

JAYARAJ ANNAPACKIAM COLLEGE FOR WOMEN (AUTONOMOUS)

A Unit of the Sisters of St. Anne of Tiruchirappalli

Accredited with 'A' Grade (3rd Cycle) by NAAC

DST FIST Supported College

Affiliated to Mother Teresa Women's University,

Kodaikanal

**PERIYAKULAM – 625 601, THENI DT.
TAMIL NADU.**



ACADEMIC COUNCIL
DEPARTMENT OF PHYSICS
09.09.2020

PG AND RESEARCH CENTRE OF PHYSICS

U.G. PROGRAMME OUTCOMES

PO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO
1.	Think critically, evaluate analytically and apply the acquired knowledge of their discipline in related scenario.
2.	Formulate hypothesis, design experiments, use appropriate tools and interpret the results.
3.	Demonstrate the precise understanding of the principles and theories of their discipline through experiments.
4.	Enhance the communicative skills and gain confidence to disseminate knowledge through oral/verbal communications effectively at various situations.
5.	Identify the different roles in an organizational structure of the work place and carry out multiple roles in social responsibilities.
6.	Increase self-awareness, set and pursue meaningful goals, and develop positive personal qualities such as self-esteem, positive attitude, self-discipline, and self-motivation.

U.G. PROGRAMME SPECIFIC OUTCOMES

PSO. NO.	UPON COMPLETION OF THIS PROGRAM THE STUDENTS WILL BE ABLE TO	PO MAPPED
1.	Assimilate basic knowledge in general Physics and apply the same in real time situation and Identify the principles of Physics behind the working of modern equipments	PO-1
2.	Apply the underlying concepts and laws of Physics to the physical systems of the universe and its constituents and Formulate, solve and interpret Physics related problems in a systematic way	PO-1
3.	Demonstrate the precise understanding of the theories and principles of Physics through experiments and Lay a foundation to interdisciplinary sciences for higher learning.	PO-1, PO-3
4.	Utilize the acquired knowledge to undertake independent project.	PO-1, PO-2
5.	Imbibe computational and Entrepreneur skills.	PO-1, PO-2

UG COURSE PATTERN - 2020 – 2023 (UGC / TANSCH/ MTU)

Sem.	Part	Code	Title of the Course	Hours	Credit
I	I	20GT1GS01/	Tamil – I	6	3
		20GH1GS01/	Hindi - I		
		20GF1GS01	French – I		
	II	20GE1GS01	English – I	6	3
	III	20PH1MC01	Mechanics and Properties of Matter	6	6
		20PH1CP01	Major Core Practical – 1	3	-
		20MA1AC01	Allied Mathematics – 1	5	4
	IV	20PH1AE01	Ability Enhancement Compulsory Course (AECC)- 1 : Professional English	2	2
		20SE1CE1B	Skill Enhancement Compulsory Course (SECC)- 1 : Computer Education	2	2
	V	20STPNS01/ 20STPNC01/ 20STPPE01	Students Training Programme: National Service Scheme/ National Cadet Corps/ Physical Education	-	-
			Total	30	20
II	I	20GT2GS02	Tamil - II	6	3
		20GH2GS02	Hindi - II		
		20GF2GS02	French – II		
	II	20GE2GS02	English – II	6	3
	III	20PH2MC02	Heat and Thermodynamics	6	6
		20PH2CP01	Major Core Practical - 1	3	3
		20MA2AC02	Allied Mathematics- 2	5	4
	IV	20AE2ES02	Ability Enhancement Compulsory Course (AECC)- 2: Environmental Studies	2	2
		20SE2CB02	Skill Enhancement Compulsory Course (SECC)- 2: Capacity Building	2	2
	V	20STPNS01/ 20STPNC01/ 20STPPE01	Students Training Programme: National Service Scheme/ National Cadet Corps/ Physical Education	-	-
			Total	30	23

Sem.	Part	Code	Title of the Course	Hours	Credit
III	I	20GT3GS03	Tamil - III	6	3
		20GH3GS03	Hindi - III		
		20GF3GS03	French – III		
	II	20GE3GS03	English – III	6	3
	III	20PH3MC03	Optics and Spectroscopy	6	6
		20PH3CP02	Major Core Practical - 2	3	2
		20CH3AC03	Allied Chemistry Theory - 1	3	3
		20CH3AP03	Allied Chemistry Practical - 1	2	1
		20PH3DE1A/ 20PH3DE1B	Discipline Specific Elective - 1 Laser and Fibre Optics/ Geometrical Optics	4	3
	V	20STPNS01/ 20STPNC01/ 20STPPE01	Students Training Programme: National Service Scheme/ National Cadet Corps/ Physical Education	-	-
			Total	30	21
IV	I	20GT4GS04/ 20GH4GS04/ 20GF4GS04	Tamil - IV Hindi - IV French - IV	6	3
	II	20GE4GS04	English – IV	6	3
	III	20PH4MC04	Electromagnetism	6	6
		20PH4CP03	Major Core Practical -3	3	2
		20CH4AC04	Allied Chemistry Theory – 2	3	3
		20CH4AP04	Allied Chemistry Practical – 2	2	1
		20PH4DE2A/ 20PH4DE2B	Discipline Specific Elective - 2 Electricity/ Non-Conventional Energy Sources	4	3
	V	20STPNS01/ 20STPNC01/ 20STPPE01	Students Training Programme: National Service Scheme/ National Cadet Corps/ Physical Education	-	2*
		20SLPEX01	Service Learning Programme - Extension JACEP	-	-
			Total	30	21+2*

Sem.	Part	Code	Title of the Course	Hours	Credit
V	III	20PH5MC05	Atomic and Nuclear Physics	6	6
		20PH5MC06	Mathematical Physics	5	5
		20PH5MC07	Basic Electronics and Communications	5	5
		20PH5CP04	Major Core Practical -4	3	2
		20PH5CP05	Major Core Practical -5	3	2
		Discipline Specific Elective - 3			
		20PH5DE3A/ 20PH5DE3B	Materials Science/ Biophysics	4	3
	IV	Generic Elective - 1 (NME)			
		20PH5GE01/ 20GE5NC01	Astrophysics/ NCC - National Integration and Personality Development	2	2
		20SE5AB03	Skill Enhancement Compulsory Course (SECC) - 3: Aptitude Building	2	2
	V	20SLPEX01	Service Learning Programme - Extension JACEP	-	4*
			Total	30	27+4*
VI	III	20PH6MC08	Theoretical Physics	5	5
		20PH6MC09	Microprocessor	5	5
		20PH6MC10	Digital Electronics	5	5
		20PH6PR01	Project	2	2
		20PH6CP06	Major Core Practical – 6	3	2
		20PH6CP07	Major Core Practical – 7	2+1*	2
		Discipline Specific Elective - 4			
		20PH6DE4A/ 20PH6DE4B	Sound and Energy / Home Electronics	4	3
	IV	Generic Elective - 2 (NME)			
		20PH6GE02/ 20GE6NC02	Digital Photography / NCC - Organization and Health Programme in NCC	2	2
		20SE6PH04	Skill Enhancement Compulsory Course (SECC) - 4: Physics Workshop Skills	2	2
	V	20PH6SS01/ 20PH6SM01	Self-Study Course: Medical Physics and Instrumentation/ MOOCs	-	2*
			Total	30+1*	28+2*
			Total	180+1*	140+8*

* Extra Credits - Self Study Paper, MOOCs

ALLIED CORE COURSE OFFERED BY DEPARTMENT OF PHYSICS

Sem.	Code	Title of the Paper	Hours	Credit
I	20PH1AC01	Allied Physics Theory- I Mechanics, Properties of Matter and Thermal Physics	3	3
	20PH1AP01	Allied Physics Practical - I	2	1
II	20PH2AC02	Allied Physics Theory – II Electricity and Electronics	3	3
	20PH2AP02	Allied Physics Practical - II	2	1
III	20PH3AC01	Allied Physics Theory-I Mechanics, Properties of Matter and Thermal Physics	3	3
	20PH3AP01	Allied Physics Practical - I	2	1
IV	20PH4AC02	Allied Physics Theory - II, Electricity and Electronics	3	3
	20PH4AP02	Allied Physics Practical - II	2	1

CERTIFICATE COURSE

Code	Title of the Course	Hours	Credit
20PH1SD01	Skill Development Programme (SDP) Mobile Technology	60	2

CERTIFICATE COURSE ON GANDHIAN THOUGHT

Code	Title of the Course	Hours	Credit
CCHYGT01	Life of Mahatma Gandhi	60	2
CCHYGT02	Non Violence and Sarvodaya		

CONTINUOUS INTERNAL ASSESSMENT COMPONENT (CIA) THEORY

Component	Marks	Marks
Internal Test I	40	Converted to 25
Internal Test II	40	
Quiz	10	
Assignment	5	
Attendance	5	
Total	100	25

Continuous Internal Assessment Component (CIA)

Practical can be decided by the respective Dept.

PASSING MINIMUM

Semester Examination	
Theory	40% out of 75 Marks (i.e. 30 Marks)
Practical	40% out of 60 Marks (i.e. 24 Marks)

EXTERNAL QUESTION PATTERN

Part – A

10 Questions × 1Mark = 10 Marks

(Two Questions from each Unit)

Part – B

5 Questions × 5 Marks = 25 Marks

(Internal Choice and one set of Question from each Unit)

Part – C

4 Questions × 10 Marks = 40 Marks (4 Questions out of 6)

(Open Choice and atleast one Question from each Unit)

INTERNAL QUESTION PATTERN

Part – A

10 Questions × 1Mark =10 Marks

Part - B

2 Questions × 5 Marks = 10 Marks

(Internal Choice)

Part – C

2 Questions × 10 Marks = 20 Marks (2 Questions out of 3)

(Open Choice and at least one Question from allotted Units)

MECHANICS AND PROPERTIES OF MATTER

Semester: I

Code : 20PH1MC01

Hours: 6

Credits: 6

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Explain the basic principles of force and energy	PSO-1, PSO-2	K, C, An
CO - 2	Analyze the mechanics of rigid bodies and compute the moment of inertia	PSO-2	K, C, An
CO - 3	Express the laws of gravitation and its effects.	PSO-2, PSO-4	K, C, Ap
CO - 4	Experiment the different elastic properties of materials	PSO-2, PSO-3, PSO-4	K, Ap
CO - 5	Illustrate the phenomena of viscosity and surface tension of fluids.	PSO-1, PSO-4	K, An, Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : I		MECHANICS AND PROPERTIES OF MATTER										Hours: 6
Code : 20PH1MC01												Credits: 6
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	4	4	3	2	3	3	4	5	3	4	4	3.54
CO2	5	4	4	3	3	3	4	5	4	3	2	3.63
CO3	5	4	3	4	3	3	4	4	3	3	2	3.45
CO4	4	4	3	4	3	2	4	4	4	3	2	3.36
CO5	4	4	4	4	2	3	3	4	4	2	3	3.18
Overall Mean Score												3.43

Result: The Score for this Course is 3.43 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I: GRAVITATION AND MOMENT OF INERTIA

Newton's law of gravitation – Kepler's laws of planetary motion – Determination of G-Boy's experiment – Gravitational field and gravitational potential – Gravitational potential and field due to a spherical shell – Gravitational potential and field due to a solid sphere – Variation of g with latitude or rotation of the earth – Variation of g with altitude – Variation of g with depth - The compound pendulum.

