

M.C.A.  
Prospectus No. 081775

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SANT GADGE BABA AMRAVATI UNIVERSITY

(FACULTY OF ENGINEERING & TECHNOLOGY)

PROSPECTUS

Prescribed for

MASTER IN COMPUTER APPLICATION

First Year M.C.A.

Examinations, 2007-2008

BI-ANNUAL PATTERN

2007

(Price Rs.8/-)

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SYLLABUS

PRESCRIBED FOR

THREE YEAR POST GRADUATE DEGREE COURSE

MASTER IN COMPUTER APPLICATIONS AND

ONE YEAR POST GRADUATE DIPLOMA COURSE

POST GRADUATE DIPLOMA IN COMPUTER SCIENCE

FIRST YEAR

SEMESTER : FIRST

1 MCA 1/ 1 CS 1 COMPUTER ORGANIZATION

Unit I Chapter Objectives, Evaluation of Computers and computer generations, Technological trends, Measuring performance, speed up, Amdahl's law, Von Neumann machine architecture, Functional units and components in computer organization, Program development tools, Operating systems.

Unit II From Electron to Bits, Binary representation of positive integers, Negative integers, Fixed point arithmetic operations on positive and signed (Negative) integers, Floating-Point numbers (IEEE 754 standard) and operations, BCD arithmetic operation, Design of ALU, Bit slice processors.

Unit III Concept of instruction formats and instruction set, instruction set types, types of operands and operations, Generation of memory addresses and addressing modes, Subroutine nesting using stacks to implement subroutine calls and calling conventions, Processor organizations, Register organization, Stack based organizations, Encoding of machine instructions, General features of RISC and CISC instruction sets, modern processors convergence of RISC with CISC, Processor microarchitecture-I - Fundamental concepts for data path implementation, Processor microarchitecture-II - Data path implementation, microprogrammed execution, recent innovations in execution unit design.

Unit IV Instruction pipeline, instruction pipeline hazards, overcoming hazards using a pipeline with forwarding paths, instruction set design influence on pipelining, example of pipelined CISC processor, example of pipelined RISC processor, VLIW (Very Long Instruction Word) processors, Vector processors, Multithreaded processors, Compilation techniques support to instruction level parallelism, Extracting parallelism.

Unit V Some basic concepts, memory hierarchy, internal organization of semiconductor main memory chips - RAM and ROM, semiconductor main memories - RAM, semiconductor Read - Only memories - ROMs, speed, size and cost, secondary storage magnetic ferrite core memories, optical disks CD-ROM memories, data caches, instruction caches, and unified cache, features describing a cache, cache implementations, multilevel caches.

Unit VI Virtual memory organization, mapping functions for translating the program pages in virtual to physical addresses space, partitioning, segmentation (superpages or page blocks) partitioning of virtual address space in to segment and page address, demand paging and swapping, cache and

virtual swapping, cache and virtual memory, inverted page tables concept, protection between programs running on the same system, accessing I/O devices, programmed I/O, interrupts, direct memory access DMA, bus arbitration, interface circuits, I/O interfaces, I/O processors, external I/O devices.

Text Book : Computer Architecture by Micholus Carter & Rajkamal, Schaum Series Pub.

## 1 MCA 2 / 1 CS 2 PROBLEM SOLVING USING C++

Unit I. Objects & Classes in C++ : Declaring & using classes, Constructors, Objects as functions arguments, Copy Constructor, Static class data. Arrays of objects, C++ String class.

Unit II. Operator overloading : Overloading unary & binary operators. Data conversion. Pitfalls of operator overloading. Pointers & arrays. Pointers & functions. new & delete operators. Pointers for objects.

Unit III. Inheritance in C++ : Derived class & base class, Derived class constructors, Function overloading, class hierarchies, Public and private inheritance, Multiple inheritance. Containership : classes within classes.

Unit IV. Virtual functions concepts, Abstracts classes & pure virtual functions. Virtual base classes, Friend functions, Static functions, Assignment and copy initialization, the this pointer. Dynamic type information.

Unit V. Streams & Files in C++ : Stream classes, stream errors, disk file I/O with streams, File pointers, Error handling in file I/O. File I/O with members functions, overloading the extractions & insertion operators, Memory as a stream object, command-line arguments. Multifile programs.

