SADAKATHULLAH APPA COLLEGE

(AUTONOMOUS)

(Reaccredited by NAAC withan 'A' Grade with a CGPA of 3.40 out of 4.00 in the III cycle An ISO 9001:2015 Certified Institution)

RAHMATH NAGAR, TIRUNELVELI- 11,

Tamilnadu

PG AND RESEARCH DEPARTMENT OF PHYSICS

(Unaided)

CBCS SYLLABUS

For

M.Phil. PHYSICS

(Applicable for students admitted in June 2018 and onwards)

(As per the Resolutions of the Academic Council Meeting held on 17.10.2018)

REGULATIONS

FULL – TIME

1. PROGRAM OBJECTIVES:

The programme is named as Master of Philosophy (M.Phil.,) in Physics. This programme is offered under Choice Based Credit System (CBCS). The CBCS enables the students to select variety of subjects as per his/her interest and requirement. Acquiring knowledge in the related fields is advantageous to the students. The programme is structured in such a way to impart more knowledge in science, in particular in Physics. Physics is the natural science that involves the study of matter and its motion through space and time along with the related concepts such as energy and force. It is one of the most fundamental scientific disciplines. The main goal of Physics is to understand how the universe behaves. Physics explains the natural phenomena in the universe and often considered to be the most fundamental science. It provides a basis for all other sciences - without Physics, we could not have Biology, Chemistry, or anything else. Physics also makes significant contributions through advances in new technologies. One academic Programme is necessary to create awareness to students in the emerging field and also it should teach basic concepts and developments of Physics to students to make them as scientist or technologists in this field. Hence our task is to introduce M.Phil., programme in Physics to educate the postgraduate students in the fascinating fields. Rigorous and comprehensive in approach, this syllabus presents essential contents in a detailed, clear and direct way

2. LEARNING OUTCOMES:

Upon completion of the programmes, M.Phil. students will be able to

(i) solve theoretical or/and experimental problems of the related research field of studies with the previous accumulated knowledge and problem solving skills,

(ii) communicate clearly and effectively in English, excel in report writing and presentation skill,

(iii) collaborate smoothly with others in team work, demonstrate a sense of responsibility, accountability, leadership and team spirit,

(iv) develop capability of independent thinking, and

(v) . possess a desire for life-long learning and self-learning.

2. ELIGIBILTIY:

Candidates who have qualified for post graduate degree in Physics/ Applied Physics/ Bio Physics/ Material Science / any other equivalent master degree.of ManonmaniamSundaranar University or any other University recognized by the Syndicate as equivalent thereto shall be eligible to register for the Degree of Master of Philosophy (M.Phil.) in Physics.

Candidates who have qualified their post graduate degree in Physics/ Applied Physics/ Bio Physics/ Material Science / any other equivalent master degree.with a minimum of 55 % of marks in their respective postgraduate degree to become eligible to register for the Degree of Master of Philosophy (M.Phil.) in Physics.

For the candidates belonging to SC/ST community and those who have qualified for the Master's degree in Physics/ Applied Physics/ Bio Physics/ Material Science / any other equivalent master degreewith the minimum eligibility marks shall be 50 % in their Master's Degree.

3. DURATION

The duration of M.Phil., course shall extend over a period of one year from the commencement of the course.

4. COURSE OF STUDY

The course of study for M.Phil., degree shall consist of (a) Part-I comprising three written papers according to the Syllabus prescribed from time to time; and (b) Part-II Dissertation.

Part-I shall consist of Paper-I Research Methodology and Paper-II Advanced paper in the main subject. There shall also be a third paper which shall be the background paper relating to the proposed Dissertation.

