sauty's bridge
4. Measurement of field strength B and its variation in a Solenoid (Determine dB/dx).
5. To study the Characteristics of a Series RC Circuit.
6. To study the series LCR circuit and determine its (a) Resonant Frequency (b) Quality Factor.
7. To study a parallel LCR circuit and determine its (acurrent law) Anti-resonant frequency and (b) Quality factor.
8. To determine a Low Resistance by –potentiometer
9. To verify the Thevenin and Norton theorem.
10. To verify the Superposition, and Maximum Power Transfer Theorem.
11. To determine Self-inductance of a given coil by using Anderson's bridge
12. To determine L for two different values by equal voltage method.
13. To determine C for two different values by equal voltage method.

14. Verification of Faraday's laws.
15. To verify the Kirchoff's current law
16. To verify the Kirchoff's voltage law
17. Charging and discharging of capacitor
18. To verify the Reciprocity theorem
19. Assignment-I
20. Assignment –II

Reference Books:

1. Advanced Practical Physics for students, B. L. Flint & H. T. Workshop. 1971. Asia Publishing House.
2. Engineering Practical Physics, S. Panigrahi & B. Mallick, 2015, Cengage, Learning India Pvt. Ltd.
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition. Reprinted 1985. Heinemann Educational Publishers.
4. Practical Physics- C. L. Arora.
5. Practical Physics by Harnam Singh and P. S. Hemne

GOVERNMENT COLLEGE (AUTONOMOUS)-585105
DEPARTMENT OF PHYSICS

Question Paper Pattern For Dsc (Major) Subjects Under State Education Policy (With Effect From 2024-25: (Semester I to VI)

Subject: Physics

Title of The Paper: Semester:

Time: 3 Hours Max. Marks: 80

Section – A	
I Answer any TEN of the following questions	(2x10=20)
1. 2. 3.	From Unit 1
4. 5. 6.	From Unit 2
7. 8. 9.	From Unit 3
10. 11. 12.	From Unit 4
Section – B	
II Answer any SIX of the following questions	(5x6=30)
13. 14.	From Unit 1
15. 16.	From Unit 2
17. 18.	From Unit 3
19. 20.	From Unit 4
Section – C	
II Answer any THREE of the following questions	(10x3=30)
21	From Unit 1
22	From Unit 2
23	From Unit 3
24.	From Unit 4

QUESTION PAPER PATTERN FOR TESTS AND SEMESTER END EXAMINATIONS.

INTERNAL ASSESSMENT TEST

Internal Assessment Test-1 for theory courses

There shall be three questions for ten marks each. Students will have to answer two questions. Questions must be drawn from the first half of the syllabus of the paper giving due weightage to each of the chapters based on the instructional hours allotted to it.

Duration of the test is one hour. Maximum marks 20.

Internal Assessment test 2 for theory courses.

There shall be three questions for ten marks each. Students will have to answer two questions.

Questions must be drawn from the first half of the syllabus of the paper giving due weight-age to each of the chapters based on the instructional hours allotted to it.

Duration of the test is one hour. Maximum marks 20.

Notice: Average of the marks secured in two internal assessment tests will be taken as the final awarded marks in the internal assessment test of the respective theory paper.

Practical Internal Assessment test

There shall be one internal assessment test in each of the practical courses. In the practical test, the students may be asked to perform the experiment or analyze the given experimental data.

Duration of the practical test is 3 hours. Maximum marks 10.

1. a) SEMESTER END EXAMINATIONS.

Question paper pattern for theory courses (DSC and DSE).

There shall be three sections I, II and III in the question paper.		**Marks (MXQ)**
In section I	**There shall be 12 questions of 2 marks each; students will answer any ten questions.**	**2x10=20**
In section II	**There shall be 6 questions of 5 marks each; students will answer any four questions.**	**5x6=30**
In section III	**There shall be 4 questions of 10 marks each; students will answer any three questions.**	**10x3=30**
Note: Equal weightage of marks should be given to all chapters of units from 1-4.		

In case of 40 marks paper (SECs) the question paper pattern is reduced to half of the above mentioned. Project: Dissertation: 30 marks, Viva:10 marks, I.A: 10 marks

Questions must be drawn from the total syllabus of the paper giving due weightage to each of the chapters based on the instructional hours allotted to it.

Examination will be conducted for 3 hours for maximum of 80 marks.

b) Question paper pattern for practical courses

In the semester end practical examination, there shall be one experiment assigned (Picked by the student from the list of the experiments put for the examinations) to each of the students. It will be examined for 40 marks. Distribution of marks for various components in the practical examination is mentioned under scheme of examination.

Laboratory Instructions to Students

1. Measurements and results must be written in SI system only.
2. Required number of experiments in each semester must be performed in order to be eligible for taking semester end examination.
3. After completing all the experiments in the given semester and writing up the Journal students must get certify their Journal by the Head of the Department. The same must be produced in the examination for assessment.

Scheme of Practical Examinations.

Division of marks in practical IA and Practical semester end examinations is detailed below.

Internal Practical Test			Semester End Practical Examination		
No	Item	Max marks	No	Item	Max marks
1	Journal	02	1	Journal	08
2	Circuit diagram / ray diagram/ observations.	02	2	Circuit diagram / ray diagram/ observations.	08
3	Observations Tabular column	02	3	Observations Tabular column	08
4	Experimental skill & procedure	02	4	Experimental skill & procedure	08
5	Graph/calculation/result	02	5	Graph/calculation/result	08
	Total	10		Total	40