Unit VI. Function Template, Class templates, Exception syntax, Multiple exceptions, exception with arguments. Introduction to the Standard Template Library. Algorithms, Sequential Containers, Iterates, Specialized iterates, Associative containers. Function objects.

Text-Book :

1. Savitch: Problem Solving using C++ (Addison Wesley) Low-Priced Edition.

References :

1. Robert Lafore Object-Oriented Programming in C++ (Galgotia)
2. Herbert Schildt C++ : Complete Reference (TMH)

3. Bjarne Stroustrup C++ Programming Language (Addison-Wesley)
4. Venugopal Mastering C++ (TMH)
5. Lipmann C++ Primer (Addison-Wesley)

#### 1MCA2 / 1 CS 2 LAB: LIST OF PROGRAMS

The sample list of program is given below. This list can be used as guide line for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

- 1 Write a C++ program to implement a stack with its constructor and two member functions PUSH and POP
- 2 Write a C++ program to find product of two same numbers from 0 to 9 stored in an object array of 10 objects and then free the memory space occupied by an object array
- 3 Write a C++ program to overload minus operator as an unary and binary operator
- 4 Write a C++ program using friend operator function to overload plus binary operator
- 5 Write a C++ program to calculate the circumference of an earth (subclass) after getting distance of it measured from sun from planet (super class)
- 6 Write a C++ program for an inventory that stores the name of an item, the number on hand, and its cost. Include an inserter and an extractor for this class
- 7 Write a C++ program that creates an output file, writes information to it, closes the file and open it again as an input file and read the information from the file
- 8 Write a C++ program that counts number of words in a file
- 9 Write a C++ program to create an abstract class area having an abstract function get Area which will find an area of derived classes rectangle and triangle
- 10 Write a C++ program to create a generic function that swaps the values of the two variables it is called with"

#### 1MCA3 / 1 CS 3COMPUTER ORIENTED STATISTICAL METHODS

UNIT-I : Introduction

Definitions : Websters, secrists, Gronton and Cowden definitions of statistics

Improtance of statistics

Scope of statistics : Industry, Economy, Planning, medical science, Computer Science etc.

Limitations of statistics.

General principles of classification of data.

Construction of Frequency distribution, cummulative frequency distribution, relative frequency distribution. Graphical representation of frequency distribution.

Diagrammatic representation : Simple bar, subdivided bar, pie diagram.

Numerical Problems.

UNIT-II : Measures of central Tendency & Measures of dispersion:

Concept of central tendency, criteria for good measures of central tendency.

Arithmetic mean for grouped and ungrouped date, properties of a.m., combined mean, weighted mean, merits and demerits. Median, mode, G.M., H.M. for grouped & ungrouped data with its merits & demerits.

Partition values : quartiles, deciles, percentiles

Numerical problems on central tendency.

Concept of dispersion criteria for good measures of dispecrsion.

Measures of dispersion : Range, quartile deviation, mean deviation, S.D. for grouped & ungrouped data with its merits & demerits          Variance : Definition for grouped & ungrouped data, combined variance, co-efficient of Dispersion, co-efficient of variation. Numerical problems on measures of dispersion.

UNIT-III : Moments, measures of Skewness and Kurtosis correlation

Raw & Central moments : for grouped & ungrouped data (upto first four moments) & their relationships. Skewness, measures of skewness, co-efficient of skewness, bempirical relation between mean, mode, median. Pearson's & Bowley's co-efficient of Skewness. Kurtosis & types of kurtic curves, co-efficient at Kurtosis based on moments.

Numerical problems on moments, co-efficient of skenmen & co-efficient of Kurtosis.

Unit-IV          Corelation : Concept of correlation for bivariate data, scatter diagram, positive, negative & no correlation, cause and effect relationship.

Karl Pearson's co-efficient of correlation( $r$ ), limits at  $r$  and interpretation of  $r$ , assumption on  $r$ .

Effect of change of origin & scale on  $r$ , independence of variables.

Spearman's Rank correlation, repeated rank correlation.

Numerical problems on Karl Pearson's & Spearman's rank correlation co-efficient.

UNIT-V : Regression :

Concept of regression & linear regression

Derivation of regression lines by method of least squares.

Properties of regression co-efficients.