SADAKATHULLAH APPA COLLEGE (AUTONOMOUS)

RESEARCH DEPARTMENT OF PHYSICS
M.Phil. Physics Syllabus
(Applicable for students admitted in June 2018 and onwards)
COURSE STRUCTURE

I SEMESTER				**II SEMESTER**		
COURSE	**H/W**	**C**		**COURSE**	**H/W**	**C**
Core 1	4	4		Project and Viva - Voce	12	12
Core 2	4	4				
Project Oriented Elective Course (Theory)	4	4				
TOTAL	**12**	**12**		**TOTAL**	**12**	**12**

DISTRIBUTION OF HOURS, CREDITS, NO. OF PAPERS, & MARKS

SUBJECT	**HOURS**	**CREDITS**	**NO. OF PAPERS**	**MARKS**
Core	8	8	2	**200**
Project Oriented Elective Course (Theory)	4	4	1	**100**
Project and Viva-Voce	12	12	1	**100**
TOTAL	**24**	**24**	**4**	**400**

TITLE OF THE PAPERS
M. PHIL. PHYSICS (2018 - 2021)

(The candidate should select any one of the Area Papers in the first semester related to their proposed topics of research)

SEM	**P**	**TITLE OF THE PAPER**	**SUB. CODE**	**H/W**	**C**	**MARKS**		
						I	**E**	**T**
I	DSC1	Research and Teaching Methodology	18MCPH11	4	4	25	75	100
	DSC2	Advanced Physics	18MCPH12	4	4	25	75	100
	DSE	A) Crystal Growth Methods and Characterization Techniques	18MEPH1A	4	4	25	75	100
		B) Nano Physics	18MEPH1B					
		C) Ultrasonic Studies	18MEPH1C					
		D) Nonlinear Dynamics	18MEPH1D					
II	D	Project and Viva-Voce	18MDPH21	-	12	--	100	100
TOTAL				**12**	**24**	**75**	**325**	**400**

I SEMESTER			
DSC 1	**RESEARCH AND TEACHING METHODOLOGY**		**18MCPH11**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Preamble: To introduce the knowledge on research. This paper provides a broad knowledge on methods of research and teaching, problem solving and analytical techniques

Course Outcomes: Students who completed this course should

- ✓ Have made progress with research leading to a M.Phil thesis.
- ✓ Capable to deliver oral presentation and written report to a very high international standard
- ✓ In-depth analysis & study of the selected research topics
- ✓ refill communication skill – demonstrate the capability in written and spoken (English as a medium) to present and discuss research information within the scientific community and society.
- ✓ Be familiar with the main statistical tests used in Physics.
- ✓ Be familiar with the numerical methods
- ✓ Be familiar with the different methods of teaching

Unit I: Basics of Research

Basics: Meaning, purpose and characteristics of research –. Scientific research : Aim and motivation - Principles and ethic: Identification of research problem - Current status – Literature survey – Abstraction of a research paper – Role of research guide and researcher – Preparation and presentation of scientific reports- Need and methods (Oral and poster) – Writing of synopsis and dissertation.

Unit II: Modern Research Practices in Scientific Research

Usage of open source software and freely licensed software for research work and data analysis – Effective use of internet for research needs-Collaborative work-Interdisciplinary research - scholarly research articles –National, International and Electronic Journals- Online submission of research articles -Open access articles benefits- Impact factor, h-index- Citations- Seminars, workshops, conferences and symposia- Respecting copy rights-Avoiding plagiarism- Intellectual property rights and patents.

Unit III: Methods of Data Analysis

Data-collection – Statistical description of data (mean, median mode, kurtosis , skewness,) – Distributions (Student's t-test, F-test, Chi-square test &Annova), Correlation (linear and nonparametric/rank); Modeling data: Least squares, Fitting data – linear and non-linear models. Pictorial representation of data.

Unit – IV: Numerical Methods

Iterative methods: Newton Raphson iterative method – Secant Method; Interpolation: Newton's forward and backward difference formulae; Differentiation and Integration: Numerical differentiation with interpolation polynomials – Numerical Integration by Trapezoidal and Simpson's rule- Ramberg integration.

Unit – V: Methodology of Teaching:

Teaching – Objectives of Teaching, Phases of Teaching – Teaching Methods: Lecture Method, Discussion Method, Discovery Learning, Inquiry, Problem Solving Method, Project Method, Seminar – Integrating ICT in Teaching: Individualised Instruction, Ways for Effective Presentation with Power Point – Documentation – Evaluation: Formative, Summative & Continuous and Comprehensive Evaluation – Later Adolescent Psychology: Meaning, Physical, Cognitive, Emotional, Social and Moral Development – Teaching Later Adolescents.

