

ANANDA COLLEGE, DEVAKOTTAI -630 303

II B.Sc Mathematics Syllabus for Nov 2020 Semester (III Semester)

Sem	Part	Sub.code	Subject	Cr.	Hrs/Week	Max.Marks			
						Int	Ext	Total	
III	I	731T	Tamil / Other Languages – III	3	6	25	75	100	
	II	732E	English – III	3	6	25	75	100	
	III	7BMA3C1	Core–V-Abstract Algebra	4	5	25	75	100	
	III	7BMA3C2	Core–VI-Differential Equations and its Applications	4	5	25	75	100	
	III			Allied – III (Theory only) (or)	5	5	25	75	100
				Allied–III (Theory cum Practical)	4	3	15	60	75
				Allied Practical – II	-	2**	--	--	---
	IV	7NME3A/ 7NME3B/ 7NME3C		இலக்கியமும் மொழிப் பயன்பாடும் பழந்தமிழ் /இலக்கியங்களும் இலக்கியவரலாறும். / EFFECTIVE EMPLOYABILITY SKILLS	2	1	25	75	100
				COMPETITIVE EXAMINATION SKILLS / executive SKILLS / DISASTER MANAGEMENT	2	2	25	75	100
	V	7BEA3		Extension Activities	1	-	100	-	100
				Total (Allied Theory only)	24	30	-	800	
				Total (Allied Theory cum Practical)	23			775	

இரண்டாம் ஆண்டு - மூன்றாம் பருவம் -

பாடக்குறியீட்டு எண்: 731T

பொதுத் தமிழ் தாள் - 3 - காப்பியமும் புதினமும்

அலகு 1

- | | | |
|------------------|---|---------------------------------|
| 1. சிலப்பதிகாரம் | - | மங்கல வாழ்த்துப்பாடல். |
| 2. மணிமேகலை | - | பாத்திர மரபு கூறிய காதை. |
| 3. கம்பராமாயணம் | - | சேது பந்தனப்படலம். |
| 4. பெரியபுராணம் | - | கோச்செங்கட்சோழ நாயனார் புராணம். |
| 5. தேம்பாவணி | - | கோலியாத் படலம். |
| 6. சீறாப்புராணம் | - | மானுக்குப் பிணை நின்ற படலம் |

அலகு 2 - புதினம்

வேரில் பழுத்தபலா - சு.சமுத்திரம்.

அலகு 3 - இலக்கணம்

யாப்பும் அணியும் செய்யுள் உறுப்புகள், எழுத்து, அசை, சீர், தளை, அடி, தொடை ஆகியன பற்றிய விளக்கம். பாவகை, வெண்பா, ஆசிரியப்பா ஆகியவற்றின் பொது

இலக்கணங்கள். அணி, வகைகள், உவமை, உருவகம், வேற்றுமை, பின்வருநிலை, சிலேடை அணிகள்.

அலகு 4 - இலக்கிய வரலாறு

அலகு 1, அலகு 2ல் உள்ள பாடம் தொடர்பான இலக்கிய வகைகள் தொடர்பான இலக்கிய வரலாறு.

அலகு 5 - படைப்பாற்றல்

மரபுக் கவிதை - புதுக்கவிதை படைத்தல்.

III SEMESTER COURSE CODE: 732E

COURSE – III - ENGLISH FOR ENRICHMENT – III

Texts Prescribed

1. *Six Short Stories*, Ed. by the Board of Editors, Harrows Publications, Chennai.
2. *One Act Plays*, Ed. by the Board of Editors, Harrows Publications, Chennai.
3. *Modern English – A Book of Grammar Usage and Composition* by N.Krishnaswamy, Macmillan Publishers.
4. *English for Communication*, Ed. by the Board of Editors, Harrows Publications, Chennai.

Unit I Short Stories

1. Two Old Men – Leo Tolstoy
2. The Diamond Necklace – Guy de Maupassant
3. The Verger – Somerset Maugham
4. The Postmaster – Rabindranath Tagore.

Unit II One Act Plays

1. Riders to the Sea – J.M.Synge
2. The Rising of the Moon – Lady Gregory

Unit III One Act Plays

1. A Kind of Justice – Margaret Wood
2. The Refugee – Asif Currimbhoy

Unit IV Grammar

Tenses, Voices, Degrees of Comparison

Unit V Composition

Agenda, Minutes, Notice, Descriptive Writing

Allocation of Working Hours per week

Short Stories	- 2 hours
One Act Plays	- 2 hours
Grammar &	- 2 hours
Composition	-----
Total	- 6 hours

COURSE CODE: 7BMA3C1

CORE COURSE - V – ABSTRACT ALGEBRA

Unit – I

Groups : Definition and Examples – Elementary Properties of a Group – Equivalent Definitions of a Group – Permutation Groups.

Unit – II

Subgroups – Cyclic Groups – Order of an Element – Cosets and Lagrange’s Theorem.

Unit – III

Normal Subgroups and Quotient Groups – Isomorphism – Homomorphism.