Linear and Non-linear regression : Fitting of second degree curve & curve  $y=abx$  by least square method.

Numerical problems on linear & non-linear regression.

Multiple regression by Yule's notations (for tri-variate data)

Multiple correlation & partial correlation.

UNIT-VI : Time series :

Definition of Time series & uses of time series

Components of Time series, Additive & multiplicative models.

Methods of estimating trend by moving average method graphical method, semiaverage method & by least square methods.

Numerical problems on Time Series.

Text Books:

J.N. Kapoor : Mathematical Statistics (MCG)

Trivedi : Probability and Statistics with Computer Science Applications (TMH)

References:

1. Statistical Methods (An Introductory Text) : J. Medhi

2. Modern Elementary Statistics : J.E. Freund

3. Statistical Methods : S.P. Gupta
4. Fundamentals of Statistics : Goon, Gupta, Dasgupta

1MCA3 / 1 CS 3 Practicals on Statistical Methods:

Minimum 12 practicles to be performed throughout the semester based on following (using C or C++ language).

1. Construction of frequency distribution, graphical methods & diagrammatic representation.
2. Problems on measures of Central Tendency.
3. Problems on measures of disperssion.
4. Problems on moments, measures of Shewmen and Kurtosis.
5. Computation of correlation co-efficient for bivariate data.
6. Fitting of linear & non linear regression lines
7. Computation of rank correlation co-efficient
8. Problems on time series .

1MCA4 / 1 CS 4 PRINCIPLES OF MANAGEMENT

(8 hours/unit)

UNIT I Introduction : Definition and concepts of management, Importance of management .Various management functions & control, responsibilities. Human resources planning , Decision-making, Trade unions & collective bargaining.

UNIT II Organization planning, design and development: Production resources, Production planning, types of production system, production systems, production control.

UNIT III Product design & development : Introduction, design of the product, New product development; Material planning and control. Inventory control technique .

UNIT IV Maintenance and system reliability: Concepts and Objectives of maintenance. Failure analysis,Reliability Maintenance system & Classification. Maintenance planning, TQM ISO 9000 and Quality audit.



UNIT V      Marketing management : Introduction, marketing planning . Consumer behavior, product management, Pricing & promotion decision.Financial planning. Source of finance.

UNIT VI      Project Management: Concepts and importance of project, Project implementation, MIS.MIS meaning and objectives. Types of data, methods of data collection, analysis and presentation of data. Editing, reporting and presentation of data, Decision options.

Text book :

A.K.Gupta,J.K. Sharma : Management of Systems (Macmillan)

Referances :

- 1.Appleby                    : Modern Business Administration, 6/e (Macmillan)
- 2.Tritaphy & Reddy : Principals of Management, 2/e (TMH)
- 3.Gupta, Sharma et    : Principales of Practices of Management (Kalyani)

1MCA5 / 1 CS 5      COMMUNICATION SKILLS

Unit I:            Comprehension - word study :-

Synonym, antonym, meanings, matching words, adjectives, adverbs, prefix and suffix, correct forms of commonly misspelled words, understanding of the given passage.

Skimming for general ideas, Contextual vocabulary, Error detection, Note making and Location of argument from text, Ability to answer inferential, factual and personal response.

Unit-II            Comprehension - - Structure study :-

Simple and compound sentences, types of conjunctions, singular and plural, tenses and their effect on verb forms. Use of - not only - but also, if clause, since, may, can, could, would, too etc. Active and passive forms, negative and interrogative, punctuation and capitalization.

Unit III            Theoretical background - importance of communication, its process, model of communication its components & barriers. Types of written communication, organization of a text (Titles, summaries, headings, sequencing, signaling, cueing etc.), Important text factors (length of

paragraph, sentences, words, clarification and text difficulty). Evaluation of written communication for its effectivity and subject content.

Unit IV Specific formats for written communication like - business correspondence, formal reports, technical proposals, research papers and articles, advertising and graphics. Format for day-to-day written communication like applications, notices, minutes, quotations, orders, enquiries etc. Letter writing, Preparation of Curriculum – Vitae, Composing messages-telegrams, telex, fax and e-mail Writing memos, agendas and notices of meetings, Preparing advertisements.