Books for Reference

1. Thesis and Assignment Writing – J Anderson, B.H. Dursten and M. Poole, Wiley Eastern (1977).
2. A Hand Book of Methodology of Research – P. Rajammal and P. Devadoss, R.M.M Vidya Press (1976).
3. Research Methodology – S.Rajasekar, P.Philominathan, V. Chinnathambi, RPC Publications, Tirunelveli. (2014)
4. Computer Oriented Numerical Methods – V. Rajaraman, Prentice Hall of India.
5. Numerical Methods for Scientific and Engineering Computation – MK Jain, SRK Iyengar and RK Jain, Wiley Eastern publn.
6. Sampath K, Panneerselvam, A & Santhanam S (1984). Introsuction to educationaltechnology. (2nd revised ed.) New Delhi:Sterling Publishers.
7. Sharma. SR (2003) Effective classroom teaching modern methods, tools & techniques. Jaipur: Mangal Deep
8. Vendanayagam EG (1989). Teaching technology for college teachers. New York: Sterling Publishers

I SEMESTER			
DSC 2	**ADVANCED PHYSICS**		**18MCPH12**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Preamble: To introduce knowledge on solar energy sources. To expose the students with knowledge of understanding the basic preparation and to get knowledge about the various properties of solar cells. To impart knowledge onadvanced mathematical methods for research physics. To make the students learn the basics of lasers, nonlinear optics and X-ray diffraction.

Course Outcomes: At the successful completion of this course, the student is expected to have/be able to:

- ✓ List and generally explain the main sources of energy and their primary applications in the world,
- ✓ Describe the challenges and problems for the construction of various types of solar cells,
- ✓ Perform basic calculations relating to crystal planes, lattice parameters and sample characteristics.
- ✓ Understand the basics of X-ray diffraction theory in terms of X-rays, diffraction and Bragg's Law.
- ✓ Provides the students a thorough understanding of the fundamentals of lasers: their unique properties, their operations and their applications.
- ✓ Be familiar with the main mathematical methods used in physics.
- ✓ Understand the fundamentals of the variety of nonlinear optical phenomena
- ✓ Exposed to emerging research topics involving laser light

UNIT I: Solar Energy

Prospects of renewable energy sources – Solar spectrum. Solar cells; Solar cells for direct conversion of solar energy to electric powers- solar cell parameters – solar cell electrical characteristics – Efficiency – Single crystal silicon solar cells- Polycrystalline silicon solar cells- cadmium sulphide solar cells- Applications of solar energy Solar water heating- solar photo voltaic- solar cooking – solar green house.

UNIT II: X-ray diffraction

Introduction - X-rays : sources - conventional generators. X-ray optics: filters – monochromators – collimators – mirrors – safety. Crystals : Lattice planes – Miller indices – Space lattice – X-ray diffraction reciprocal lattice – relation between direct and reciprocal space – Bragg's law in reciprocal lattice.

UNIT III: Lasers

Lasers: Basic principles of Lasers – Nd:YAG Laser – He-Ne laser – Semiconductor diode Laser – Dye Laser – Colour Center Lasers. Applications of Lasers : Medicine, Industry, Communication and Holography.

UNIT IV: Nuclear Models

Introduction to Nuclear models: Liquid drop model- Shell model - Nilsson model - Collective model (Vibration and Rotational contributions) – Standard model.

UNIT V: Characterization Techniques

X-ray diffraction (XRD)- Particle size determination - Fourier Transform Infrared Spectroscopy (FTIR) – UV-Visible Spectroscopy - Differential Thermal Analysis (DTA) - Differential Scanning Calorimeter (DSC) - Vibrating Sample Magnetometer (VSM) – Scanning Electron Microscopy (SEM).