Perpendicular axes theorem – Theorem of parallel axes – Moment of inertia of a thin circular ring – Moment of inertia of a circular disc– Moment of inertia of a cylinder – M.I. of a hollow cylinder about an axis passing through the Centre and perpendicular to the length of the cylinder – M.I. of a hollow cylinder about its own axis – Moment of inertia of a solid sphere – M.I. of a hollow sphere about its diameter – Determination of the moment of inertia of a fly-wheel. **(18 Hours)**

UNIT II: IMPACT OF ELASTIC BODIES, PROJECTILE MOTION AND MECHANICS OF A RIGID BODY

Impulse of a force –Collision – Oblique impact of a smooth sphere on a fixed smooth plane – Direct impact of two smooth spheres – Loss of K.E. due to direct impact of two smooth spheres – Oblique impact of two smooth spheres – Loss of K.E. due to oblique impact. Range on an inclined plane – Range and time of flight down an inclined plane – Velocity of projection and a given range on the inclined plane for the maximum range – Two-body problem and the reduced mass – Bifilar pendulum-parallel threads – M.I. of a rectangular block.

Moment of inertia of a uniform rod – Moment of inertia of a rectangular lamina – Moment of inertia of an annular ring or disc – Moment of inertia of a spherical shell – Kinetic energy of a rotating body – Moment of inertia of a triangular lamina – Angular momentum – Relation between torque and angular momentum - Angular momentum of a system of particles – Conservation of angular momentum. **(18 Hours)**

UNIT III: SYSTEM OF PARTICLES, CENTRE OF GRAVITY, CENTRE OF PRESSURE AND FRICTION

Centre of mass, motion of Centre of mass, systems with varying mass Centre of gravity of a right solid cone-solid hemisphere-hollow semi sphere -Thrust on a plane surface -Centre of pressure -rectangular lamina, Laws of static friction-experimental method for determining coefficient of friction between two surfaces-equilibrium of a body on a rough inclined plane acted by external force.

(18 Hours)

UNIT IV: ELASTICITY AND VISCOSITY

Different moduli of elasticity – Relation between angle of shear and linear strain – Relation between volume strain and linear strain – Work done in a strain – Behaviour of a wire under progressive tension – Relation between the elastic moduli – Determination of Poisson's ratio ν for rubber – Torsion of a body – Determination of rigidity modulus- Static torsion method – Work done in a twisting a wire - Torsional oscillations of a body - Expressions for the bending moment - Depression of the loaded end of a cantilever – Measurement of E - Oscillations of a cantilever - Depression at the mid-point of a beam loaded at the middle -Uniform bending of a beam - Measurement of Young's modulus by bending of a beam - Searle's method of determining E,G & ν - Konig's method.

Streamline flow and turbulent flow -Poiseuille's formula for the flow of liquid through a capillary tube - Corrections to Poiseuille's formula - Poiseuille's method for determining coefficient of viscosity of a liquid - Ostwald's viscometer— Poiseuille's method for determining coefficient of viscosity - Terminal velocity and Stokes' formula - Stokes' method for the coefficient of viscosity - Variation of viscosity with temperature and pressure – Friction and lubrication. Searle's viscometer – Viscosity of gases – Rankine's method for determination of η of a gas.

(18 Hours)

UNIT V: SURFACE TENSION AND HYDRODYNAMICS

Explanation of surface tension on kinetic theory – Work done in increasing the area of a surface – Work done in blowing a bubble – Forms of liquid drops – Angle of contact – Spreading of one liquid over another – Pressure difference across a liquid surface – Excess pressure inside a curved liquid surface – Force between two plates separated by a thin layer of a liquid – Jaeger's method – Variation of surface tension with temperature – Quincke's method – Vapour pressure over flat and curved surfaces – Determination of S.T. by Ripple's method (Rayleigh's method) – Experimental study of the variation of surface tension with temperature – Drop-weight method of determining the surface tension of a liquid – Experiment to determine the interfacial tension between water and kerosene.

Equation of continuity – Energy of the liquid – Euler's equation for unidirectional flow – Bernoulli's theorem.

(18 Hours)

BOOKS FOR STUDY:

R. Murugesan - Properties of Matter, Fifth Edition (Reprint 2018) – S Chand and Company Limited

DETAILED REFERENCE:

R. Murugesan - Properties of Matter, Fifth Edition (Reprint 2018) – S Chand and Company Limited

UNIT I – Chapter 6, 7

UNIT II –Chapter 8,9, 10

UNIT III –Chapter 19,20,21,22

UNIT IV – Chapter 1, 2

UNIT V – Chapter 3, 4

BOOKS FOR REFERENCE:

1. Mechanics – Prof. D.S Mattur, Revised by: Dr.P.S. Hemne. S. Chand and Co. New Delhi. First edition 1981, Reprint 2015.
2. Properties of Matter – Brij Lal and Subramanyam. Eurasia publishing house (Pvt) Ltd, New Delhi. Sixth Edition 1991.

MAJOR PRACTICAL I

Semester: I & II

Hours: 3 +3

Code : 20PH1CP01& 20PH2CP01

Credits: 3

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Compute the parameters of mechanics and properties of matter through experiential learning.	PSO-1, PSO-2, PSO-3	K, Ap, An
CO - 2	Construct simple electric circuits through different experiments,	PSO-2, PSO-3	K, Ap, An
CO - 3	Verify the fundamental laws of sound.	PSO-1, PSO-2, PSO-3	K, C, Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : I & II						MAJOR PRACTICAL I						Hours: 3+3
Code : 20PH1CP01& 20PH2CP01												Credits: 3
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	4	4	5	3	3	3	4	5	4	3	3	3.71
CO2	3	4	5	3	2	2	4	4	5	3	3	3.45
CO3	3	4	5	3	2	3	3	4	5	3	2	3.72
Overall Mean Score												3.62

Result: The Score for this Course is 3.62 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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LIST OF PRACTICALS (Any 14)

1. Young's Modulus- Uniform Bending - Pin and Microscope.
2. Young's Modulus- Uniform Bending - optic lever- Telescope and Scale method.
3. Young's Modulus- Non Uniform Bending - optic lever- Telescope and Scale method.
4. Young's Modulus- Non Uniform Bending - Pin and Microscope.
5. Torsion Pendulum- Rigidity modulus.
6. Compound Pendulum - Determination of g .
7. Comparison of Capacitances of capacitors using BG
8. Comparison of e.m.f 's two cells using BG
9. Low range Voltmeter Calibration using Potentiometer.
10. Spectrometer- Refractive Index and Dispersive power of the Prism
11. Spectrometer - Normal Incidence and Dispersive power of the grating
12. Determination of frequency by Melde's String apparatus
13. Calibration of Ammeter using Potentiometer.
14. Determination of self-inductance of a coil by Owen's Bridge
15. Determination of co-efficient of Viscosity by Stoke's Method
16. Determination of frequency of AC mains using Sonometer.
17. Determination of self-inductance of a coil by De-Sauty's bridge
18. Determination of surface tension by capillary rise method.

ALLIED PHYSICS THEORY -I

MECHANICS, PROPERTIES OF MATTER AND THERMAL PHYSICS

Semester: I

Hours: 3

Code : 20PH1AC01

Credits: 3

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Explain fundamental laws of gravity and determine 'g'.	PSO- 1, PSO- 2	K, C, Ap
CO - 2	Describe the types of elastic moduli.	PSO- 1, PSO- 2	K, C, An
CO - 3	Discuss the concepts of viscosity and surface tension through experiments.	PSO- 1, PSO-2, PSO- 3	C, Ap, An
CO - 4	Analyze the concepts of conduction, convection, radiation and their applications.	PSO- 1, PSO- 2	K, C, An
CO - 5	Apply Laws of Thermodynamics and concepts of entropy to heat engines.	PSO- 2, PSO- 3, PSO-4	C, Ap, An

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : I		ALLIED PHYSICS THEORY -I MECHANICS, PROPERTIES OF MATTER AND THERMAL PHYSICS										Hours: 3
Code : 20PH1AC01												Credits: 3
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	5	5	5	4	3	3	5	4	4	3	2	3.90
CO2	5	4	5	4	3	2	5	4	3	3	3	3.72
CO3	5	5	3	4	2	3	5	5	4	3	3	3.81
CO4	5	5	4	3	3	2	5	5	5	2	3	3.81
CO5	5	5	3	3	3	2	5	4	5	3	2	3.63
Overall Mean Score												3.77

Result: The Score for this Course is 3.2 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I: GRAVITATION

Kepler's law of planetary motion -Law of gravitation -Boy's method -Compound Pendulum-Expression for period -Experiment to find g -Variation of g with altitude, latitude & depth-Artificial satellites. **(9 Hours)**

UNIT II: ELASTICITY

Elastic modulus- Poisson's ratio – Beams - Determination of Young's modulus by uniform bending - I section girders - Torsion- Expression for couple per unit twist- Work done per unit twist –Torsion pendulum. **(9 Hours)**

UNIT III: VISCOSITY AND SURFACE TENSION

Derivation of Poiseuille's Formula - Poiseuille's method for determining coefficient of viscosity of a liquid - Equation of continuity - Bernoulli's Theorem - Applications of Bernoulli's Theorem - Venturimeter - Pitot Tube - Definition and unit of surface tension - Explanation of surface tension on kinetic theory - forms of liquid drops - angle of contact - Jaeger's method - drop - weight method of determining the surface tension of a liquid. **(9 Hours)**

UNIT IV: CONDUCTION, CONVECTION & RADIATION

Lee's disc method - Analogy of heat flow & current flow - Weidemann - Franz Law- Convection in atmosphere - Lapse rate - stability of atmosphere - Stefan's law - Determination of Stefan's constant - Solar constant - Measurement - Water flow Pyrheliumeter - Temperature of the sun- Solar spectrum - Planck's constant with derivation- derivation of Wein's law & Rayleigh Jeans Law from Planck's Law. **(9 Hours)**

UNIT V: THERMODYNAMICS

Heat Engine- Expression for the efficiency of a Carnot's Engine-Efficiency - Carnot's theorem (statement only) -II Law of Thermodynamics - Entropy - Change of entropy on Carnot's cycle - Change of entropy when ice is converted to steam. **(9 Hours)**

BOOKS FOR STUDY:

1. Mechanics, properties of matter and sound - R. Murugesan - S.Chand Publication - 2006.
2. Properties of matter - R. Murugesan, S. Chand & company Pvt.Ltd - Reprint 2015.
3. Thermal Physics - R. Murugesan - S.Chand Publication -2007.