Unit-V Oral communications - Important objectives of interpersonal skills, Verbal communication, its significance, face to face communications, group discussion and personal interviews. Voice modulation and logical argument, Comprehension of text at normal reading speed. Listening skill and timely response, Participation and contribution to discussion, Command over language Formal and informal style of communication, Body language.

BOOKS Recommended :

- 1) Krishna Mohan, Meera Banerjee : Developing Communication Skills, MacMillan India Limited.
- 2) Chrissie Wright (Editor) : Handbook of Practical Communication Skills, Jaico Publishing House.
- 3) Curriculum Development Centre, TTTI WR, Bhopal : A Course in Technical English, Somaiya Publication Pvt. Ltd.
- 4) F.Frank Candlin : General English for Technical Students, University of London Press Ltd.

#### COMMUNICATION SKILLS LABORATORY

Objective :

On completion of this laboratory the candidate should be able to demonstrate adequate skills in oral and written communication for technical English language, actively participate in group discussions and interviews and exhibit the evidence of vocabulary building. Candidates should be assessed through continuous monitoring and evaluation.

The sample list of experiments is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

1. Assignments and tests for vocabulary building
2. Technical report writing
3. Group discussions

4. Interview techniques
5. Projects and tasks such as class news letter
6. Writing daily diaries and letters
7. Interactive language laboratory experiments.

Text Book : Norman Lewis : Word Power Made Easy

<http://www.teachingenglish.org.uk>

#### 1MCA 6 / 1 CS 6 COMPUTER LABORATORY-I

1. Introduction to Windows.
2. Introduction to MS-Word.
3. Introduction to MS-Excel.
4. Introduction to MS-PowerPoint.
5. Introduction to MS-Access
6. Introduction to Tally.
7. Introduction to MS-Internet Explorer.

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SEMESTER : SECOND

#### 2 MCA 1 / 2 CS 1 DATA STRUCTURES & ALGORITHMS

Unit-I Data structures basics, Mathematical/algorithmic notations & functions, Complexity of algorithms, Subalgorithms. String processing: storing strings, character data type, string operations, word processing, and pattern matching algorithms.

Unit-II Linear arrays and their representation in memory, traversing linear arrays, inserting & deleting operations, Bubble sort, Linear search and Binary search algorithms. Multidimensional arrays, Pointer arrays. Record structures and their memory representation. Matrices and sparse matrices.

Unit III Linked lists and their representation in memory, traversing a linked list, searching a linked list. Memory allocation & garbage collection. Insertion deletion operations on linked lists. Header linked lists, Two-way linked lists.

Unit-IV Stacks and their array representation. Arithmetic expressions: Polish notation. Quick sort, an application of stacks, Recursion. Tower of Hanoi problem. Implementation of recursive procedures by stacks, Queues. Deques. Priority queues.

Unit-V Trees, Binary trees & and their representation in memory, Traversing binary trees. Traversal algorithms using stacks, Header nodes: threads. Binary search trees, searching, inserting and deleting in binary trees. Heap and heapsort. Path length & Huffman's' algorithm. General trees.

Unit-VI Graph theory, sequential representation of graphs, Warshalls' algorithm, Linked representation, operations & traversing the graphs. Posets & Topological sorting. Insertion Sort, Selection Sort. Merging & Merge-sort, Radix sort, Hashing.

Text Book:

Seymour Lipschutz: "Theory & Problems of Data Structures", Schaum's Outline Series (McGraw-Hill) Int. Editions.

References:

1. Ellis Horowitz, Sartaj Sahni – Fundamentals of Data Structures (CBS Publications)
2. Trembley, Sorenson:- An Introduction to Data Structures with Applications. (TMH)
3. Kutty: Data Structures using C++ (PHI)
4. Bhagat Singh, Naps : Introduction to Data Structures (TMH)

DATA STRUCTURES- LABORATORY

The sample list of program is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected out comes. Further, C,C++ or Java may be used as the programming language.

1. Write an application to implement Tower of Hanoi Problem Algorithm.
2. Write an application to implement Abstract data type stack
3. Write an program to evaluate Post fix expression using stack
4. Write a program to implement Abstract data type queue.
5. Write a program to implement singly linked list that performs various operation such as insertion, deletion, searching a node in linear linked list.
6. Write a program to implement Preorder Traversal of a binary tree.
7. Write a Program to search a given element using Binary Search.
8. Write a Program to implement Selection Sort.
9. Write a Program to implement Merge Sort.
10. Write a Program to Perform insertion or search in a specified level of a stack implemented tree-structured symbol table.