Unit – IV

Rings : Definitions and Examples – Elementary properties of rings – Isomorphism – Types of rings – Characteristic of a ring – Subrings – Ideals – Quotient rings.

Unit – V

Maximal and Prime Ideals – Homomorphism of rings – Field of quotients of an Integral domain – Unique factorization domain – Euclidean domain.

Text Book:

1. S.Arumugam and A.ThangapandiIssac, Modern Algebra, SciTech Publications Pvt. Ltd., Chennai, 2003.

Unit I	Chapter 3 sections 3.1 to 3.4
Unit II	Chapter 3 sections 3.5 to 3.8
Unit III	Chapter 3 sections 3.9 to 3.11
Unit IV	Chapter 4 sections 4.1 to 4.8
Unit V	Chapter 4 sections 4.9 to 4.11, 4.13 & 4.14

Books for Reference:

1. N.Herstein, Topics in Algebra, John Wiley & Sons, Student 2nd edition, 1975.
2. Vijay, K.Khanna and S.K.Bhambri, A course in Abstract Algebra, Vikas Publishing House Pvt. Ltd.
3. Dr. R.Balakrishnan and N.Ramabadran, A text book of Modern Algebra, Vikas Publishing House Pvt. Ltd, New Delhi, 1994.

COURSE CODE: 7BMA3C2

CORE COURSE - VI – DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS

Unit – I

Exact Differential Equations – Conditions for equation to be exact –Working rule for solving it – problems – Equations of the first order but of higher degree – Equations solvable for p, x, y, clairaut's form – Equations that do not contain (i) x explicitly (ii) y explicitly – Equations homogenous in x and y–Linear Equation with constant coefficients.

Unit – II

Linear equations with variable coefficients – Equations reducible to the linear equations – Simultaneous Differential Equations – First order and first degree – Simultaneous linear Differential Equations.

Unit – III

Linear equations of the second order – Complete Solution given a known integral – Reduction to Normal form – Change of the independent variable – Variation of parameters – Total Differential Equations – Necessary and Sufficient condition of integrability of $Pdx + Qdy + Rdz = 0$, Rule for solving it.

Unit – IV

Partial Differential Equations of the First order – classifications of integrals – Derivations of Partial Differential Equations – Special methods – Standard forms – Charpit's method.

Unit – V

Flow of water from an Orifice – Falling bodies and other rate problems – Brachistochrone Problem – Tautochronous property of the Cycloid – Trajectories.

Text Book:

1. Differential Equations and its Applications by S.Narayanan&T.K.ManickavachagomPillay, S.Viswanathan (Printers& Publishers) Pvt. Ltd., 2015.

Unit I	Chapter 2 –sections 6.1 to 6.3; Chapter 4; Chapter5 –sections 1, 2, 3, 4
Unit II	Chapter 5–sections 5, 6; Chapter 6 – sections 1to 6
Unit III	Chapter 8–sections 1 to 4; Chapter 11
Unit IV	Chapter 12 – sections 1, 2, 3, 4, 5.1 to 5.4 & Section 6
Unit V	Chapter 3 – sections 2, 3, 4, 5; Chapter 10 – sections 1.1 – 1.3

Book for Reference:

1. Differential Equations and its Applications by Dr. S.Arumugam and Mr. A.ThangapandiIssac, New Gamma Publishing House, Palayamkottai, Edition, 2014.

COURSE CODE: 4BCEA3

ALLIED COURSE III – PROGRAMMING IN C (THEORY & LAB)

Unit I

Introduction to computers – types of programming languages – Introduction to C – Structure of C programs – Constants, Variables and data types – operators and expressions – Input and Output operations – Decision making and branching – decision making and looping

Unit II

Arrays: one and two dimensional arrays – initializing two dimensional arrays Handling of character strings: Declaring and initializing string variables – reading strings from terminal – writing strings to screen – arithmetic operations on characters – string handling functions

Unit III

User defined functions: Introduction – need for user defined functions – the form of C functions – return values and their types – calling a function – categories of functions – nesting of functions – recursion – functions with arrays – the scope and lifetime of variables

Structures and Unions: Structure definition – giving values to members – structure initialization – arrays of structures – arrays within structures – structures within structures – structures and functions – unions

Unit IV

Pointers: Introduction – understanding pointers – accessing the address of a variable – declaring and initializing pointers – accessing a variable through it's pointer – pointer expressions – pointer increments and scale factor – pointers and arrays – pointers and functions – pointers and structures

UNIT V

File Handling: defining and opening a file – closing a file – i/o operations on files – error handling during i/o operations – random access to files – command line arguments

Preprocessor: Introduction – Macro substitution, file inclusion and compiler control directives

Text Book

1. Programming in ANSI C – E.Balagurusamy Tata McGrawHill Publishing Company Ltd, New Delhi

Reference Books

1. Programming with C – K.R.Venugopal, Sudeep.R Prasad Tata McGrawHill Publishing Company Ltd, New Delhi

COURSE CODE : 4BCEAP2

Allied Practical – II - PROGRAMMING IN C AND C++ LAB

(for allied course III & IV)