DETAILED REFERENCE:

1. R. Murugesan – Mechanics, Properties of Matter and sound - S.Chand Publications 2006.

UNIT I: Chapter 3 (all sections)

UNIT II: Chapter 4 (all sections)

UNIT III: Chapter 5 (all sections)

2. Properties of matter - R. Murugesan, S. Chand & company Pvt.Ltd - Reprint 2015.

UNIT III: Chapter 3:3.1, 3.2, 3.5, 3.6, 3.11, 3.17

3. Murugesan - Thermal Physics - S.Chand Publications -2007

UNIT IV: Chapter 3, Chapter 4: 4.1 - 4.4, Chapter 5.

UNIT V: Chapter 7

BOOKS FOR REFERENCE:

1. Mechanics - D.S.Mathur - S. Chand Publications,New Delhi- Reprint-2012.
2. Properties of matter - R. Murugesan - S. Chand Publications,New Delhi- Reprint-2015.
3. Heat, Thermodynamics and Statistical Physics - Brijlal and N. Subramanyam & P.S. Hemne- S.Chand Publications, New Delhi - Reprint - 2014.

ALLIED PRACTICAL - I

Semester: I

Hours: 2

Code : 20PH1AP01

Credit: 1

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Determine the moduli of elasticity through different experiments.	PSO- 1, PSO- 2, PSO- 3	K, C, Ap, An
CO - 2	Determine the parameters of mechanics through experiential learning.	PSO-1, PSO- 2, PSO-3	K, Ap, AN
CO - 3	Perform and verify the fundamental laws of sound.	PSO-2, PSO-3	K, Ap, An

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : I				ALLIED PRACTICAL - I								Hours: 2	
Code : 20PH1AP01												Credits: 1	
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's	
	1	2	3	4	5	6	1	2	3	4	5		
CO1	4	5	5	2	2	2	4	4	5	3	2	3.45	
CO2	4	5	5	2	2	2	4	4	5	3	2	3.45	
CO3	4	5	5	2	2	2	4	4	5	3	2	3.45	
Overall Mean Score												3.45	

Result: The Score for this Course is 3.45 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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LIST OF PRACTICALS (Any Six)

1. Young's Modulus- Uniform Bending - Pin and Microscope.
2. Young's Modulus- Uniform Bending - Optic lever- Telescope and Scale method.
3. Young's Modulus- Non Uniform Bending -Optic Lever- Telescope and Scale method.
4. Young's Modulus- Non Uniform Bending - Pin and Microscope.
5. Torsion Pendulum- Rigidity modulus.
6. Determination of g using Compound Pendulum.
7. Determination of thermal conductivity of a bad conductor - Lee's Disc Method.
8. Determination of co-efficient of Viscosity - Stoke's Method.
9. Verification of Laws by sonometer
10. Determination of surface tension - Drop weight Method.
11. Determination of surface tension - Capillary rise method

PROFESSIONAL ENGLISH

Semester: I

Hours: 2

Code : 20PH1AE01

Credits: 2

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Recognise their own ability to improve their competence in using the language	PSO-1, PSO-4	C,AP, S
CO - 2	Use language for speaking with confidence in an intelligible and acceptable manner	PSO-1, PSO-4, PSO-3, PSO-5	C, AP, E
CO - 3	Read independently unfamiliar texts with comprehension	PSO-2, PSO-3, PSO-5	K,C,AP,E
CO - 4	Understand the importance of reading for life and writing in academic life.	PSO-1, PSO-3, PSO-4, PSO-5	C,AP, E
CO - 5	Write simple sentences without committing error of spelling or grammar	PSO-4	C,E

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : I		PROFESSIONAL ENGLISH										Hours: 2
Code : 20PH1AE01												Credits: 2
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO-1	4	4	4	4	4	4	4	3	4	4	4	3.90
CO-2	3	4	4	4	4	4	4	3	4	4	4	3.81
CO-3	4	3	3	3	4	4	4	4	3	3	4	3.63
CO-4	3	4	4	3	4	4	4	3	3	3	4	3.54
CO-5	3	4	3	3	3	3	3	4	4	4	4	3.45
Overall Mean Score												3.68

Result: The score for this course is 3.68 (High Relationship)

Note:

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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NB: All four skills are taught based on texts/passages.

UNIT I: COMMUNICATION

Listening: Listening to audio text and answering questions - Listening to Instructions

Speaking: Pair work and small group work.

Reading: Comprehension passages –Differentiate between facts and opinion

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT II: DESCRIPTION

Listening: Listening to process description.-Drawing a flow chart.

Speaking: Role play (formal context)

Reading: Skimming/Scanning-

Reading passages on products, equipment and gadgets.

Writing: Process Description –Compare and Contrast

Paragraph-Sentence Definition and Extended definition-Free Writing.

Vocabulary: Register specific -Incorporated into the LSRW tasks.

UNIT III: NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields (Subject specific)

Speaking: Brainstorming.(Mind mapping).

Small group discussions (Subject- Specific)

Reading: Longer Reading text.

Writing: Essay Writing (250 words)

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT IV: PRESENTATION SKILLS

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages

Writing: Writing Recommendations

Interpreting Visuals inputs

Vocabulary: Register specific -Incorporated into the LSRW tasks

UNIT V: CRITICAL THINKING SKILLS

Listening: Listening comprehension- Listening for information.

Speaking: Making presentations (with PPT- practice).

Reading: Comprehension passages –Note making.

Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills)

Writing: Problem and Solution essay– Creative writing –Summary writing

Vocabulary:Register specific - Incorporated into the LSRW tasks

COURSE BOOK:

- *English for Physical Sciences* by Tamil Nadu State Council for Higher Education

INTERNAL ASSESSMENT	
COMPONENTS	MARKS
Test-I	30
Test-II	30
Listening Comprehension	10
Reading Comprehension	10
Language lab (Speaking skills)	10
Assignment	10
Total	100

PROFESSIONAL ENGLISH - 20PH1AE01**QUESTION PATTERN****Time: 1 Hour****Max. Marks: 30**

- | | | |
|------|------------------------------------|----|
| I. | Match the following | 10 |
| | or | |
| | True or False | |
| II. | Writing Definition | 5 |
| | or | |
| | Transcript of a passage | |
| III. | Sketch mind maps for the following | 10 |
| | or | |
| | Essay Writing | |
| IV. | Comprehension on short talks | 5 |
| | or | |
| | Writing Recommendations | |

HEAT AND THERMODYNAMICS

Semester: II

Hours: 6

Code : 20PH2MC02

Credits: 6

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Identify and analyze the behaviour of ideal and real gases	PSO-1, PSO-2	K, C, An
CO - 2	Distinguish various transport phenomena	PSO- 1	K, C
CO - 3	Apply the laws of thermodynamics to heat engines	PSO- 1, PSO-3, PSO-4	K, C, AP
CO - 4	Evaluate entropy changes for various thermodynamic systems	PSO-1, PSO- 3	K, C, An
CO - 5	Derive thermo dynamical relations	PSO- 1, PSO- 2	K, C

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester: II		HEAT AND THERMODYNAMICS										Hours: 6
Code : 20PH2MC02												Credits: 6
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	5	4	3	2	3	3	5	5	4	3	2	3.55
CO2	5	3	3	2	2	2	5	3	3	2	2	2.90
CO3	5	4	3	2	3	2	5	5	5	3	2	3.55
CO4	5	4	4	3	3	2	5	5	3	2	2	3.45
CO5	5	4	4	2	2	2	5	5	5	2	2	3.45
Overall Mean Score												3.38

Result: The Score for this Course is 3.38 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I: BEHAVIOUR OF IDEAL GASES

Kinetic model - Pressure exerted by a gas - RMS speeds of molecules - Boyle's law - Energy per unit volume of a gas - Gas equation - Gas laws - Avogadro's hypothesis - Graham's law of diffusion of gases - RMS velocity as a function of temperature - Degrees of freedom - Maxwell's law of equipartition of energy - Relation between molar specific heats and degrees of freedom - Specific heats of mono, di and polyatomic gas - Experimental and Theoretical agreement of C_p , C_v and γ - Behaviour of specific heats at low temperature - Adiabatic expansion of an ideal gas - Kinetic interpretation of temperature - Change of pressure with height - Application to Atmospheric Physics. **(18 Hours)**

UNIT II: REAL GASES AND TRANSPORT PHENOMENA

Critical Constants - Behaviour of gases at high pressure - Boyle's Temperature - Vander Waal's Equation of state - Constants and Limitations - Critical Co-efficient - Joule Thomson Effect - Porous Plug Experiment - Regenerative Cooling - Joule-Kelvin Effect - Relation between Boyle's Temperature, Temperature of Inversion and Critical Temperature. Viscosity - Effect of Temperature and Pressure - Thermal conductivity - Effect of Temperature and Pressure - Relation with viscosity - Largest thermal conductivity of hydrogen - Diffusion - Effect of Temperature and Pressure - Relation with viscosity. **(18 Hours)**

UNIT III: THERMODYNAMIC SYSTEM

Zeroth law of thermodynamics - Concept of heat - Thermodynamic Equilibrium - Work: A Path Dependent Function - Internal Energy (U) - First law of Thermodynamics - Internal Energy as a State Function - Specific Heats of a Gas - Applications of first law of thermodynamics - Indicator diagram - Work done during an Isothermal and Adiabatic process - Slopes of Adiabatics and Isothermals - Relation between Adiabatic and Isothermal Elasticities - Reversible and Irreversible Process - Heat engines - Definition of Efficiency - Carnot's Cycle - Carnot's Engine and Refrigerator - Co-efficient Performance - Second law of Thermodynamics - Carnot's theorem. **(18 Hours)**

UNIT IV: ENTROPY

Concept of Entropy - Change in Entropy - Adiabatic Process, Reversible and Irreversible Cycles - Principle of Increase of Entropy - Temperature-Entropy diagram - Physical Significance - Entropy of a Perfect Gas and Steam - Kelvin's Thermodynamic Scale of temperature - Size of a degree - Zero of Absolute or Thermodynamic Scale - Identity of Perfect Gas Scale and Absolute Scale - Third law of thermodynamics - Zero point energy - Negative temperature. **(18 Hours)**

UNIT V: THERMODYNAMICAL RELATIONSHIPS

Thermodynamical variables - Extensive and Intensive Variables - Maxwell's thermodynamical equations - Applications - Thermodynamic Potentials - Significance - Relation of Thermodynamical Potentials with their variables - Relations between C_p , C_v and μ - Tds Equations - Clapeyron's Latent Heat Equation - Entropy and the Second law of thermodynamics - Joule-Kelvin Co-efficient - Equilibrium between Liquid and its Vapour - First and Second Order Phase Transitions - Emf of a reversible cell. **(18 Hours)**

BOOK FOR STUDY:

Brijlal, N. Subrahmanyam and P. S. Hemne - Heat, Thermodynamics and Statistical Physics (Reprint 2014) - S. Chand & Company Pvt. Ltd., New Delhi.