## 2 MCA 2 / 2 CS 2 OBJECT ORIENTED PROGRAMMING

Unit-I MFC Introduction: MFC history, Architecture & class hierarchy, Creating an application, modifying the application, tooltips, DDX, uses of standard dialog boxes, File Open/Save, color selector, Font Selector, Print Dialog.

Unit-II Windows Common Controls: Initialization & Modification, Hotkey controls, Spin control, Slide Control, Progress bar, Image list, List View controls, List view items, Tree view controls, Tab Controls, Animate Controls Rich Edit Controls.

Unit-III Device Controls & GDI: MFC Dc classes, Windows graphics objects, Vector Graphics, Fonts & Text, Raster graphics. Bitmaps: Device dependent & independent bitmaps. Bitmap resources. Sample Programs.

Unit-IV Custom control development: Validating control, clock state control, hyperlink control, Cursor Control, Mouse & Keyboard inputs, MFC Application object: details, Message routing, message maps & categories, Idle processing, Splash screen component.

Unit-V Document –view Architecture: Documents, Frames, & Views, New document creation, Views: various views classes & their applications in SDI/MDI. Extending the user interface: Keyboard /Mouse messaging, Extending Menus, Property sheets & Wizards.

Unit-VI      Printing Fundamentals: Printing with MFC, GDI mapping modes, WYSIWYG printing, pagination, stopping & aborting the printing. String classes. Cfile class, CfileDialog class, Practical usage of Cfile class, CfileDialog classes. MFC Exceptions.

Text Books:

1.      David White, others: MFC Programming Using Visual C++ Unleashed (Techmedia Publications)
2.      Jeff Prosise: Programming Windows with MFC (Microsoft Press)

References:

1.      Herbert Schildt      :      MFC from Bottom up (TMH)
2.      Al Steven              :      MFC Black Book (IDG)
3.      Kruglinski             :      Inside Visual C++ (Microsoft Press)

2 MCA 2 / 2 CS 2 Object Oriented Programming Labs:

Minimum 12 programs based on the above syllabus with at least two programs on each unit and the recent version of VC++ should be used.

2 MCA 3 / 2 CS 3      SYSTEM ANALYSIS & DESIGN

UNIT I.      Introduction : System Analysis & Design concepts. Role of system analyst. Review of System DLC. Organization as systems. Levels of management culture. Project fundamentals. Feasibility study. Activity planning & control. Managing analysis & design activities.

UNIT II.      Sampling and investigating hard data. Interviewing. Planning & conducting interview & reporting. Joint application design. Using questionnaires. Planning designing and administering the questionnaire.

UNIT III.      Coservation of a decision-makers behavior and office environment. Prototyping : User reactions. Approaches to prototyping & developing prototype. Data flow aproach to requirements. Developing DFDs. Logical & Physical DFDs. Examples of DFDs.

UNIT IV. Data dictionary concept. Data repository. Creating & using data dictionary. Overview of process specifications. Structured English, Decision tables/trees. Decision support system & decision making concepts relevant to DSS. Semi structured decisions. Multiple-criteria decision-making.

UNIT V. System Proposal : Ascertaining hardware/software needs.

Identifying & forecasting cost/benefit & comparing cost/benefit. Writing and presenting the systems proposals. Principles of Delivery.

UNIT VI. Output Design Objectives. Designing printed output, Screen output. Input Design objectives. Form Design. Screen Design for input. Introduction to OOSAD. : Object-Oriented Analysis. Object-Oriented Design.

Text-book :

Kenneth E.Kendall & : "System Analysis and Design"

Julie E.Kendall (Pearson Education) 3/e

References :

1. Yeates "System Analysis & Design" (Macmillan)
2. J.Fitzgerald & A.Fitzgerald. "Fundamentals of System Analysis & Design" (John-Wiley) 3/e
3. Edward "System Analysis & Design" (McGraw-Hill)
4. Whilten, Bentley, Barlow "System Analysis & Design Methods" (Galgotia) 2/e.

2MCA 3 / 2 CS 3 Labs : 8 to 10 Examples of SAD from text book covering each unit of syllabus, using any available SAD tool, as from one available with text book.