1. Write a program in C to find whether the given number is odd or even using class
2. Write a program in C to find whether the given number is prime or not using class.
3. Write a program in C to sort the numbers in ascending and descending order.
4. Write a program in C to whether the given number is perfect or not.
5. Write a program in C to find whether the given number is palindrome or not
6. Write a program in C to count the occurrence of positives, negatives and zeroes in the list of numbers.
7. Write a program in C to find the simple and compound interest.
8. Write a program in C to check whether the given number is Armstrong or not.
9. Write a program in C++ to add complex numbers using operator overloading
10. Write a program in C++ to multiply complex numbers using operator overloading
11. Write a program in C++ to convert temperature from Fahrenheit to Celsius
12. Write a program in C++ to calculate variance and standard deviation of N numbers
13. Write a program in C++ to find largest value of two numbers using nesting of member functions.
14. Write a program in C++ to find the sum of digits using constructor
15. Write a program in C to prepare the pay bill of employees
16. Write a program in C++ to calculate the volume of sphere, cone and cylinder using inline function
17. Write a program in C++ to prepare the student mark list
18. Write a program in C++ to perform the matrix addition, subtraction, and multiplication using single level inheritance
19. Write a program in C++ to find out the standard deviation using hybrid inheritance.
20. Write a program in C for counting even and odd numbers using pointers to objects

II YEAR – III SEMESTER

COURSE CODE: 7NME3C

COURSE II – EFFECTIVE EMPLOYABILITY SKILLS

Unit I Curriculum Vitae & Facing the Interview

Applying for jobs, Preparing the curriculum Different formats vita, Facing the interviews, Frequently Asked Questions (FAQs).

Unit II Interpersonal Communication

One to one Communication - One to group Communication

Unit III Group Discussion

Listening, Ice-breaking, Leader – Member Moderates his role responsibility, Conflict, Management, Consensus, Steps involved

Unit IV Team Work

Qualities Selection constant & comfort, Orientation Review Tea, Review of the team work

Unit V Motivation

Leadership & Motivation, Behaviour, Motives Managerial Skills

Books for Reference:

1. E.H.McGrath, S.J., “Basic Managerial Skills For All”, Prentice-Hall of India Private Limited, New Delhi 110 001. ISBN-0-87692-498-4.
2. D.K.Sarma, “You & Your Career”, Wheeler Publishing, 755, Anna Salai, Chennai 600002. ISBN 81-7544-170-4. -1999
3. Indian Jaycees, “Skills” Series, published by Indian Jaycees.
4. S.P.Sachdeva, “Interview In A Nutshell”, Sudha Publications (P) Ltd., B-5, Prabhat Kiran, Rajendra Place, New Delhi 110 008.

III SEMESTER

COURSE CODE: 7SBS3A1

COURSE I – COMPETITIVE EXAMINATION SKILLS

Objectives:

- To build a sense of awareness among students through proper guidance about various competitive examinations in order to motivate students for prospective career in government and corporate sector.
- To intensively guide students for competitive examinations like TNPSC, UPSC, SSC, RRB, IBPS etc.

Unit I

Public Service Commission: Tamil Nadu Public Service Commission (TNPSC) and its role - History of TNPSC - Constitutional Provisions on the Formation, Functions, and Powers of Public Service Commissions for the Union and for the States - TNPSC and its rules of Procedure.

Eligibility and examination pattern: TNPSC - Union Public Service Commission (UPSC) - Staff Selection Commission (SSC) - Railway Recruitment Board (RRB) – Institute of Banking Personnel Selection (IBPS).

Unit II

Intelligence, creativity & application, testing & assessment - Types, verbal abilities & fluency

Unit III

Numerical ability:

Numbers, simplification, time and work, percentage, fraction, speed and distance, simple and compound interest, ratio and proportion

Unit IV

Spatial and perceptual abilities, situation reaction test

Unit V

Memory and inductive reasoning, Logical reasoning, Coding and Decoding, Direction Test, Syllogism

Books for Reference:

1. Ajay rai, “intelligence tests”, sterling paperbacks, published by sterling publishers pvt. Ltd., 1-10, green park extension, new delhi 110 016., 2001
2. Competition success review magazines.

III SEMESTER**COURSE CODE: 7SBS3A2****COURSE II – executive SKILLS****Objectives:**

- To understanding good leadership behaviors
- To prepare themselves for training after reviewing administrative matters and making introduction
- To understand qualities and strengths
- To understand housekeeping and documentation skill

Unit I

Professionalism: professional approach & behaviour – rational vs. Emotional decisions – analysis of self-competence and self confidence – qualities of an effective executive

Unit II

Corporate etiquette: dressing occasions – formal – semi formal and informal – eating habits– table manners – body language: kinesics and proximity

Unit III

Housekeeping skills: cleanliness at work place – organizing the work table and shelves – spatial utility and energy saving habits – office files and personal computer / laptop management

Unit IV

Front office skills: reception and greeting – telephone manners – effective visitor appointments management – preparation to attend office meetings – preparation to hold office meetings

Unit V

Documentation: objectives, report writing, how to write minutes, preparation methods, and report for media?