DETAILED REFERENCE:

Brijlal, N. Subrahmanyam and P. S. Hemne - Heat, Thermodynamics and Statistical Physics (Reprint 2014) - S. Chand & Company Pvt. Ltd., New Delhi.

UNIT I: Chapter 1: 1.3 to 1.12, 1.18 to 1.27

UNIT II: Chapter 2: 2.4 to 2.13, 2.20 to 2.25, Chapter 3: 3.7 to 3.18

UNIT III: Chapter 4: 4.1 to 4.15, 4.20 to 4.29

UNIT IV: Chapter 5: 5.1 to 5.17

UNIT V: Chapter 6: 6.1 to 6.11, 6.15 to 6.20

BOOKS FOR REFERENCE:

1. D.S. Mathur - Heat and Thermodynamics - Sultan Chand & Sons, New Delhi - 2008.
2. A. K. Saxena and C. M. Tirwari - Heat and Thermodynamics - Alpha science International Ltd, Oxford, United Kingdom - 2014.
3. Sidharth Sharma - Heat and Thermodynamics - Mohit Books International, Central Delhi - 2012.
4. V. N. Dass - Heat and Thermodynamics - Dominant Publishers & Distributors(P) Ltd., New Delhi - 2013.
5. Francis W. Sears and Gerhard L. Salinger - Thermodynamics, Kinetic theory and Statistical Thermodynamics - Narosa Book Distributors, New Delhi - 1998.

ALLIED PHYSICS THEORY - II
ELECTRICITY AND ELECTRONICS

Semester: II

Hours: 3

Code : 20PH2AC02

Credits: 3

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Describe the laws of electrostatics	PSO- 1	K, C
CO - 2	Apply the laws of electricity to a.c bridges for the electrical measurements.	PSO- 1, PSO- 2, PSO- 4	K, C, Ap, An
CO - 3	Explain magnetic effects of alternating currents.	PSO- 1, PSO-3	K, C, Ap
CO - 4	Explain the basic concepts of electronic components.	PSO-1, PSO-2, PSO-3	K, Ap, An
CO - 5	Distinguish various number systems and design logic circuits using gates.	PSO-1, PSO-2	K, C, Ap, An

**RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES
AND PROGRAMME SPECIFIC OUTCOMES**

Semester: II		ALLIED PHYSICS THEORY - II										Hours: 3
Code : 20PH2AC02		ELECTRICITY AND ELECTRONICS										Credits: 3
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	5	5	4	2	2	2	5	4	4	3	2	3.45
CO2	4	5	4	2	2	2	5	4	5	4	2	3.55
CO3	5	4	3	2	2	2	5	4	4	3	2	3.27
CO4	5	5	5	3	2	2	5	4	3	4	2	3.64
CO5	5	4	5	2	2	2	4	5	5	3	2	3.55
Overall Mean Score												3.49

Result: The Score for this Course is 3.49 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I: ELECTROSTATICS

Coulomb's Law - Electric field - Electric field due to point charge - Gauss Law- Applications of Gauss Law - Electric field due to an infinite plane sheet of charge- Field near a charged conducting cylinder - Coulomb's Theorem (Field of charged Conductor) - Potential Difference - Potential at a point due to a point charge Relation between electric field and electric potential - Capacitor - Capacitance of parallel plate capacitor - Partly filled with dielectric slab - Capacitance of the spherical capacitor (outer sphere earthed) - capacitance of the cylindrical capacitor- Energy stored in a charged capacitor-Loss of energy on sharing of Charges between two capacitor. **(9 Hours)**

UNIT II: CURRENT ELECTRICITY

Kirchhoff's laws- Application of Kirchhoff law to Wheatstone's network - Sensitivity of Wheatstone bridge - Wheatstone's network- Determination of the temperature of resistance- Potentiometer- Calibration of ammeter-Calibration of voltmeter (Low range, High range)- Measurement of resistance using potentiometer.

(9 Hours)

UNIT III: MAGNETIC EFFECT OF ELECTRIC CURRENT

Force on a current-carrying conductor in a magnetic field - Torque on a current in a uniform magnetic field - The D' Arsonval moving coil galvanometer (Mirror galvanometer) - Current and voltage sensitivity of a moving coil galvanometer - Moving coil ballistic galvanometer - Measurement of charge sensitivity- Difference between Dead-Beat and ballistic galvanometer - Comparison of emf's of two cells using BG - Comparison of two capacitors using BG

ALTERNATING CURRENT:

EMF generated in a coil rotating in a uniform magnetic field - Mean value of AC- Root mean square value of an AC - Review of subjects - AC circuits containing resistance, Inductance and Capacitance in series (series resonance circuit) - Parallel Resonance Circuit - Comparison between series and parallel resonant circuit - Wattless current - Choke coil. **(9 Hours)**

UNIT IV: ELECTRONICS

Formation of PN junction diode - Forward and reverse biasing of a junction diode -V-I Characteristic of junction diode - Zener Diode - Experiment to study the characteristic to the Zener diode - Light emitting diode - Bridge Rectifier - Filter circuits- π -section Filter - Transistor - Working of an NPN Transistor - Common emitter configuration - Characteristics of transistor (CE mode) - Transistor biasing - CE transistor amplifier - Hartley Oscillator - Operational amplifier - Characteristic of an OP AMP - The common mode rejection ratio - Slew Rate - Virtual Earth - Inverting Amplifier - Non inverting amplifier - Adder or summing amplifier - Difference amplifier or subtractor. **(9 Hours)**

UNIT V: NUMBER SYSTEM AND CODES

Decimal number system - Binary number system - Conversion of binary number into decimal number - Conversion of decimal number into binary number - Binary Addition, Subtraction.

LOGIC CIRCUITS

Boolean algebra - Digital logic gates - NOT Gate (Inverter) - OR Gate - AND Gate, NOR Gate - NOR gates in a universal gates - NAND gates in a universal gates -NOT Gate exclusive OR Gate. **(9 Hours)**

BOOK FOR STUDY:

R. Murugesan - Electricity & Electronics - 2016.

DETAILED REFERENCE:

R. Murugesan - Electricity & Electronics - 2016.

UNIT I: Chapter-1 (All sections)

UNIT II: Chapter-2 (All sections)

UNIT III: Chapter-3 (All sections)

UNIT IV: Chapter-4 : 4.1- 4.15, 4.17 – 4.25

UNIT V: Chapter-5 All sections

BOOKS FOR REFERENCE:

1. R. Murugesan - Electricity and Magnetism - S. Chand Company, New Delhi - 2013.
2. V. K. Mehta - Principle of Electronics, 11th edition - S. Chand & Company, New Delhi - 2012.

ALLIED PHYSICS PRACTICAL – II

Semester: II

Hours: 2

Code : 20PH2AP02

Credit: 1

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Construct logic circuits using discrete components and IC's.	PSO-1, PSO-2, PSO- 4	K, C, Ap
CO - 2	Verify Boolean laws	PSO-1, PSO-2	K, Ap, An
CO - 3	Construct adder and subtractor circuits using IC's.	PSO- 1, PSO-2	K, Ap, An

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester: II		ALLIED PHYSICS PRACTICAL – II										Hours: 2
Code : 20PH2AP02												Credits: 1
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO1	4	5	5	2	2	2	4	4	5	3	2	3.45
CO2	4	5	5	2	2	2	4	4	5	3	2	3.45
CO3	4	5	5	2	2	2	4	4	5	3	2	3.45
Overall Mean Score												3.45

Result: The Score for this Course is 3.45 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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LIST OF PRACTICALS (Any Six)

1. Construction of AND, OR, NOT - Using discrete components.
2. Construction of AND, OR, NOT - Using IC 74 Series.
3. Construction of NAND, NOR - Using IC.
4. AC – Frequency Sonometer.
5. Construct AND, OR, NOT gates using universal Gates.
6. Study of frequency response of LCR Series Circuit.
7. Characteristics of Zener Diode
8. Verification of Boolean theorems.
9. Construction and verification of Half adder and Half Subtractor.

**ENVIRONMENTAL STUDIES
PROGRAMME OUTCOMES**

PO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO
1.	Endow with in-depth knowledge, analyze and apply the understanding of their discipline for the betterment of self and society.
2.	Synthesize ideas from various disciplines, enhance the interdisciplinary knowledge and extend it for research.
3.	Gain confidence and skills to communicate orally/ verbally in research platforms and state a clear research finding.
4.	Develop problem solving and computational skills and gain confidence to appear for the competitive examinations.
5.	Enhance knowledge regarding research by accumulating practical knowledge in specific areas of research.
6.	Achieve idealistic goals and enrich the values to tackle the societal challenges.