2MCA 4 / 2 CS 4 DATA COMMUNICATIONS

Unit-I : Data communication concepts, uses and applications.

Telephone : Voice communication networks, Switches, PBX cellular technologies, Fax. IVR, Voice Mail.

Unit-II : Hardware; network architecture, Hosts, Clients, Circuits, Special purpose Communication Devices, FEP, Multiplexers, Protocol Converters, Line adapters.

Unit-III : Data transmission : Coding, Transmission modes, Band width, Modulation, Modem : Types and Standards, PAM & PCM techniques, Connector cables.

Unit-IV : OSI model, MAC protocol; Controlled & contention-based, Error control in networks, Data link Protocols : asynchronous & synchronous Transmission efficiency.

Unit-V : Network Layer : Topologies. Network routing, Network Standards and network protocols : TCP/IP, IPX/SPX, X.25 & GOSIP protocols.

Unit-VI : LANs : uses and types, LAN components. Ethernet : topology, MAC, types, Token rings : topology, MAC, types, Other types of LANs, MAP (IEEE 802.4)., ArcNet, Apple Talk. LAN performance improvement, selecting a LAN.

Text Book :

1. J.Fitzgerald & A Denis Business Data Communication & Networking, (5/e) (John Wiley & Sons)

References:

1. Schweber: Data Communication (McGrawHill)
2. Miller : Digital & Data Communication (Jaico)

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## 2 MCA 5 BUSINESS SYSTEMS

Unit-I Introduction : Nature of business, objectives, components of business, environment of business system, business system and its sub-systems, forms of legal ownership : sole proprietorship, partnership organisation, company form of organisation. Social responsibilities of business.

Unit-II Company Management : Structure of company management, patterns and problems of company management, company meetings & resolutions, company office - its organisation and management. Business combinations, Government & business.

Unit-III Production functions : Plant location, factory planning, production control and cost control, Budgets and budgetary control, purchasing and storekeeping.

Unit-IV Personnel functions : Personnel management; definition, role of personnel manager, job evaluation, merit rating. Industrial relations, Trade Unionism, employee remunerations, wage payments, incentives & wage policies.



Unit-V Financial functions : Financial planning, various sources of finance, institutions of industrial finance. Securities market.

Unit-VI Marketing functions : Marketing & its function, transport, selling or distributions of goods, channels of distribution, salesmanship, advertising and promotion.

Text Book :

M.C.Shukla : Business Organisation & Management, S. Chand & Company.

References:

1. P. Gopalkrishnan : Materials Management, PHI.
2. Reddy & Gulshan : Business Organisation & Management, S. Chand & Company.
3. R.C.Appleby : Modern Business Administration, 6/e, Macmillan.

2MCA 6 COMPUTER LABORATORY-II

This lab. is based on Unix/Linux Operating System.

The topics to be covered include :-

- 1) Unix commands,
- 2) General purpose utilities & editors,
- 3) The shell & shell programming,
- 4) Communication & electronic mail,
- 5) TCP/IP networking,
- 6) Internet with Linux/Unix.

Minimum 2 experiments on each topic.

Text book :-

S.Das : Unix : Concepts & Applications (TMH)

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\*# ORDINANCE NO.5 OF 1996

Examinations leading to the Degree of Master in

Computer Application (Biannual pattern)

(Three Year Course) Ordinance,1996

Whereas it is expedient to prepare a new Ordinance for Examinations leading to the Degree of Master in Computer Application (Bi-annual pattern)(Three Year Course) for the purposes hereinafter appearing, the Management Council is hereby pleased to make the following ordinance.

1. This Ordinance may be called "Examinations leading to the Degree of Master in Computer Application (Bi-annual pattern) (Three Year Course) Ordinance,1996".

2. This ordinance shall come into force w.e.f. the session 1995-96.

3. Subject to their compliance with the provisions of this Ordinance and other ordinances in force from time to time, the following person shall be eligible for admission to MCA.

(a) Graduate in any Discipline with minimum 50% marks and Math upto 10+2 level (5% Relaxation for B.C.)

(b) A person passing a PGDCS Exam. of Amravati University, satisfying the condition given in "a" above are eligible to take admission directly at second year of MCA(subject to condition of availability of seats, in total intake capacity) subject to condition that he will pass the subject heads of 1st MCA not covered at PGDCS level.