Books for Reference

1. S.P. Sukhatme, Solar Energy, Tata McGraw Hill Edition.
2. G.D. Rai, Non-Conventional Energy sources, Khauna publications, New Delhi.
3. X-ray Structure Determination (2nd Edition) – Stout and Jensen – John Wiley (1989).
4. Fundamentals of Crystallography - (2nd Edition)- C. Giacovazzo- Oxford press.
5. Structure determination of X-ray Crystallography (2nd Edition)- Ladd and Palmer.
6. William Silfvast, Laser Fundamentals , Cambridge University Press, London (1996).
7. B.B. Laud, Lasers and Non Linear optics –New age international P (Ltd) (2^{nd} Edition), New Delhi (1991).
8. AjoyGhatak, Optics -(2nd Edition)- Tata Mcgraw Hill Publications.
9. Mathews and R..L. Walker, Mathematical Methods of Physics (Pearson Education, New Delhi, (2004).
10. P.K.Chattopadhyay, Mathematical Physics, Wiley Eastern Ltd., New Delhi (1990)
11. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Private Limited, 1999.Patterns, Springer Verlag, Berlin (2003).

I SEMESTER			
DSE A	**CRYSTAL GROWTH METHODS AND CHARACTERIZATION TECHNIQUES**		**18MEPH1A**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Preamble: To introduce the knowledge on crystal growth and characterization. To expose the students with theories of nucleation & crystal growth, crystal growth from various techniques such as, solution, melt and vapour phase and their characterization.

Course Outcomes:

Students who have completed this course should

- ✓ Understand the formation, classification, theories of nucleation and kinetics of crystal growth
- ✓ Understand the various analysis such as structural and optical and characterization techniques suchsuch as SEM and TG/DGA.,
- ✓ Have an ability to grow the crystals from solutions and melt
- ✓ Be able to know the important applications of crystals

Unit I – Nucleation and kinetics

Saturation and super saturation – solubility– expression for super saturation solution. Nucleation : classifications-Theories of nucleation –Gibbs Thomson equation for solution,Vapour & Melt – Crtitical nucleation parameters- Kinetic of crystal growth.

Unit II - Growth from solutions

Low temperature solution growth: Slow cooling method– slow evaporation method – gel growth process. Temperature gradient Method : high pressure method- electrolyte process.

Unit III - Growth from melt

Bridgeman technique – czocharalski technique – zone melting technique –verneuil process.

Unit IV – Applications of Crystals

Medicine- Cosmetics- Energy- Electronic device fabrications- superconductors- optical devices- Thermal appications.

Unit V - Analysis and Characterizations

Structural analysis : X-ray diffraction Analysis and FTIR spectral analysis. Optical transmission studies (UV) –- Micro hardness studies (vicker)- Scanning Electron Microscope (SEM)- Thermo gravemetric/ diffrencial thermal analysis (TG/DTA).

Books for Reference:

1. Brice J.C, Crystal Growth Processes, John Wiley & sons , New York 1986,
2. Santhanaraghavan P, Ramasamy . P, Crystal Growth – Process and Methods, KRU Publications, Kumbakonam, 2000.
3. Buckly H.E, Crystal Growth, John Wiley & Sons, New York, 1986.
4. Gilman J, The Art of Science of Growing Crystals, John Wiley & Sons, New York, 1956.
5. William Kemp, Oraganic spectroscopy, 3rd Edition, , Palgrave, New York, 2004.

I SEMESTER			
DSE B	**NANO PHYSICS**		**18MEPH1B**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Preamble: To felicitates the knowledge on nanomaterials. To make the students understanding the fundamental aspects of nanomaterials, synthesis, nanostructures, properties and characterization techniques

Course Outcomes: Upon completion of the subject, students will be able to:

- ✓ Demonstrate the understanding of length scales concepts, nanostructures and nanotechnology.
- ✓ Identify the principles of processing, manufacturing and characterization of nanomaterials and nanostructures.
- ✓ Apply the electronic microscopy, scanning probe microscopy and nanoindentation techniques to characterize the nanomaterials and nanostructures.
- ✓ Evaluate and analyze the mechanical properties of nanomaterials

Unit I - Fundamentals of Nanomaterials

Introduction: Nanotechnology and Nanomaterials. Quantum well-quantum wires-quantum dots- Difference between quantum well,quantum wireand quantum dots. Nanorods-and its significance.Carbon nanotubes : Single walled and multiwalledand Applications-Fullerenes and itsapplications.