PSO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PO MAPPED
1.	Assess the scope and importance of environmental studies and need for public awareness	PO1,2,3
2.	Develop deeper understanding in classification of resources	PO 1,2,5
3.	Analyse the concept of an eco system	PO1,2,4,6
4.	Comprehend the definitions, causes and control measures of environmental pollutions	P O 1 ,5
5.	Participate in the environmental issues programmes from the unsustainable to sustainable development	PO 1 , 4,5,6

ENVIRONMENTAL STUDIES

Semester: II

Hours: 2

Code : 20AE2ES02

Credits: 2

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO - 1	Recall the components of our planet earth.	PSO 1,2,4	K, A ,S
CO - 2	Elucidate the importance of the natural resources.	PSO 2,3,5	K, An, E
CO - 3	Summarise the energy status of the environment.	PSO1,2,5	K,A,An
CO - 4	Acquire knowledge on the conservation of our environment.	PSO1,4,5	K,AP,S
CO - 5	Analyse the significance of water and climate towards sustainable development.	PSO 2,3,5	K,An, Ap, S,E

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester: II		ENVIRONMENTAL STUDIES										Hours: 2
Code : 20AE2ES02												Credits: 2
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO - 1	4	4	3	4	3	4	5	4	5	4	5	4.09
CO - 2	3	4	3	4	3	4	5	4	4	4	4	3.81
CO - 3	3	4	3	4	3	4	5	4	4	4	4	3.81
CO - 4	3	4	3	4	3	3	5	4	5	5	4	3.90
CO - 5	4	4	3	4	3	4	5	4	4	4	5	4.00
Overall Mean Score for COs												3.92

Result: The Score for this Course is 3.92 (High Relationship)

Note:

Mapping	1 - 20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I: MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance - Need for public awareness **(2 Hours)**

UNIT II: NATURAL RESOURCES

Classification of Resources: Renewable and non - renewable resources - Forest resources, water resources, mineral resources, food resources, energy resources, Land resources - associated problems; Role of an individual in conservation of natural resources - Equitable use of sources for sustainable life styles. **(8 Hours)**

UNIT III: ECOSYSTEMS

Concept of an ecosystem - Structure and function of an ecosystem - producers, consumers and decomposers - Energy flow in the ecosystem - Food chains, food webs and ecological pyramids - Introduction, types, characteristic features, structure and function of the following Eco system: Forest, grass land, desert and aquatic. **(6 Hours)**

UNIT IV: ENVIRONMENTAL POLLUTION

Definition, Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste management, Role of an individual in prevention of pollution. **(8 Hours)**

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENTS

From unsustainable to sustainable development - Urban problems related to energy Water conservation, rain water harvesting, water shed management, Resettlement and rehabilitation of people, its problem and concerns, case studies, Environmental ethics, Climate change, global warming, acid rain and ozone layer depletion, nuclear accidents and holocaust, case studies. Waste land reclamation. Environmental protection act, air act, water act, wild life protection act. **(6 Hours)**

FIELD WORK

Visit to local area to document environmental assets- river/forest/ grassland/hill/ mountain.

COURSE BOOK:

Murugesan, R., (2007). Environmental science and Engineering, Millenium publication, Madurai.

UNIT I : Section - 1.1 & 1.2

UNIT II : Section - 1.3 to 1.37

UNIT III : Section - 2.1 to 2.7 & 2.10 to 2.27

UNIT IV : Section - 3.1 to 3.37

UNIT V : Section - 4.1 to 4.17

Note: Tamil Version for Tamil Literature and History Tamil Medium Students.

Continuous Internal Assessment Component (CIA)

Theory:

Component	Marks
Internal test I	40
Internal test II	40
Quiz	10
Assignment	5
Attendance	5
Total	100

Continuous Internal Assessment Component (CIA)

Passing Minimum: 40% out of 100

Internal Question Pattern

Part - A

10 Questions × 1Mark =10 Marks

Part - B

2 Questions × 5 Marks = 10 Marks

(Internal Choice)

Part - C

2 Questions × 10 Marks = 20 Marks (2 Questions out of 3)

(Open Choice and atleast one Question from allotted Units)

SKILL ENHANCEMENT COMPULSORY COURSE (SECC -2)
CAPACITY BUILDING
PROGRAMME OUTCOMES

PO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO
1.	Fix healthy attitudes and standards to face the outside world.
2.	Develop healthy interpersonal, intrapersonal and social relationships.
3.	Analyze the portrayal of social issues depicted in films that help them aware of the issues and figure out ways to eliminate them.
4.	Identify the role of social media in the present scenario and adopt the positive changes.
5.	Build up qualities like team work, leadership and problem solving
6.	Improve perspectives on positive thinking, team work, and creativity

PROGRAMME SPECIFIC OUTCOMES

PSO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO	PO MAPPED
1.	Develop positive thinking that helps them to set and pursue for meaningful goals.	PO-1, 6
2.	Develop leadership qualities that lead them to inspire and guide people among peer groups and in workplaces.	PO-1, 2, 3, 6
3.	Assess the advantages and disadvantages of social media.	PO-2, 6
4.	Acquiring trade skills by developing social relationships effectively with trade experts.	PO-2,5,6
5.	Understand the portrayal of social causes in films	PO-3

CAPACITY BUILDING

Semester: II

Hours: 2

Code : 20SE2CB02

Credit: 2

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO – 1	Realised the importance of physical health, emotional well-being, and stress management.	PSO-1	K
CO – 2	Apply the features of team work and strive to become good leaders.	PSO-2,4	Ap
CO – 3	Enhance their awareness on social media and e- learning.	PSO-3	Sy
CO - 4	Develop interactive skills in online trade, and become value based professionals.	PSO-4	Ap
CO - 5	Acquire film making skills.	PSO-5	Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Semester : II		CAPACITY BUILDING										Hours: 2
Code : 20SE2CB02												Credits: 2
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO-1	4	4	4	4	4	5	4	4	5	4	4	4.18
CO-2	4	4	5	4	4	4	4	4	4	4	4	4.09
CO-3	4	3	4	4	4	3	4	4	4	4	4	3.81
CO-4	5	4	4	4	4	3	4	4	5	4	3	4
CO-5	4	4	5	4	4	4	3	4	4	4	4	4
Overall Mean Score												4.01

Result: The score for this course is 4.01 (Very high)

Note:

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I

Positive thinking-Seven steps in dealing with doubts. Traits of positive thinking. Goal setting-techniques of positive thinking to achieve the goals-creativity and components of creativity (6 Hours)

UNIT II

Leadership - Types of Leadership - Team work and public speaking - Importance of maintaining good interpersonal relationship with Team - Motivation - Self confidence - Attitude - Working in Group - Time Management - Effective Planning. (6 Hours)

UNIT III

Skilful usage of Social media (Whatsapp, Twitter, Facebook, Instagram, other app). Cyber bullying, photo, video morphing & editing, fake news. Useful study apps, e learning apps, Health, Police, Lawyer help app, Social issues complaint app. (6 Hours)

UNIT IV

Online interaction with Experts – Mushroom Cultivation – Mrs. Arthi (Batlagundu) –Apiculture –Mrs. Josephine (Madurai), Garment making – Mr. Alagusundaram (Tirupur) - Terrace Garden – Mrs. Megala – (Madurai) – Spirulina Cultivation - D. Aarthi (Madurai) – Antenna Foundation, (Madurai) (6 Hours)

UNIT V

Film Review: Thani Oruvan , Peranmai, Dhangal, 36 Vayadhinile, Kaatrin Mozhi, Ratchasi, English Vinglish - Short Film Making–Submission of Short Film. (6 Hours)

BOOKS FOR REFERENCE:

1. Power of positive thinking, Mile, D.J.Rohan Book Company Delhi, 2004.
2. Dolmans 1922, A Handbook Public Speaking 1922, New York, Harcourt Brearee and company.
1. <http://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/positive-thinking/art-20043950>.
2. <http://mayoclinic.org/healthy-lifestyle/stress-management/in-depth/3-simple-strategies-to-help-you-focus-and-de-stress/art-20390057>.
3. <http://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/3-ways-to-become-more-stress-resilient/art-20267213>
4. <http://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/3-ways-to-learn-patience-and-amp-up-your-well-being/art-20390072>
5. <http://www.mayoclinic.org/4-proven-ways-you-can-feel-happier/art-20390079>
6. <http://mayoclinic.org/healthy-lifestyle/adult-health/in-depth/anger-management/art-20048149>
7. <http://www.gaiam.com/blogs/discover/positive-thinking-strategies-to-help-you-achieve-yourgoals#:~:text=Focus%20on%20what's%20of%20old%20failures>.

8. <http://www.linkedin.com/pulse/what-makes-positive-attitude-10-components-gary>
9. <http://ifflab.org/how-to-prevent-cyber-bullying-anti-cyber-bullying-law-in-india/>
10. <http://www.sciencedaily.com/terms/morphing.htm#:text=Morphing%20is%20special%20effect,little%20instruction%20from%20the%20user.>
11. <http://www.educationalappstore.com/>
12. <http://www.mobihealthnews.com/37340/38-more-health-and-wellness-apps-that-connect-to-apples-healthkit>
13. <http://www.youtube.com/watch?v=skfqt9mm7j4>
14. <http://www.youtube.com/watch?v=rvy44i-ciE>
15. <https://www.youtube.com.com/watch?v=rINOELMCiqc>
16. <http://www.youtube.com/watch?v=N5R-KCWPzr0&list=PLHw83ZMxtQ9NdRd5yAxYrxkRsqcqvwaie@index=3>
17. <http://www.youtube.com/watch?v=PUzaLjSjERE>
18. <http://www.youtube.com/watch?v=QkVue8XmVr8>
19. <http://www.youtube.com/watch?v=XcRs4JBN43o>
20. <http://www.youtube.com/watch?v=dzvpQG-2xC4>

Continuous Internal Assessment Component (CIA)

Theory:

Component	Marks
Internal test I	40
Internal test II	40
Quiz	10
Assignment	5
Attendance	5
Total	100

Continuous Internal Assessment Component (CIA)

Passing Minimum: 40% out of 100

Internal Question Pattern

Part - A

10 Questions × 1Mark =10 Marks

Part - B

2 Questions × 5 Marks = 10 Marks
(Internal Choice)

Part - C

2 Questions × 10 Marks = 20 Marks (2 Questions out of 3)
(Open Choice and atleast one Question from allotted Units)

STREAM - B

COMPUTER EDUCATION

(for B.Sc. Mathematics, Physics and Chemistry programmes)

Semester: I

Hours: 2

Code : 20SE1CE1B

Credits: 2

COURSE OUTCOMES:

- ❖ Handle the tools of MS office
- ❖ Create animations, presentations and documents
- ❖ Prepare spreadsheets using MS Excel for various applications
- ❖ Develop computational skills and apply Google Apps for ICT learning
- ❖ Use DTP skills to become an Entrepreneur.