4. (i) Duration of the course shall be three academic years.

(ii) Courses of First year MCA, Second year MCA and Third year MCA are divided into two parts every year i.e. part-I and part-II and the University shall held Examination in Winter and in Summer every year for both the Part-I & II.

(iii) The main Examination of Part-I shall be held in Winter & the Main Examination of Part-II shall be held in Summer every year. The Supplementary examination for Part-I shall be held in Summer and the Supplementary Examination for Part-II shall be held in Winter every year.

5. For purposes of instruction and examination the student shall study sequentially.

\* As Approved by the Management Council, dated 15.5.1996

#As amended by Ordinance Nos. 20/2000 & 2/2003

6. The period of academic session/term shall be such as may be notified by the University.
7. The Examinations shall be held at such places and on such dates as may be notified by the University.
8. Subject to his/her compliance with the provisions of this Ordinance and of other Ordinances (Pertaining to Examinations in General) in force from time to time, the applicant for admission, at the end of the course of study of a particular term shall be eligible to appear at it, if,
  - i) He/She satisfied the condition in the table and the provision thereunder.
  - ii) He/She was prosecuted a regular course of study in the University/College affiliated to the University.
  - iii) He/She has in the opinion of the Head of the Department/Principal shown satisfactory progress in his/her studies.

Name of Exam	The student should have passed the examination of	The student should have completed the session/term satisfactorily
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1.	2.	3.
First Year MCA Part-I	The qualifying Examination mentioned in para-3	First Yr. MCA Part-I
First Year		First Yr. MCA
MCA Part-II		Part-I & II
Second Year MCA Part-I		Second Year MCA Part-I
Second Year		Second Year MCA

MCA Part-II

Part I & II

Third Year MCA Part - I Shall have cleared 1st of MCA & qualified for Third year MCA Part-I

Third Year admission to Third Year Third Year MCA

MCA Part - II as per para-4 Part-I & II

9. The paper and practical in which an examinee is to be examined, the maximum marks for these and the minimum pass marks which an examinee must obtain in order to pass in the subjects and the examination shall be as per Appendix-A.

10. i) The scope of the subject is as indicated in the syllabus.

ii) The medium of instruction and examination shall be English.

11. There shall be no classification of examinees successful in First Year MCA Part-I examination, First Year MCA Part-II exam., Second Year MCA Part-I exam. and Second Year MCA Part-II exam., Third Year MCA Part-I and Third Year MCA Part-II exam separately.

12. Examinees who are successful in Third Year MCA Part-II examination and all other five previous examinations and have obtained not less than 60% marks in aggregate shall be placed in First Division & those who have obtained less than 60% shall be placed in Second Division.

13. An examinee at First Year MCA Part-I, First Year MCA Part-II, Second Year MCA Part-I and Second Year MCA Part-II, Third year MCA Part-I and Third year MCA Part-II examination shall have to option of not being declared successful; at the examination in case he/she does not secure a minimum of 50% marks at the examination. The option will have to be exercised every time an application is submitted to any of these examinations and shall be on the proforma printed on the application form itself. Once exercised, the option shall be binding upon the examinee and shall not be revoked under any circumstances.

14. Any candidate who has obtained a Third Division at the MCA examination of this University shall be eligible to take the examination again under this Ordinance in the same subject or group of subjects as the case may be for improvement of the division. In such case, the provision of Ordinance No. 138 relating to the improvement of Division shall apply.

15. The provision of Ordinance No. 7-A relating to the condonation of deficiency of marks for passing an examination and Ordinance No. 10 relating to exemption and compartment shall apply to the examination under this Ordinance.

16. An examinee who does not pass or who fails to present himself/herself for the examination shall be eligible for readmission to the same examination, on payment of fresh fees and such other fees as may be prescribed.

17. As soon as possible after the examination, the Management Council shall publish a result of the examinees. The result of final MCA Examination shall be classified as above and meritlist shall be notified as per Ordinance No.6.

18. Notwithstanding anything to the contrary in this Ordinance, no person shall be admitted to an examination under this Ordinance, if he/she has already passed the same examination or an equivalent examination of any statutory University.