Unit II - Synthesis of Nanomaterials

Introduction: Top-down and Bottom-up approaches. Physical Techniques: Ball milling- laser ablation-physical vapour deposition (PVD). Chemical Techniques: Sol gel method- co-precipitation method – chemical vapour deposition (CVD).

Unit III – Properties of Nanomaterials

General properties: Physical properties - chemical properties - Optical properties - electrical properties-magnetic properties- mechanical properties - Thermal properties – Antimicrobial activity- Antibacterial properties.

Unit IV – Characterization Techniques

X ray diffraction analysis (XRD) - Fourier Transform Infra Redanalysis(FTIR) - Uv-Visible spectral analysis- Scanning electron microscopy (SEM) - Energy dispersive analysis of x-ray (EDAX).

Unit V - Applications of Nanomaterials

Applications of nanomaterial: Medicine- Food and Textile industry- Cosmetics-Electronic devices-Solar energy- environment- dye- defence & security- optical engineering.

Books for Reference:

1. C.Cao,Nanostructures and Nanomaterials Synthesis, Properties and Applications,Imperial College Press, 2004.
2. Daniel L.Feldheim Colby,A.Foss,Metal Nanoparticles,Synthesis,Characterization and Applications,Wiley VCH ,1998.
3. Dider A, Nanoparticles and Catalysis, Wiley VCH, 2008.
4. G.C.Hdjipanayis,R.W.Seigal, Nanophase Materials,Properties and Applications, Kluwer Academic Publishers 1994.
5. Skoog.D.A,James,Holler.F.Neiman.T.A. Principles and Instrumental Analysis,Harcourt College Press, 2007.

I SEMESTER			
DSE C	**ULTRASONIC STUDIES**		**18MEMA1C**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Unit 1 – Measurement of Density, Ultrasonic Velocity and Viscosity for liquid mixtures

Significance of the study of thermo-physical and thermodynamic properties – Densimeter and Antonpar–Preparation of binary mixtures and ternary mixtures - Experimental techniques to determine density of liquid mixtures using Antonpar&Pycnometer – Ultrasonic Interferrometer - Experimental techniques to determine ultrasonic velocity using interferometer.

Unit – 2 Volumetric Properties

Relationship between density and Volumetric properties - Apparent Molal Volume – Partial Molal Volume – Partial MolalExpansivity – Isobaric Thermal Expansion Coefficient – calculation of Hydration Number from volumetric data. Variation of Partial Molal Volume with Temperature – Hepler's constant – Transfer Partial Molal Volume – Pairwise and Triplet interactions by volumetric studies.

Unit- 3 Properties related to Ultrasonic studies

Speed of sound – Relationship between ultrasonic velocity and compressibility properties - Isentropic Compressibility – Change in Isentropic compressibility – Relative change in Isentropic compressibility – Apparent Molal Compressibility – Limiting Apparent Molal Compressibility – Calculation of Hydration number using compressibility data – Transfer Partial Molal Compressibility – Pairwise and Triplet interactions by compressibility studies.

Unit- 4 Viscometric Properties

Relationship between viscosity and viscometric properties - Viscosity - Relative Viscosity – Jones - Dole equation to calculate Viscosity B coefficient – variation of Viscosity B coefficient with temperature –Gibb's Free energy of activation per mole of solute and solvent – Relationship between Free energy of Activation with Viscosity B-coefficient - Transfer B coefficient – Pairwise and Triplet interactions by viscometric studies.

Unit - 5 Analysis of Molecular interactions

Nature of intermolecular interactions between the components of liquid mixtures - Concept of Zwitterions – Polar and Non-Polar groups - Types of interactions - Co-Sphere overlap model –Solute - Solvent interactions – Solute - Solute interactions –Structure making/breaking ability of solute in solvents based on theVolumetric, Ultrasonic and Viscometric properties .

Books For Study And Reference:

1. Fundamentals of Ultrasonics, J. Blitz, Second Edition, Plenum Press, New York,(1967).
2. Thermodynamics of ion hydration in water, Friedman H.L and Krishnan C.V., Plenum Press, New York.
3. Ultrasonics: Fundamentals, Technologies and Applications, Third Edition, Dale Ensminger, Leonard J. Bond, CRC Press, (2011).