MICROSOFT OFFICE 2017

MS WORD:(Word processing software)

1. Formatting
2. Table Creation
3. Mail Merge
4. Preparation of advertisement using drawing tool

MS EXCEL:(Electronic spread sheets)

1. Excel Function (statistical)
2. Data filtering and sorting
3. Mark sheet, pay bill Preparation
4. Data analysis using chart

MS POWERPOINT:(Presetation)

1. Theme - based presentation with Animation Effects
2. PPT Record Narration

Mobile APPLICATIONS I:

1. Gmail
2. Cloud based callendar, mail
3. Google docs
4. Google groups

MOBILE APPLICATIONS II:

1. E books
2. Video chat, online chat
3. Cloud storage
4. Form creation
5. Assistant

COURSE BOOK:

Study Material prepared by Mathematics, Physics and Chemistry.

BOOKS FOR REFERENCE:

1. D. P. Nagpal - Computer Fundamentals - S. Chand & Company Ltd, New Delhi - 1999.
2. V. Rajaraman - Fundamentals of Computers, 3rd edition - Prentice Hall of India Private Limited - 2001.
3. B. Ram - Computer Fundamentals, 3rd edition - New Age International Pvt. Ltd – 2010
4. Web resources

NATIONAL CADET CORPS

NON MAJOR ELECTIVE

Sem.	Part	Code	Title of Paper	Hours	Credits
V	IV	20GE5NC01	NCC - National Integration and Personality Development	2	2
VI	IV	20GE6NC02	NCC- Organization and Health Programme in NCC	2	2

INTERNAL COMPONENTS

Internal - I	:	30 marks
Internal - II	:	30 marks
Component - I	:	10 marks
Component - II	:	10 marks
Component - III	:	10 marks
Component - IV	:	10 marks
Total	:	100 marks

NATIONAL INTEGRATION AND PERSONALITY DEVELOPMENT

Semester: V

Hours: 2

Code : 20GE5NC01

Credits: 2

UNIT I: NATIONAL INTEGRATION

Motto of National Integration - Importance of National Integration Culture and heritage of Tamil Nadu. **(6 Hours)**

UNIT II: CIVIL AFFAIRS

Aim of aid to civil authority - Role of NCC Cadets during natural calamities - Types of disaster - Essential services during natural calamities **(6 Hours)**

UNIT III: CIVIL DEFENCE AND SELF DEFENCE

Civil Defence - Organization - Aims and services - Aid to Civil authorities in emergency - Self Defence -Aims of Self Defence - Women and Self Defence **(6 Hours)**

UNI IV: LEADERSHIP AND PERSONALITY DEVELOPMENT

Leadership - Types and traits - Man Management in NCC - Duties of a Good Citizen - Role of Youth in Nation Building - Morale - Factors which affect morale - Factors which develop high morale Personality Development - Factor influencing Personality-Time Management . **(6 Hours)**

UNIT V: SOFT SKILLS

Soft skills - interview skill - influencing skill - social skill - communication skill - self motivation - self esteem - body language. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC**, Kanti Prakashan, Etawah, 2000.

ORGANIZATION AND HEALTH PROGRAMME IN NCC

Semester: VI

Hours: 2

Code : 20GE6NC02

Credits: 2

UNIT I: INDIAN MILITARY AND NCC ORGANIZATION

History of Indian Military - Paramilitary forces - BSF- CRPF and CISF - NCC Organization and History - Aims and Objectives of NCC - Motto of NCC - DG's Four Cardinal Principles of NCC - NCC Song- Ranks in Army, Air force and Navy - Certificate Examination in NCC- Honours and Awards. **(6 Hours)**

UNIT II: MAP READING

Map and its features - kinds of north - Service protractor and Compass-bearing - Conversion of bearings - Conventional signs - Setting of map - Finding own position - Map to ground - Ground to map - Night March chart. **(6 Hours)**

UNIT III: HYGIENE AND SANITATION

Personal Hygiene - Sanitation - Methods of purification of drinking water -Latrine types - Urinal Types. **(6 Hours)**

UNIT IV: TYPES OF DISEASE AND POLLUTION

Define Health - Types of Health - Communicable and Non communicable Disease - Pollution and its type. **(6 Hours)**

UNIT V: FIRST AID

Aims of First Aid - Principle of First Aid - Motto of First Aid - List of items in First aid Box - Types of Bandages - Types of Fracture - Dislocation - Types of Wounds - Burns and Scalds - Sprain - Strain - Asphyxia - Drowning - Poison - Shock - Snake bite - Sun and Heat Stroke - Insect bite - Dog bite - Hanging - Artificial Respiration - Haemorrhage. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC**, Kanti Prakashan, Etawah, 2000.

INTERNAL QUESTION PATTERN

Time: 2 hours

Marks: 30

PART - A

Answer Any 4 out of five

$4 \times 2 = 8$

PART- B

Two either or questions (one from each)

$2 \times 4 = 8$

PART - C

Two either or questions (one from each)

$2 \times 7 = 14$

DEPARTMENT OF PHYSICAL EDUCATION

COURSE PATTERN

(PART V)

Sem.	Code	Title of the Paper	Hours	Credits
I & II	20STPPE01	Yoga and Rhythmic Activities	120	-
III & IV		Fundamentals of Physical Education	120	1
		Total	240	1

YOGA AND RHYTHMIC ACTIVITIES

Semester: I & II

Hours: 120

Code : 20STPPE01

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	COGNITIVE LEVEL
1.	Recall the principle of Asnas	K
2.	Classify Pranayama for different needs	C
3.	Appraise the application and effects of Suryanamaskar for human wellness	An
4.	Execute the techniques in Free Hand Exercise	Ap
5.	Construct Pyramids based on the underlying principles	S

UNIT I: ASNAS

Sitting Postures - Standing Posture - Prone Posture - Supine Postures.

(24 hours)

UNIT II: PRANAYAMA

Pranayama - Suga Pranayama - Chandra bethana - Nadi Sudhi - Ujjayee - Seethali - Seethakari - Brahmari.

(24 hours)

UNIT III: SURYANAMASKAR

Suryanamaskar: 12 Postures - 12 Postures & Breathe consioius - 12 Postures With manthra - Relaxation Techniques.

(24 hours)

UNIT IV: CALLISTHENICS (FREE HAND EXERCISE)

Standing series - Bending series - Sitting series - Twisting series - Dumb - bells - Indian Clubs - Lezium - Hoops.

(24 hours)

UNIT V: AEROBICS & PYRAMIDS

Aerobics: Aerobic Basics - Aerobic Movements - Aerobic With Rhythm - Aerobic Programme Pyramids: Basics of Pyramids - Types of Pyramids.

(24 hours)

BOOKS FOR REFERENCE:

1. Wuest Jeborah,A and Charles A. Bucher (1987), 'Foundation of Physical Education, B.I Publication Pvt.Ltd., New Delhi.
2. Elangovan.R, (2002), 'Utarkalvi Oru Arimugam', Ashwin Publication, Triunelveli.
3. Chandrasekaran.K, (1999), 'Sound Health through Yoga, Prem Kalyan Publication, Sedapatti.
4. Iyengar, B.K.S,'Lights on Yoga', Unwin Hyman Company, London

FUNDAMENTALS OF PHYSICAL EDUCATION

Semester: III & IV

Hours: 120

Code : 20STPPE01

Credits: 1

COURSE OUTCOMES:

CO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	COGNITIVE LEVEL
1.	Familiarize the fundamentals of Physical Education	K
2.	Illustrate different rules for different games and athletic events	C
3.	Examines the need for good nutrition	Ap
4.	Synthesis the relation between hygiene and health	S
5.	Apply the first aid techniques	Ap

UNIT I: PHYSICAL EDUCATION

Definition, need, scope, aims and objectives of physical education. **(24 hours)**

UNIT II: GAMES AND ATHLETEIC EVENTS

History of Games: Basketball, Volley Ball, Kho-Kho, Kabaddi, Badminton and Ball Badminton - Rules and regulation of the Games and Athletic Events. **(24 hours)**

UNIT III: NUTRITION

Balanced Diet, Daily Energy Requirement, Nutrient Balance, Nutrition Intake, Diet and Competition, Nutritional Tips, Your Ideal Weight. **(24 hours)**

UNIT IV: HEALTH EDUCATION

Meaning of health education, Definition of health education, Personal Hygiene, Communicable Diseases **(24 hours)**

UNIT V: FIRST AID

First Aid: Injuries to bones and Muscles, Sprain, Strain, Muscle Cramp and joints Dislocation and Fractures Snake-bite, Dog bite Poisoning, Artificial Respiration, (Drowning) **(24 hours)**

BOOKS FOR REFERENCE:

1. Sathyanesan, R.C., 'Hand Broken Physical Education, 'Gheena Publishers, Madurai.
2. Thirunarayanan,C and Hariharan,s, 'Analytical History of physical Education 'South India Press, Karaikudi.
3. St. John Ambulance Association, 'First Aid to the Injured' New Delhi.
4. Prabhakar Eric, (1995), 'The way to Atheletic Gold', Affiliated East West Pvt. Ltd., New Delhi.

SCHEME OF EVALUATION

1.	Summative Examination (2 hours)	:	40 marks
2.	Continuous Internal Assessment	:	60 marks
	Total	:	100 marks

SCHEME OF EVALUATION FOR CONTINUOUS INTERNAL ASSESSMENT

1.	Attendance (240 hrs)				
	❖ Theory Class	:	120 hrs	:	20 marks
	❖ Games	:	60 hrs		
	❖ Field Work	:	60 hrs		
2.	Performance in any one Game	:			10 marks
3.	Performance in any one of Athletic event	:			10 marks
4.	Performance in Yoga / Rhythmic activities	:			10 marks
5.	Assignment	:			10 marks
	Total	:			60 marks

QUESTION PATTERN FOR SUMMATIVE EXAMINATION

Total marks: 40

Time: 2 hours

SECTION - A

Answer All Questions (5x1=5)
(Choose the best Answer)

SECTION - B

Answer any four questions (4x2=8)
(Four question out of six)

SECTION - C

Answer any Four out of Six questions (4x5=20)
(Four question out of six)

SECTION - D

Answer any one question (1x7=7)
(One question out of two)

CERTIFICATE COURSE ON GANDHIAN THOUGHT

PROGRAMME OUTCOMES

PO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO
1.	Think critically, evaluate analytically and apply the acquired knowledge of their discipline in related scenario.
2.	Formulate hypothesis, design experiments, use appropriate tools and interpret the results.
3.	Demonstrate the precise understanding of the principles and theories of their discipline through experiments.
4.	Enhance the communicative skills and gain confidence to disseminate knowledge through oral/verbal communications effectively at various situations.
5.	Identify the different roles in an organizational structure of the work place and carry out multiple roles in social responsibilities.
6.	Increase self-awareness, set and pursue meaningful goals, and develop positive personal qualities such as self-esteem, positive attitude, self-discipline and self-motivation.