Books for Reference:

1. Naveen kumar, sudan a. S; managerial skill development, first edition (2004), anmol publications
2. Lesikar & flatley, basic business communication, new delhi: tata mcgraw hill
3. www.executiveworld.com
4. www.selfconfidence.co.uk
5. www.senselang.com

II YEAR – III SEMESTER

COURSE CODE: 7SBS3A3

COURSE III – DISASTER MANAGEMENT

Objectives:

- To provide students an exposure to disaster, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction.
- To gain a preliminary understanding of approaches of disaster risk reduction (drr)
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live with due sensitivity.

Unit-I

Introduction to disasters

Concepts, and definitions (disaster, hazard, vulnerability, resilience, risks)

Unit –II

Disasters: classification, causes, impacts

Including social, economic, political, environmental, health, psychological, etc., Differential impacts- in terms of caste, class, gender, age, location, disability global trends in disasters urban disasters, pandemics, complex emergencies, climate change.

Unit – III

Approaches to disaster risk reduction

Disaster cycle – its analysis, phases, culture of safety, prevention, mitigation and preparedness, community based DRR, structural – non structural measures, roles and responsibilities of community, panchayati raj institutions/ urban local bodies (PRIs/ULBs), states, centre, and other stake-holders.

Unit –IV

Inter-relationship between disasters and development

Factors affecting vulnerabilities, differential impacts, impact of development projects such as dams, embankments, changes in land-use etc. Climate change adaption. Relevance of indigenous knowledge, appropriate technology and local resources.

Unit –V

Disaster risk management in India

Hazard and vulnerability profile of India

Components of disaster relief: water, food, sanitation, shelter, health, waste management

Institutional arrangements (mitigation, response and preparedness, dm act and policy, other related policies, plans, programmes and legislation).

Books for Reference:

1. Alexander David, Introduction in ‘ Confronting Catastrophe’, Oxford University Press, 2000
2. Andharia J. Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no.8, 2008
3. Blaikie, P, Cannon T. Davis Ii, Wisner B 1997. At Risk Natural Hazards, peoples’ Vulnerability and Disaster, Routledge.
4. Coppola P Damon, 2007, Introduction to International Disaster Management.
5. Carter, Nick 1991. Disaster Management: A Disaster Manager’s Handbook. Asian Development Bank, Manila Philippines.
6. Cuny, F. 1983. Development and Disasters, Oxford University Press.
7. Document on World Summit on Sustainable Development 2002.
8. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
9. Government of India, 2009. National Disaster Management Policy,
10. Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk, Management, NIDM, New Delhi
11. Indian Journal of Social Work 2002. Speical Issue on Psychological Aspects of Disasters, Volume 63, Issue2, April.
12. Kapur, Anu & others, 2005: Disasters in India Studies of grim reality, Rawat Publishers, Jaipur.
13. Parasuraman S, Acharya Niru 2000. Analysis forms of vulnerability in a disaster, The Indian Journal of Social Work, vol 61, issue 4, October.
14. Pelling Mark, 2003, The Vulnerability of Cities: Natural Disaster and Social Resilience Earthscan publishers, London.
15. Reducing risk of disasters in our communities, Disaster theory, Tearfund, 2006.
16. UNISDR, Natural Disasters and Sustainable Development: Understanding the links between Development, Environment and Natural Disasters, Background paper No.5. 2002.
17. IFRC, 2005. World Disaster Report: Focus on Information in Disaster, PP.182-225.

PART – V – EXTENSION ACTIVITIES

Extension Activities will be organized for 2 days in the Third Semester. The programme may be organized in any Saturday and Sunday.

A meeting of all the staff of the College (Teaching, Administrative and Technical Staff) be conducted before departing to the camp in which each and every aspect like Programmes to

carried out, accommodation, food, medical aid, transport facilities, etc., should be thoroughly discussed.

One credit will be allotted for this Extension Activities. The marks allotted for each camp will be 100. Each student participating in the camp will be evaluated internally for 100 marks. The criteria for evaluation of Extension Activities will be as follows:

S. No.	Criteria	Maximum Marks
1.	Interaction with villagers	10
2.	Participation / Attitude towards work	10
3.	Participation in interaction and discussion	10
4.	Knowledge of problems / issues	10
5.	Organising & decision making ability	20
6.	Expression: a) Cultural programmes	10
	b) Report Writing	20
7.	Ability to adjust and work in a team	10
Total		100

ANANDA COLLEGE, DEVAKOTTAI -630 303

III B.Sc Mathematics Syllabus for Nov 2020 Semester (V Semester)

Sem	Part	Sub.code	Subject	Cr.	Hrs/ Week	Max.Marks			
						Int	Ext	Total	
V	III	7BMA5C1	Core-IX-Real Analysis	4	6	25	75	100	
	III	7BMA5C2	Core-X-Statistics I	4	5	25	75	100	
	III	7BMA5C3	Core-XI-Operations Research I	4	5	25	75	100	
	III	7BMAE1A/ 7BMAE1B	Elective (I) - A) Graph Theory (or) B) Special Functions	5	5	25	75	100	
	III	7BMAE2A/ 7BMAE2B	Elective (II) – A) Numerical Analysis (or) B) Combinatorics	5	5	25	75	100	
	IV		7SBS5A4/ 7SBS5A5/	Entrepreneurial Development Skills / Heritage and Tourism	2	2	25	75	100
			7SBS5A6/ 7SBS5A7	Marketing And Sales Management / Urban Planning	2	2	25	75	100
			Total	26	30	-	-	700	

III YEAR - V SEMESTER

COURSE CODE: 7BMA5C1

CORE COURSE - IX – REAL ANALYSIS

Unit – I

Introduction – Sets and functions – Countable and Uncountable sets – Inequalities of Holder and Minkowski – Metric spaces – Definition and examples – Bounded sets in a metric space – Open Ball in a metric space – Opensets.