I SEMESTER			
DSE D	**NONLINEAR DYNAMICS**		**18MEMA1D**
Hrs/Week: 4	**Hrs/ Sem: 60**	**Hrs/Unit: 12**	**Credits: 4**

Preamble: To understand the basic concepts of nonlinear dynamics. This course provides knowledge about the effects of nonlinearity on dynamical systems, fractals and its properties and the importance of soliton

Course outcomes: By the end of the course.

- ✓ Students will be able to analyze the behavior of dynamical systems (e.g. find periodic orbits and assess their stability, draw phase portraits, etc.) expressed as either a discrete-time mapping or a continuous-time flow.
- ✓ Students will be able to apply the techniques of nonlinear dynamics to physical processes drawn from a variety of scientific and engineering disciplines.
- ✓ Students will be able to analyze changes (i.e. bifurcations) to dynamical systems as system parameters are varied.
- ✓ Students will be able to independently research topics in nonlinear dynamics and synthesize this work into coherent written and oral presentations.

UNIT – I : **Introduction to Nonlinear dynamics**

The notion of nonlinearity – Superposition principle and its validity – Linear and nonlinear oscillators – Autonomous and nonautonomous systems – Equilibrium points – Phase space – Classification of equilibrium points – Limit cycle motion .

UNIT – IIBifurcation and Chaos in Dissipative Systems

Some simple bifurcations – The logistic map period doubling phenomenon – Onset of chaos – Bifurcation scenario in Duffing oscillator – Route to chaos – Lorenz systems – Sensitive dependence on initial condition – controlling of chaos

UNIT – III Chaos in Conservative Systems

Pointcare cross section – Possible orbits in conservative systems – Henon – Heiles system – Charecterization of regular and chaotic motions : Lyapunov exponents – Numerical computation – Power spectrum and dynamical motion.

Unit – IV: Fractals

Self similarity - Properties and examples of fractals - Fractal dimension - Construction and properties of some fractals-Middle one third cantor set-Koch curve - Sierpinski triangle-Julia set - Mandelbrot set - Applications of fractals.

UNIT – V: Soliton

Linear wave propagation (nondispersive and dispersive) – Fourier transform and solution of intial value problem – wave packet and dispersion – Nonlinear Dispersive system – Scott Russel`s phenomenon –cnoidal waves and Korteweg-de Vries equation – Fermi Pasta Ulam phenomenon-Numerical experiments of Zabusky and Kruskal – birth of solitons.

References:

1. M.Lakshmanan and S.Rajasekar, Nonlinear Dynamics : Intergrability Chaos and Patterns (Springer-Verlag, Berlin, 2003)
2. M.Lakshmanan and K.Murali, Chaos in Nonlinear Oscillators (World Scientific, Singapore, 1996)
3. P.G.Drazin, Nonlinear Systems (Cambridge University Press, Cambridge, 1992)
4. A.J.Lichtenberg and M.A.Lieberman, Regular and Stochastic Motion (Springer- Verlag, Heidelberg, 1992).
5. P.G.Drazin and R.S.Johnson, Solitons : An Introduction (Cambridge University Press, Cambridge, 1989).
6. M.J.Ablowitz and P.A.Clarkson, Solitons : Nonlinear Evolution Equations and Inverse Scattering (Cambridge University Press, Cambridge, 1991)

II SEMESTER		
D	**DISSERTATION**	**18MDPH21**
Hrs/Week: 12	**Hrs/ Sem : 180**	**Credits: 12**

The following guidelines have to be followed by every candidate while preparing his/her M.Phil. Dissertation:

1 The Dissertation should be typed in English.

2 The first page, declaration and certificate of the dissertation should be according to the model given at the end of this.

3 Dissertation text should be typed in MS Word / LaTeX with size 12 / 13 on A4 size Executive bond quality paper with double line spacing. Each page should contain at least 20 lines.

4The number of pages in M. Phil. Dissertation should be not less than 80 pages inclusive of bibliography and Annexure.

5Candidates shall submit the dissertation to the Controller of Examinations through the Supervisor and Head of the Department within 6 months but not earlier than 5 months from the date of start of the second semester.