PROGRAMME SPECIFIC OUTCOMES

PSO. NO.	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PO MAPPED
PSO - 1	Analyse the social, political, economic, cultural and religious conditions of the various dynasties of India, British India, Indian Constitution, Indian Administration and Indian Economy to acquire the special skill in the field of administration.	PO- 1, PO-2, PO-4
PSO - 2	Evaluate the History of World Civilizations and Europe in the world politics and compare the various types of constitution and the constitutional development in England.	PO- 1, PO-2
PSO - 3	Get knowledge on the principles of Economics, functions of banking system, development of Science and Technology, Tourism, the importance of Human Rights and equip with computer knowledge and applications for all competitive examinations.	PO- 1, PO-4, PO-5
PSO - 4	Recognize the sacrifice of the freedom fighters in the National Movement and picturize the traditional values in the right perception on Women Studies and Women Entrepreneurship.	PO- 1, PO- 5, PO- 6
PSO - 5	Participate in discussions by listening to others perspectives, asking productive questions, articulating original ideas, correspond efficiently with good vocabulary, realize the need of historical research and excel in General Studies for Competitive Examinations.	PO- 2, PO- 5, PO- 6

PAPER I: LIFE OF MAHATMA GANDHI - CCHYGT01

Code: CCHYGT01

Hours: 1

Credit: 1

COURSE OUTCOMES:

CO. NO	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO- 1	Gain Knowledge on the Early Life of Mahatma Gandhi	PSO - 5	K
CO-2	Analyse the racial equality and Mahatma Gandhi's Experience in South Africa	PSO - 5	An
CO-3	Explain the role of Mahatma Gandhi in Indian Freedom Struggle	PSO - 2	Ap
CO-4	Assess the constructive works of Mahatma Gandhi in Indian Nationalism	PSO - 2	Ap
CO-5	Discuss the major Incidents from the Life of Mahatma Gandhi	PSO - 5	Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

		PAPER I: LIFE OF MAHATMA GANDHI - CCHYGT01										Hours: 1
Code: CCHYGT01		CCHYGT01										Credits: 1
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO - 1	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 2	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 3	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 4	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 5	5	5	5	5	5	5	4	5	4	3	3	4.45
Overall Mean Score												4.45

Result: The score for this course is High

Note:

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos= $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I

Family background and beginnings of the Mahatma - Birth and childhood - Education and family life - lessons learned - The London Experience

UNIT II

Making of the Mahatma: Gandhi in South Africa - From a barrister to a people's leader - Towards racial equality - From family life to ashram life - Birth of Satyagraha and constructive work - experiments with truth

UNIT III

Beginnings of Indian Freedom Struggle: Early resistances and 1857 Revolt - Birth of Indian National Congress: Moderates, Extremists and Terrorists - Gandhi leads the nation in a new direction - Early micro satyagrahas

UNIT IV

Mahatma Gandhi leads the Freedom struggle to victory: Major satyagrahas - Constructive Work - Sabarmathi and Sevagram - Various currents of Indian Nationalism - Towards partition and freedom - The final martyrdom

UNIT V

Video shows on Gandhi - Field and life experiences - Incidents from the life of Gandhi that inspired and shaped your life.

PAPER II: NON VIOLENCE AND SARVODAYA - CCHYGT02

Code: CCHYGT02

Hours: 1

Credit: 1

COURSE OUTCOMES:

CO. NO	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO- 1	Gain Knowledge on Mahatma Gandhi's Non - violence	PSO - 5	As
CO-2	Discuss the Policies of Mahatma Gandhi on Truth and Action	PSO - 5	An
CO-3	Analyse Sarvodaya and Antyodaya	PSO - 5	K
CO-4	Assess the values introduced through Brahmacharya and Aparigraha	PSO - 5	Ap
CO-5	Relate violence and Truth in our day today life with the teachings of Gandhiji	PSO - 2	Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Code: CCHYGT02		PAPER II: NON VIOLENCE AND SARVODAYA - CCHYGT02										Hours: 1	
												Credits: 1	
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's	
	1	2	3	4	5	6	1	2	3	4	5		
CO - 1	5	5	5	5	5	5	4	5	4	3	3	4.45	
CO - 2	5	5	5	5	5	5	4	5	4	3	3	4.45	
CO - 3	5	5	5	5	5	5	4	5	4	3	3	4.45	
CO - 4	5	5	5	5	5	5	4	5	4	3	3	4.45	
CO - 5	5	5	5	5	5	5	4	5	4	3	3	4.45	
Overall Mean Score												4.45	

Result: The score for this course is High

Note:

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos= $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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UNIT I

Meaning of Nonviolence (*ahimsa*): Nonkilling and noninjuring - Love, service and forgiving - Nonviolent Action: Peaceful resolution of conflict, nonviolent life style & constructive work and Satyagraha - Nonviolent values and ethics

UNIT II

Truth: Absolute and Relative - Moving beyond falsehood, errors and mistakes - Truth and pluralism - Truth and action - Truth and Nonviolence

UNIT III

Sarvodaya (welfare of all at all levels) and Antyodaya (welfare of the last first) - Means and Ends - Removal of untouchability - Communal Harmony - Uplift of Women

UNIT IV

Removal of poverty: Full & total appropriate employment - Self-dependence, Self-reliance, Swaraj and Swadeshi (love thy neighbour) - Self-control and Sublimation (*brahmacharya*) - Simple and Ethical living - *Aparigraha* (nonpossession) and Trusteeship (stewardship) - Appropriate and Holistic Science and Technology.

UNIT V

Place of Nonviolence and truth in our day to-day life and ways to enhance them - learn and practice three skills which would enhance your self-reliance and ability to help (serve) others in need - Resolve conflicts peacefully - Experience inter-religious relationships, dialogue and prayers.

RECOMMENDED BOOKS

PAPER I

Mahatma Gandhi	:	An Autobiography சத்திய சோதனை
R. Nanda	:	Mahatma Gandhi - A Biography
டி.டி. திருமலை	:	காந்தி
கல்கி	:	மாந்தருள் ஒரு தெய்வம்
திரு.வி.க.	:	காந்தியடிகளும் மனித வாழ்க்கையும்
ஜெயகாந்தன்	:	வாழ்விக்க வந்த காந்தி
J.B. Kriplani	:	Gandhi His Life and Thought
லூயி பிஷர்	:	மகாத்மா காந்தி
Louis Fischer	:	The Life of Mahatma Gandhi
பா. ஆனந்தி, மங்களவதி கேப்ரியல் &	:	காந்திய சிந்தனை வினா-விடை
வி.ஏ. வித்யா	:	(Gandhian Thought Quiz)
சி. பெரிதாய் & பா. ஆனந்தி	:	மகாத்மா காந்தியடிகளின் காலம்

PAPER II

M.K. Gandhi	:	Sarvodaya
_____	:	Nonviolence in Peace and War (2 Vols)
_____	:	Truth is God
Richard B. Gregg	:	Power of Nonviolence
மு. வசந்தா (பதி.)	:	சர்வோதயம்
R.R. Diwakar	:	The Saga of Satyagraha
ச. செயப்பிரகாசம்	:	அகிம்சை

COURSE BOOK:

மகாத்மா காந்தியின் வாழ்வும் அறவியலும் - டாக்டர் பா. ஆனந்தி & டாக்டர் ச. செயப்பிரகாசம்
Life and Values of Mahatma Gandhi - Dr. B. Ananthi & Dr. S. Jeyapragasam

தாள் I - மகாத்மா காந்தியின் வாழ்வு - CCHYGT01

Code: CCHYGT01

Hours: 1

Credit: 1

COURSE OUTCOMES:

CO. NO	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO- 1	Gain Knowledge on the Early Life of Mahatma Gandhi	PSO - 5	K
CO-2	Analyse the racial equality and Mahatma Gandhi's Experience in South Africa	PSO - 5	An
CO-3	Explain the role of Mahatma Gandhi in Indian Freedom Struggle	PSO - 2	Ap
CO-4	Assess the constructive works of Mahatma Gandhi in Indian Nationalism	PSO - 2	Ap
CO-5	Discuss the major Incidents from the Life of Mahatma Gandhi	PSO - 5	Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

Code: CCHYGT01		தாள் I - மகாத்மா காந்தியின் வாழ்வு - CCHYGT01										Hours: 1
												Credits: 1
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO - 1	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 2	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 3	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 4	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 5	5	5	5	5	5	5	4	5	4	3	3	4.45
Overall Mean Score												4.45

Result: The score for this course is High

Note:

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos= $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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அலகு 1

குடும்ப பின்னணியும் மகாத்மாவின் தொடக்கமும் - பிறப்பும் குழந்தைப் பருவமும் - கல்வியும் குடும்ப வாழ்வும் - கற்ற பாடங்கள் - இலண்டன் அனுபவங்கள்.

அலகு 2

மகாத்மா உருவாகிறார் - தென்னாப்பிரிக்காவில் காந்தி - பாரிஸ்டரிலிருந்து மக்கள் தலைவராக - இன சமத்துவத்தை நோக்கி - குடும்ப வாழ்விலிருந்து ஆசிரம வாழ்வுக்கு - சத்தியாகிரகம் மற்றும் தீர்மானப்பணியின் தொடக்கம் - சத்திய பரிசோதனைகள்.

அலகு 3

இந்திய விடுதலைப் போராட்டத்தின் தொடக்கம் - ஆரம்ப கால எதிர்ப்புகளும் 1857 எழுச்சியும் - இந்திய தேசிய காங்கிரஸின் தொடக்கம் - மிதவாதிகள், தீவிரவாதிகள் மற்றும் பயங்கரவாதிகள் - காந்தி நாட்டை புதிய திசையில் நடத்துகிறார் - ஆரம்ப வட்டார சத்தியாகிரங்கள்.

அலகு 4

மகாத்மா காந்தி இந்திய விடுதலைப் போராட்டத்தை தலைமையேற்று நடத்துகிறார் - தேசிய சத்தியாகிரங்கள் - நிர்மாணப் பணிகள் - சபர்மதியும் சேவாகிராமும் - இந்திய தேசியத்தின் பல்வேறு போக்குகள் - பிரிவினையும் விடுதலையும் - மகத்தான உயிர் தியாகம்.

அலகு 5

காந்தியைப் பற்றிய படங்கள் - கள மற்றும் வாழ்க்கை அனுபவங்கள் - உங்களது வாழ்வை பரவசப்படுத்திய, உருக்கிய மகாத்மா காந்தியின் வாழ்க்கை நிகழ்ச்சிகள்.