Unit – II

Subspace – Interior of a set – Closed sets – Closure – limit point – Dense sets – Completeness – Baire’s Category Theorem

Unit – III

Continuity – Homeomorphism – Uniform continuity.

Unit – IV

Connectedness – Definition and examples – Connected subsets of \mathbb{R} – Connectedness & Continuity.

Unit – V

Compact Metric spaces – Compact subsets of \mathbb{R} – Equivalent Characterization for Compactness – Compactness and Continuity.

Text Book:

1. Modern Analysis, Dr. S.Arumugam & Mr. A.Thangapandi Issac, New Gamma Publishing House, Palayamkottai, Edition 2015.

Unit I	Chapter 1 sections 1.1 to 1.4 Chapter 2 sections 2.1 to 2.4
Unit II	Chapter 2 sections 2.5 to 2.10 & Chapter 3
Unit III	Chapter 4 sections 4.1 to 4.3
Unit IV	Chapter 5
Unit V	Chapter 6

Book for Reference:

1. Richard R.Goldberg, Methods of Real analysis, IBM Publishing, New Delhi.

COURSE CODE: 7BMA5C2

CORE COURSE - X – STATISTICS - I

Unit – I

Central Tendencies – Introduction – Arithmetic Mean – Partition Values – Mode – Geometric Mean and Harmonic Mean – Measures of Dispersion.

Unit – II

Moments – Skewness and Kurtosis – Curve fitting – Principle of least squares.

Unit – III

Correlation – Rank correlation Regression – Correlation Coefficient for a Bivariate Frequency Distribution.

Unit – IV

Interpolation – Finite Differences – Newton's Formula – Lagrange's Formula – Attributes – Consistency of Data – Independence and Association of Data.

Unit – V

Index Numbers – Consumer Price Index Numbers – Analysis of Time series – Time series – Components of a Time series – Measurement of Trends.

Text Book:

1. Statistics by Dr. S. Arumugam and Mr. A.ThangapandiIssac, New Gamma Publishing House, Palayamkottai, June 2015.

Unit I	Chapter 2 sections 2.1 to 2.4 Chapter 3 section 3.1
Unit II	Chapter 4 sections 4.1 & 4.2 Chapter 5 section 5.1
Unit III	Chapter 6 sections 6.1 to 6.4
Unit IV	Chapter 7 sections 7.1 to 7.3 Chapter 8 sections 8.1 to 8.3
Unit V	Chapter 9 sections 9.1 & 9.2 Chapter 10 sections 10.1 to 10.3

Book for Reference:

1. Statistics Theory and Practice by R.S.N.Pillai and Bagavathi, S.Chand and Company Pvt. Ltd. New Delhi, 2007.

COURSE CODE: 7BMA5C3**CORE COURSE - XI – OPERATIONS RESEARCH - I****Unit – I**

Introduction – Origin and Development of O.R – Nature and features of O.R. – Scientific Method in O.R. – Modelling in O.R. – Advantages and Limitations of Models – General solution methods of O.R. models – Applications of Operations Research – Linear Programming problem – Mathematical formulation of the problem – Illustration on Mathematical formulation of linear programming problems – Graphical solution method – Some exceptional cases – General linear programming problem – Canonical and Standard forms of L.P.P – Simplex method.

Unit – II

Use of Artificial variables (Big M method – Two Phase method) Duality in linear programming – General primal and dual pair – Formulating a Dual problem – Primal – Dual pair in matrix form – Duality Theorems – Complementary Slackness Theorem – Duality and Simplex method – Dual simplex method.

Unit – III

Introduction – L.P. formulation of T.P. – Existence of solution in T.P. – The Transportation table – Loops in T.P. – Solution of a Transportation problem – Finding an initial

basic – feasible solution (NWCM – LCM – VAM) – Degeneracy in TP – Transportation Algorithm (MODI Method) – Unbalanced T.P – Maximization T.P.

Unit – IV

Assignment problem – Introduction – Mathematical formulation of the problem – Test for optimality by using Hungarian method – Maximization case in Assignment problem.

Unit – V

Sequencing problem – Introduction – problem of sequencing – Basic terms used in Sequencing– n jobs to be operated on two machines – problems – n jobs to be operated on K machines–problems–Two jobs to be operated on K machines (Graphical method)–problems.