19. i) The examinees who have passed in all the subjects prescribed for all the examinations shall be eligible for award of the Degree of Master in Computer Application.

ii) An examinee successful at the examination shall on payment of prescribed fees receive a degree in prescribed form signed by the Vice-Chancellor.

\* \* \* \* \*

DIRECTION

No. 13/2007.

Date :12/4/2007.

Subject : Examinations leading to the Degree of Master in Computer Applications  
(Biannual pattern) (Three Year Course)

Whereas Ordinance No. 5 of 1996 in respect of Examinations leading to the Degree of Master in Computer Applications (Biannual pattern) (Three Year Course) Ordinance, 1996 is in existence in the University,

AND

Whereas the Academic Council in its meeting held on 29-12-2006 vide Item No. 78 (7) (D) (R-1) (b) has accepted modified schemes of teaching & examinations and syllabi of First Year Master of Computer Applications course to be implemented from the academic session 2007-2008,

AND

Whereas the modified schemes of teaching & examinations of Ist, IInd and IIIrd year Master of Computer Applications (Biannual pattern) (Three Year Course) are required to be regulated by the Ordinance,

AND

Whereas the matter regarding making of amendments in existing Ordinance is likely to take some time,

AND

Whereas the modified schemes of teaching & examinations of 1st year Master of Computer Applications (Biannual pattern) (Three Year Course) are to be implemented from the academic session 2007-2008 and syllabi of 1st year M.C.A. course has to be sent for printing for the session 2007-2008.

Now, therefore, I, Prof. Dr. Kamal Singh, Vice-Chancellor of Sant Gadge Baba Amravati University, Amravati in exercise of powers conferred upon me under sub section (8) of Section 14 of the Maharashtra Universities Act, 1994, hereby directs as under :-

1. This Direction shall be called "Examinations leading to the Degree of Master in Computer Applications (Biannual pattern) (Three Year Course) Direction, 2007."
2. This Direction shall come into force from the date of its issuance.
3. In 'Appendix-A' appended with the Ordinance in respect of Examinations leading to the Master of Computer Applications (Biannual pattern) (Three Year Course) Ordinance, 1996 i.e. Ordinance No. 5 of 1996, the schemes of teaching & examinations of 1st year Master of Computer Applications course be substituted by "Appendix-A"annexed with this Direction.

Amravati  
Sd/-

(Kamal Singh)

Date : 9/4/2007  
Vice-Chancellor

Three Year Post Graduate Course  
Master in Computer Applications (MCA)

SEMESTER PATTERN

FIRST YEAR SEMESTER-I

Sr. No.	Sub. Code	Subject	Teaching Scheme			
	No.		L	P	Total	THEORY
						PRACTICAL

Max. Marks	To- tal	Min. pass marks	Max. Marks	Max. Marks	To- tal	Min. Pass Marks	periods/ week	Dura- tion of Papers Hrs)	Max. Marks of Theory Papers	Max. ment.	
100	40	--	--	--	--	4	-	4	3	80	20
Computer Organisation											
100	40	25	25	50	25	4	2	6	3	80	20
Problem Solving using C++											
100	40	25	25	50	25	4	2	6	3	80	20
Computer Oriented Statistical Methods											
100	40	--	--	--	--	4	-	4	3	80	20
Prinples of Management											
100	40	25	25	50	25	4	2	6	3	80	20
Communication Skills											
--	--	50	50	100	50	-	4	4	-	--	--
Computer Lab.-I											
TOTAL						20	10	30			
500											250

GRAND TOTAL : 750

FIRST YEAR SEMESTER-II

1.	2	MCA 1	Data Structures & Algorithms				4	2	6	3	80	20
100	40	25	25	50	25							
2.	2	MCA 2	Object Oriented Programming				4	2	6	3	80	20
100	40	25	25	50	25							
3.	2	MCA 3	Systems Analysis & Design				4	2	6	3	80	20
100	40	25	25	50	25							
Methods												
4.	2	MCA 4	Data Communications				4	-	4	3	80	20
100	40	--	--	--	--							
5.	2	MCA 5	Business Systems				4	-	4	3	80	20
100	40	--	--	--	--							
6.	2	MCA 6	Computer Lab.-II				-	4	4	-	--	-- -
--	--	50	50	100	50							
TOTAL						20	10	30				
500			250									

GRAND TOTAL : 750