Code: CCHYGT02

Hours: 1

Credit: 1

COURSE OUTCOMES:

CO. NO	UPON COMPLETION OF THIS COURSE THE STUDENTS WILL BE ABLE TO	PSO ADDRESSED	COGNITIVE LEVEL
CO- 1	Gain Knowledge on Mahatma Gandhi's Non - violence	PSO - 5	As
CO-2	Discuss the Policies of Mahatma Gandhi on Truth and Action	PSO - 5	An
CO-3	Analyse Sarvodaya and Antyodaya	PSO - 5	K
CO-4	Assess the values introduced through Brahmacharya and Aparigraha	PSO - 5	Ap
CO-5	Relate violence and Truth in our day today life with the teachings of Gandhiji	PSO - 2	Ap

RELATIONSHIP MATRIX FOR COURSE OUTCOMES, PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES

		தாள் II - அகிம்சையும் சர்வோதயமும் - CCHYGT02										Hours: 1
Code: CCHYGT02												Credits: 1
Course Outcomes	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)					Mean Score of CO's
	1	2	3	4	5	6	1	2	3	4	5	
CO - 1	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 2	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 3	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 4	5	5	5	5	5	5	4	5	4	3	3	4.45
CO - 5	5	5	5	5	5	5	4	5	4	3	3	4.45
Overall Mean Score												4.45

Result: The score for this course is High**Note:**

Mapping	1-20%	21 - 40%	41 - 60%	61 - 80%	81 - 100%
Scale	1	2	3	4	5
Relation	0.0 - 1.0	1.1 - 2.0	2.1 - 3.0	3.1 - 4.0	4.1 - 5.0
Quality	Very Poor	Poor	Moderate	High	Very High

Values Scaling:

Mean Score of Cos = $\frac{\text{Total of Values}}{\text{Total No. of Pos \& PSOs}}$	Mean Overall Score for Cos = $\frac{\text{Total of Mean Scores}}{\text{Total No. of Cos}}$
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அலகு 1

அகிம்சையின் பொருள் - கொல்லாமையும் துன்பம் செய்யாமையும் - அன்பு, தொண்டு மற்றும் மன்னித்தல் - அகிம்சைச் செயல்- அமைதி வழியில் சிக்கல் தீர்வு, அகிம்சை வாழ்வியலும் நிர்மாணப்பணியும், சத்தியாகிரகம் - அகிம்சை அறவியலும் விழுமியங்களும்.

அலகு 2

உண்மை : பேருண்மையும் (முழுமை உண்மையும்) சார்பு உண்மையும்- பொய்மைகள், தவறுகள் மற்றும் குற்றங்களுக்கு அப்பால் செல்லுதல் - உண்மையும் பன்மியமம் - உண்மையும் செயலும் - உண்மையும் அகிம்சையும்.

அலகு 3

சர்வோதயமும் (அனைவரின் நலம் அனைத்து நிலைகளிலும்) அந்தியோதயமும் (கடையவர் நலன் முதலில்) - குறிக்கோளும் வழிமுறையும் - தீண்டாமை நீக்கம் - சமூக ஒற்றுமை - மகளிர் முன்னேற்றம்.

அலகு 4

வறுமை நீக்கம் : முழுமையான ஏற்புடைய வேலை வாய்ப்பு - தற்சார்பும் தன்னிறைவும், சுயராஜ்ஜியம் மற்றும் சுதேசி (அயலவரை நேசி) - புலனடக்கமும் மேன்மையாக்கமும் (பிரம்மச்சரியம்) - எளிய மற்றும் அறவியல் வாழ்வு உடைமையின்மையும், அறங்காவலர் நெறியும் - ஏற்புடைய மற்றும் முழுமை அறிவியலும் தொழில் நுட்பமும்.

அலகு 5

நமது அன்றாட வாழ்வில் அகிம்சையும் உண்மையும் பெறுமிடமும் அதனை மேம்படுத்தும் வழிகளும் - உங்களது தற்சார்பையும் தேவையில் பிறருக்கு உதவும் ஆற்றலையும் வளர்க்கும் ஏதாவது மூன்று திறன்களைக் (Skills) கற்றல் - அமைதி வழியில் சிக்கல் தீர்வு அனுபவங்கள் - சர்வசமய நட்புறவு, உரையாடல் மற்றும் வழிபாட்டு அனுபவம் பெறல்.

DEPARTMENT OF HINDI
PART I - HINDI - COURSE PATTERN

Part	Sem.	Code	Title of the Paper	Hours	Credits
I	I	20GH1GS01	Paper - I - Prose, Short Story and Grammar- I	5	3
	II	20GH2GS02	Paper - II - Novel, One act Play, and Grammar - II	5	3
	III	20GH3GS03	Paper - III Poetry and History of Hindi Literature, Alankar	5	3
	IV	20GH4GS04	Paper IV - General Essay, Technical Hindi, Translation, and Letter Writing	5	3
		Total		20	12

TESTING AND EVALUATION

Course	Continuous Internal Assessment	Semester Examination
Hindi	40%	60%

Continuous Internal Assessment

Continuous Assessment will be carried out by the Course Teachers. The components of CIA are as follows:

Components	Marks
Test -I	30
Test -II	30
Seminar/Quiz	10
Assignment	05
Attendance	05
Total	*80

* The total internal marks obtained for 80 will be converted into marks obtained for 40.

HINDI - EXTERNAL QUESTION PATTERN

Time: 3 Hours

Marks: 60

Section A: (One Word / Sentence)

10 x 1 = 10 Marks

Section B: (Paragraph / Annotation)

4 x 5 = 20 Marks

Section C: (Essay)

3x 10 = 30 Marks

PAPER I - PROSE, SHORT STORY AND GRAMMAR - I

Semester: I

Hours: 5

Code : 20GH1GS01

Credits: 3

1. Prose : Naveen Hindi Patamala Part-3

Published by Dakshina Bharathi Hindi Prachar Sabha,
Thyagaraya Nagar, Chennai - 600 017.

The following Lessons have been prescribed

- a) Shiraj Ki Gurubhakthi
- b) Shri Krishn
- c) Gupth Rupya
- d) Karmaveer Kamaraj

2. Short Story : Kahani Manjari

Edited by : Dakshin Bharath Hindi Prachar Sabha,
Thyagaraya Nagar, Chennai - 600 017.

The following short stories have been prescribed

- a) Badegar kee beti - Premchand
- b) Thayee - Vishwamranava
Shrama Kaushik
- c) Paanch minute - Mohanlalji Mahato yogi
- d) Usne Kaha tha - Chandra dharshama
Guleri

3. Grammar I : Vyakaran Pradeep Published by Ramdev, Hindi Bhaan,
63, Tagore Nagarm Allahabad -2

The following topics have been prescribed

- a) Noun
- b) Gender and Number
- c) Pronoun
- d) Adjectives

PAPER II - NOVEL, ONE ACT PLAY AND GRAMMAR - II

Semester: II

Hours: 5

Code : 20GH2GS02

Credits: 3

- 1. Novel** : Nirmala (Abridged version)
by Premchand, Hamsa Prakashan Allahabad
- 2. One Act Play** : Aadarsh Ekanki
Published by Dakshina Bharath Hindi Prachar
Sabha,
Thyagaraya Nagar, Chennai - 600 017.
The following Ekankies have been prescribed
- a) Doosra din - Kanchanlatha sabbarval
 - b) Rajpoothri Ka badla - Divjendralal Rai
- 3. Grammar** : Ramdev, Published by Hindi Bhavan,
63 Tagore Nagar, Allahabad - 2
The following topics have been prescribed
- a) Verb
 - b) Tense and Voice
 - c) Adverb
 - d) Prepositions
 - e) Conjunctions
 - f) Interjunctions

PAPER III - POETRY AND HISTORY OF HINDI LITERATURE, ALANKAR

Semester: III

Hours: 5

Code : 20GH3GS03

Credits: 3

1. POETRY:

Kavya Saurab Published by Dakshina Bharatha Hindi Prachar Sabha, T. Nagar, Chennai - 600 017.

The following poems have been prescribed

1. Sachche Devtha - Ayodhya Singh Upadhyay Harioudh
2. Murjhaphool
3. Vivshtha
4. Badal - Sumitranandan Panth
5. Vasanth Aayaa
6. Deep Koi jal raha hai
7. Kabir Ke Dohe - 5 numbers
8. Tulasi Ke Dohe - 5 numbers
9. Raheem Ke Dohe - 5 numbers
10. Bihari Ke Dohe - 5 numbers

2. HISTORY OF HINDI LITERATURE:

Hindi Sahitya Ka Itihas by Rajanath Sharma Vinod Pushhak Mandir, Agra - 2

The following topics have been prescribed Salient features of Aadikl Bakthikal (Gyan marg, Premmag, Rambakthi, Krishnabakthi and Reethika.

Short Notes from Adunikkal: Chayavad, Pragathivad, Mythili Sharan, Gupta, Dinkar Premchand Pant Prasad, Ramachandra Shukla

3. ALANKAR:

Ras chand Alankar Chandrika Karnataka Mahila Hindi Seva Samithi, Chamarajpet, Bangalore - 560 008. The following Alankars have been prescribed Anupras, Yamak, Vakrokthi, Upama, Virodabhas.

**PAPER - IV - GENERAL ESSAY, TECHNICAL HINDI, TRANSLATION AND
LETTER WRITING**

Semester: IV

Hours: 5

Code : 20GH4GS04

Credits: 3

1. General Essay:

Nibandh Praveshika, Dakshin Bharath Hindi Prachar Sabha T.Nagar, Chennai - 600 017

The following Sahityotar (General) essay have been prescribed

- a. Anushashan
- b. Parishram Ka Mahatva
- c. Paropkar
- d. Bharat Ki Kalatmak Ekta
- e. Nari Ka Karthavye Aur Adhikaar

2. Translation: Anuvad Aabyas - III (1-5 Lessons) English to Hindi, Hindi to English Published by Dakshina Bharath Hindi Prachar Sabha T.Nagar, Chennai - 600 017.

3. Technical Hindi: Karyalaya Sahayika, Kendriya Sachivalaya
Hindi Parishad NewDelhi, Hindi Vathayan
Dr. K. Chandra Mohan, Viswa Vidyalaya Prakashan
Varanashi

Banking Terms : 50 only

Nemikaryalaya Tippani : 50 only

Name of the Ministries : 33 only

4. Letter Writing: Pramanik Alekan Aur Tippan Prof Viraj M.A. Kashmirgate,
Delhi - 110 006

PaariVarik Patra, Avedan Patra, Sampathak ke naam Patra,
Padhadhikariyon ke naam Patra