Text Book:

1. Operations Research (14th edition) by KantiSwarup, P.K.Gupta and Man Mohan, Sultan Chand & Sons, New Delhi, 2008.

Unit I	Chapter 1 sections 1.1 to 1.7, 1.10 Chapter 2 sections 2.1 to 2.4 Chapter 3 sections 3.1 to 3.5 Chapter 4 sections 4.1 to 4.3
Unit II	Chapter 4 sections 4.4 Chapter 5 sections 5.1 to 5.7, 5.9
Unit III	Chapter 10 sections 10.1 to 10.3, 10.5, 10.6, 10.8, 10.9, 10.12, 10.13, 10.15
Unit IV	Chapter 11 sections 11.1 to 11.4
Unit V	Chapter 12 sections 12.1 to 12.6

Books for Reference:

1. P.K.Gupta and D.S.Hira, Operations Research, 2nd Edition, S.Chand & Co., New Delhi, 2004.
2. Taha H.A., Operations Research–An Introduction, 8th edition, Pearson Prentice Hall.

COURSE CODE: 7BMAE1A

ELECTIVE COURSE - I (A) – GRAPH THEORY

Unit – I

Graphs – Definition and examples – Degrees – Sub graphs – Isomorphism – Ramsey Numbers – Independent Sets and Coverings – Intersection graphs and Line graphs – Matrices – Operations on Graphs.

Unit – II

Degree Sequences – Graphic sequences – Walks, Trails and Paths – Connectedness and Components – Blocks – Connectivity – Eulerian Graphs – Hamiltonian Graphs.

Unit – III

Trees – Characterisation of Trees – Centre of a Tree – Matchings–Matchings in Bipartite Graphs.

Unit – IV

Planer graphs and properties – Characterization of Planer graphs – Thickness, crossing and outer planarity – Chromatic number and Chromatic Index – The Five colour theorem and four colour problem.

Unit – V

Chromatic polynomials – Definitions and Basic properties of Directed Graph – Paths and Connections – Digraphs and Matrices – Tournaments.

Text Book:

1. Invitation to Graph Theory by Dr. S.Arumugam & S.Ramachandran, Scitech Publications (India) Pvt. Ltd,2001 .

Unit I	Chapter 2
Unit II	Chapters 3, 4 & 5
Unit III	Chapters 6 & 7
Unit IV	Chapter 8, Chapter 9, sections 9.1 to 9.3
Unit V	Chapter 9 section 9.4; Chapter 10

Book for Reference:

1. Graph Theory with Applications to Engineering and Computer Science by Narasingh Deo, Prentice Hall of India, New Delhi.

COURSE CODE: 7BMAE1B

ELECTIVE COURSE – I (B) – SPECIAL FUNCTIONS

Unit – I

Power Series solution of Ordinary Differential equations of First and Second Order – Properties of Power Series – Illustrative Examples

Unit – II

Singular Points of Linear Second Order Differential Equations – The Method of Frobenius.

Unit – III

Bessel's Equation – Solution of Bessel's General Differential Equation – Recurrence Formula for $J_n(X)$ – Generating Function $J_n(X)$

Unit – IV

Hermite's Polynomials – Orthogonal properties of Hermite's polynomials – Recurrence formula for Hermite's polynomials – Laguerre polynomials – Orthogonal properties of Laguerre polynomials.

Unit – V

Legendre's Equation – Solutions of Legendre's Equation – Definition of $P_n(X)$ and $Q_n(X)$ – Laplace Definite Integral for $P_n(X)$ – Orthogonal Properties of Legendre's Polynomials – Recurrence Formula for Legendre's Polynomials – Beltrami's Result – Christoffel's Expansion.

Text Books:

1. Special Functions by J.N.Sharma and R.K.Gupta, Krishna Prakashan Media (Pvt.) Ltd. Meerut, Twenty Sixth Edition 2006.
2. Advanced Calculus for Applications by F.B.Hilde Brand, Prentice Hall, INC. Englewood Cliffs, New Jersey

Unit I	Chapter 4 sections 4.1,4.2 of (2)
Unit II	Chapter 4 sections 4.3,4.4 of (2)
Unit III	Chapter 5 sections 5.1,5.2,5.6,5.7 of (1)
Unit IV	Chapter 6 sections 6.7,6.8 Chapter 7 sections 7.3,7.7 of (1)
Unit V	Chapter 2 sections 2.1 to 2.3,2.6 to 2.10 of (1)

Books for Reference:

1. Differential Equations and Calculus of Variations by L.Elsgolts.
2. Differential Equations by Diwan and Agashe.

COURSE CODE: 7BMAE2A

ELECTIVE COURSE - II (A) – NUMERICAL ANALYSIS

Unit – I

Solution of Algebraic and Transcendental equations – Introduction, Bisection Method, Iteration Method, Method of False position, Newton Raphson Method.

Unit – II

Interpolation : Finite differences – Forward differences, Backward differences, Central differences, Symbolic relations, Newton’s formula for Interpolation – Interpolation with unevenly spaced points – Lagrange’s Interpolation formula.