6.Two bound copies of the M.Phil. Dissertation duly signed by the Guide and Head of the Department should be submitted through the Controller of Examinations along with the CD containing the softcopy of the Dissertation in PDF format.

7.The M.Phil. scholars should attend at least one of the following:

training programmes / Workshops / Seminars / Symposiums, etc., and that they should also have a paper either published or received for acceptance in an ISSN / Reputed Journal before submitting the Dissertation. M.Phil. Scholars shall present at least one research paper in a conference or seminar as per UGC norms. Photo copy of the publication/Letter of acceptance for publication should be given as Annexure at the end of the Dissertation. **Scholars who fail to comply with the above are not eligible for the submission of their Dissertation.**

8. Both the Internal as well as External Examiner award 100 marks for the Dissertation. The distribution of mark will be 60 marks for the Dissertation and 40 marks for the Public Viva-voce Examination. In the Public Viva-voce Examination, the M. Phil. Scholars should present their dissertation work with PowerPoint Presentation. The division of marks for the Dissertation is as mentioned below.

9. The medium of instruction in M.Phil courses is English and students shall write the CIA and Semester Examinations in English.

(Model for the Title Page of the Dissertation)

TITLE OF THE DISSERTATION

Dissertation Submitted to the
SadakathullahAppa College (Autonomous)
in partial fulfilment of the requirements for the award of the degree of

MASTER OF PHILOSOPHY (MAJOR)
Submitted by

NAME OF THE CANDIDATE

(REGISTER NO. XXXXXXXX)

Under the guidance of

NAME OF THE GUIDE

Designation of the Guide
SadakathullahAppa College (Autonomous)
Tirunelveli – 627011

RESEARCH DEPARTMENT OF (MAJOR)
SADAKATHULLAH APPA COLLEGE (AUTONOMOUS)
TIRUNELVELI – 627011
MONTH, YEAR

(Model for the Certificate of the Dissertation)

SadakathullahAppa College (Autonomous)

Rahmath Nagar,Tirunelveli – 627011

CERTIFICATE

Certified that the dissertation work with the title, **"TITLE OF THE DISSERTATION"**submitted by **NAME OF THE CANDIDATE** with the register number XXXXXXX in partial fulfilment of the requirements for the award of the degree of **Master of Philosophy in (Major) at the Research Department of (Major),SadakathullahAppa College (Autonomous),** is a work done by the candidate during the period 20XX-XX, under my guidance and supervision and this dissertation or any part thereof has not been submitted elsewhere for any other Degree or Diploma.

Tirunelveli – 627011
DD-MM-YEAR

<<Signature of the HOD with date>>
<<Name of the HOD>>
<<Academic Designation of the HOD>>
<<Name of the Department>>
SadakathullahAppa College (Autonomous)
Tirunelveli - 11

<<Signature of the Supervisor with date>>
<<Name of the Supervisor>>
<<Academic Designation of the Supervisor>>
<<Name of the Department>>
SadakathullahAppa College (Autonomous)
Tirunelveli - 11

Viva-Voce Examination for the candidate was conducted on ……..……

Internal Examiner External Examiner

(Model for the Declaration by the Candidate)

Name of the Candidate,

M.Phil. Scholar, (Register No.: XXXXXXX)
Research Department of XXXXXXXX,
SadakathullahAppa College (Autonomous),
Rahmath Nagar, Tirunelveli – 627011

DECLARATION BY THE CANDIDATE

I hereby declare that, the dissertation with the title, **"TITLE OF THE DISSERTATION"**submitted in partial fulfilment of the requirements for the award of the degree of **Master of Philosophy in XXXXXXXX** at **the Research Department of XXXXXXXX, SadakathullahAppa College (Autonomous)**, is my original work done under the guidance of **Name of the Guide, Designation of the Guide, SadakathullahAppa College (Autonomous), Tirunelveli – 11** and this work has not been submitted elsewhere for any other Degree or Diploma.

Tirunelveli – 627011
DD-MM-YEAR **(Signature of the Candidate)**

Countersigned

1.Signature and Seal of the Guide **2. Signature and Seal of the HOD**