Unit – III

Numerical Differentiation and Integration – Introduction, Numerical Differentiation – Errors in Numerical Differentiation – Cubic Spline method – maximum and minimum values of a tabulated function, Numerical Integration – Trapezoidal Rule and Simpson’s 1/3 and 3/8 rules.

Unit – IV

Matrices and Linear system of Equations – Gaussian Elimination method, Gauss – Jordan method, Modification of the Gauss method to compute the inverse – Method of Factorization – Iterative method – Jacobi and Gauss Seidal methods.

Unit – V

Numerical Solutions of Ordinary Differential Equations – Solution by Taylor Series, Picard’s method of Successive approximations, Euler method, Modified Euler method Runge – Kutta Methods.

Text Book:

1. Introductory Methods of Numerical Analysis, (4th Edition) by S.S.Sastry, PHI Learning Pvt. Ltd., New Delhi, 2009.

Unit I	Chapter 2 sections 2.1 to 2.5
Unit II	Chapter 3 sections 3.3, 3.6, 3.9, 3.9.1.
Unit III	Chapter 5 sections 5.1, 5.2 - 5.2.2, 5.3, 5.4 – 5.4.1, 5.4.2, 5.4.3.
Unit IV	Chapter 6 sections 6.3.2, 6.3.3, 6.3.4, 6.4.
Unit V	Chapter 7 sections 7.2 to 7.4, 7.4.2, 7.5

Books for Reference:

1. Numerical Methods by P.Kandasamy and Others S.Chand Publications.
2. Numerical Analysis with Programming in C by Dr. S.Arumugam, A.Thangapandi Issac, Dr. A.Somasundaram, New Gamma Publishing House, Palayamkottai, 2013.

COURSE CODE: 7BMAE2B

ELECTIVE COURSE - II (B) – COMBINATORICS

Unit – I

Basic Combinatorial Numbers – Stirling Numbers of the First kind – Stirling Numbers of

the Second kind – Recurrence Formula for S_n^m – Recurrence formula for P_n^m – Patterns of Distributions.

Unit – II

Generating Functions and Recurrence Relations – The Algebra of Formal Power Series – Generating functions for Permutations – Generating functions for Partitions - Inventory of Maps – Recurrence Relations.

Unit – III

Symmetric functions – The Monomial Symmetric functions K_λ – The complete Homogeneous Symmetric Functions h_λ – The Elementary Symmetric Functions a_λ – The Power sum Symmetric Function s_λ – Multinomials.

Unit – IV

Inclusion and Exclusion Principle - Permutations with Forbidden Positions – The Menage problem – Problem of Fibonacci – Polya Theory – Necklace problem and Burnside’s Lemma – Cyclic Index of a Permutation Group.

Unit – V

Polya’s Theorems and their Immediate Applications – Binary operations on Permutation Groups.

Text Book:

1. Combinatorics Theory and Applications by V.Krishnamurthy, Affiliated East-West Press Private Limited, New Delhi, 1985.

Unit I	Chapter 1 section 1
Unit II	Chapter 1 section 2
Unit III	Chapter 1 sections 3 & 4
Unit IV	Chapter 1 sections 5 & 6 Chapter 2 sections 1, 2
Unit V	Chapter 2 sections 3, 4

Books for Reference:

1. A First Course in Combinatorial Mathematics by Ian Anderson, Oxford Applied Mathematics and Computing Science Series, U.K., 1974
2. Combinatorics by V.K.Balakrishnan, Schuam Series, 1996.

COURSE CODE: 7SBS5A4

COURSE I – ENTREPRENEURIAL DEVELOPMENT SKILLS

Objectives:

- To learn the concepts, principles of entrepreneurship and to develop entrepreneurial interest and qualities
- To impart the process and procedure involved in setting up of a small enterprise and to acquire the necessary managerial skills to run a small-scale industry

Unit I

Concept of Entrepreneurship and basics of selection of project/business

Qualities of an entrepreneur – Classification of industries as tiny, small, medium and large Infrastructure facilities, threats and Opportunities-Corporate Social Responsibility

Unit II

Preparation of Project Proposal

Introduction to nature of business – techniques of market survey – goal setting, funding institution, departmental licenses and clearance – production capacity – fixed capital – working capital and total investment – costing, pricing, profit assessment – return on capital investment, Break Even Point and Cash Flow

Unit III

Marketing skills

Salesmanship, credit sales, customer management, negotiation skills, business tie ups, export possibilities and policies

Unit IV

Management of Men, Materials, Money, Machine and Methods (the 5Ms)

Management of man power, problem solving, purchasing techniques, inventory management– Quality control and standards – resource mobilization – Financial planning, record keeping and accounting, knowledge of employees' welfare measures – plant selection and layout.

Unit V

Industrial Management

Technology up gradation – value addition – diversification – utilization of waste and by products – concepts of zero discharge

Books for Reference:

1. Entrepreneurial Development – S.S.Khanna, S.Chand & Co.
2. Entrepreneurial & Management of Small Business – CED, Madurai – 10.
3. Entrepreneurship Development – S.P.Saravanan, Sul

COURSE CODE: 7SBS5A5

COURSE II – HERITAGE AND TOURISM

Objectives:

- To understand the definitions, terminology and concepts of cultural heritage and its relationships with tourism.
- To Understand heritage tourism supply by examining different categories of heritage attractions and the contexts within which heritage exists and additional perspectives on scale from the supply perspective
- To understand the role of interpretation in cultural heritage sites and the relevance of such interpretation approaches to visitors.
- Provide a framework to plan, design, and assess interpretation programs for tourists

Unit I

Tourism – Introduction – Concepts – Significance – Forms of Tourism – Effects of Tourism – Social, Economic and Environmental aspects – Human Rights

Unit II

Importance of preserving heritage – Heritage Spots in India – In Tamil Nadu – Brief history of the heritage spots – The role of heritage spots in promoting tourism – UNESCO guidelines on Heritage

Unit III

Role of Government in promoting tourism – ITDC- TTDC-Palace on wheels – Travel industry service network – Land (rail and road) Air – Water – Travel Agency – Hospitality and Accommodation

Unit IV

Travel Guide – Features – requirements – One's role as a guide – Income and Employability – Qualities and skills of a professional travel or tourist guide

Unit V

Project work – Field visit to heritage and tourism spots in Sivagangai and Ramanathapuram Districts and submission of a report (15 to 25 pages)

Books for Reference:

Bhatia, A. K – Tourism Development Principles and Practices,
(Sterling Publishers (P) Ltd., New Delhi)

- Ananand M. M – Tourism and Hotel Industry in India
(Sterling Publishers (P) Ltd., New Delhi)
- Acharya Ram – Tourism and Cultural Heritage
(Rosa Publications: Jaipur, 1986)
- Jha, S.M – Tourism Marketing (Himalaya Publishing House)

COURSE CODE: 7SBS5A6

COURSE III – MARKETING AND SALES MANAGEMENT

Objectives:

- To acquire analytical skills for solving marketing related problems and challenges and to familiar with the strategic marketing management process
- To learn the elements of sales force to be an effective component of an organization's overall marketing strategy.

Unit I

Introduction: Evolution of Marketing – Types of Marketing: Consumer Products Marketing, Industrial Marketing and Services Marketing – Demographic and Behavioural Dimensions of Marketing – Marketing Planning

Unit II

Basics of Market Segmentation, Targeting and Positioning – Components of The Marketing Mix: Product – Price – Place – Promotion – Distribution Channels: Types – Merits and Demerits

Unit III

Marketing Vs Selling – Nature and Scope of Sales Management – Personal Selling and Salesmanship – Selling Function – Understanding Consumer's Decision Making Process – Sales Organization and Types Of Selling

Unit IV

Prospecting – Approaching The Customer – Sales Presentation – Sales Demonstration – Negotiating Buyer Concerns – Closing The Sale – Post Sales Service and Complaint Handling

Unit V

Modern Trends in Marketing and Sales: Internet Marketing – Direct Marketing – Multi Level Marketing – Relationship Marketing – Selling through Kiosks

Books for Reference:

1. Chunawalla, S. A., Sales Management, 5th Edition (2007), Himalaya Publishing House
2. Havaladar, Krishna; Sales And Distribution Management, 1st Edition (2006), Tata Mcgraw Hill
3. Perreault, Jr., William; Mccarthy, E. Jerome, **Basic Marketing, 15th Edition, 2006, Tata Mcgraw Hill**

COURSE CODE: 7SBS5A7

COURSE IV – URBAN PLANNING

Objectives

- To expose the students the various aspects of urban planning.
- To provide students an exposure to development plans, plan formulation and evaluation.
- To gain a preliminary understanding of urban forms, size and infrastructure

Unit I Introduction to urban planning

Urban planning and development- definition of terms- explanation of concepts- trends of urbanization- international, national and regional level- positive and negative impacts of urban development.

Unit II Planning process

Various definitions of town and country planning - principles of planning- types and levels of urban plans- stages in planning process- goals and objectives of planning - delineation of planning areas- surveys and analysis.

Unit III Development plans, plan formulation and evaluation

Scopes and content of regional plan- definition of development plan; types of development plans: master plan, city development plan, structure plan, district plan, action area plan, subject plan, town planning scheme, regional plan, sub-regional plan; planning of industrial estates development strategies- formulation and evaluation.

Unit IV Urban forms, size and infrastructure

Obligatory and discretionary services - implication of urban form and size on services - norms and standards - national and local guidelines - recommendations of rakesh mohan committee.

Unit V Essential Services

Demand strategy, issues and tasks, operation and management aspects of each service–

water supply, sewerage / drainage, solid waste management, roads and street lighting and living environment.

Books for References:

1. Karat Singh, "Rural Development, Principles, Policies And Management Stages", Sage Publication India Pvt.Ltd, 2009
2. George Chanwick, "A System View Planning", Pergamon Press,Oxford1978
3. Cpheeri, M/C Ua, ' Manual On Water Supply And Sewerage', New Delhi, 1991
4. Dhaliwal S.S, 'Urban Infrastructure Development In Small And Medium Towns' Deep And Deep Publications, 2004.