NOTIFICATION

No. 44 / 2018 Date: 7/ 6 /2018

Subject : Introduction of new syllabi for B.Sc. Part-II (Semester-III & IV) Computer Science / Computer Application/ Information Technology which to be implemented from the academic session 2018-19.

It is notified for general information of all concerned that the authorities of the University has introduced new syllabi for B.Sc. Part-II (Semester-III & IV) Computer Science / Computer Application/ Information Technology), which to be implemented from the academic session 2018-19. Hence the page Nos. 98 to 102, appearing in prospectus No. 2015122 be substituted respectively by the **"APPENDIX"**, which is appended with this notification.
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Sd/-
(Dr.A.P.Deshmukh)
Registrar,
Sant Gadge Baba Amravati University

APPENDIX
Syllabus prescribed for B.Sc. Part II (Semester-III & IV) Computer Science / Computer Application/ Information Technology to be implemented from the Academic Session 2018-19 & onwards.

B.Sc. Part-II (Semester-III)

The Examination in Computer Science of Third Semester shall comprise of one theory paper of 80 Marks of three hours duration and internal assessment of 20 Marks. The practical examination will be of 4 Hrs. duration and carry 50 Marks.

The distribution of marks for practical examination is as under:

1. Program writing / execution (on group A & B) : 30 Marks
2. Practical record : 10 Marks
3. Viva Voce : 10 Marks

Total 50 Marks

3S: Computer Science / Computer Application/ Information Technology
Data Structure and C++

Unit I : Data structure: Introduction to data structure, types of data structure: primitive and non primitive, linear and non linear data structure, data structure operations.
Linear arrays: Definition and concepts, representations, operations on arrays: traversing, inserting, deleting.
Stacks: Definition and concepts, representations, operations on stacks: Push , Pop.

Unit II: Queues: Definition and concepts, representations, operations: Insert and delete; concept of circular queue, dequeue, priority queue. **Linked List:** Introduction, implementation of linked list, types of linked list: single, circular and doubly linked list. Operations on linked list: Insert, Delete, Search.

Unit III: Trees: Definition and concept, binary tree, traversing operations: in order, pre-order, post-order
Sorting and Searching: Definition and concept, **sorting techniques:** bubble,
selection, insertion, merge and quick sort. **Searching techniques:** Sequential and binary searching.

Unit IV : Object Oriented Programming: features, advantages and applications of oops. Introduction to C++, Program structure in C++. **Classes and Objects:** classes and objects specifiers, defining data member and member functions; accessing members. **Managing console I/O :** Formatted and Unformatted, Usage of manipulators, memory allocation operators: new and delete, scope resolution operator.

Unit V: Functions in C++: Passing objects to and returning objects from functions. Function overloading and default argument, Inline function, Friend function. Array of Objects, Pointer to objects, 'this' pointer. Constructor and Destructor: Types of constructor, Usage of Constructor.

Unit VI : Operator Overloading : Definition, Overloading unary and binary operators. **Inheritance:** Definition, Visibility mode; Types of inheritance with example, virtual base classes and abstract base classes.

Books Recommended:
1. An introduction to data structure with application: Jean-paul Trembley, Paul G Soresan Mc Graw Hill Publication.
2. Data structures : Horowitz, Sahani, Galgotia Publication
3. Data structure and algorithms : Aho, Hopcroft, Ulman

4. Introduction to Data structure : Bhagat Singh, Mops
5. Object Oriented Programming with C++ : E Balagurusamy TMH
6. Mastering in C++ by K. R. Venugopalan
7. Programming with C++ by R. S. Nisar Ali.

Practical : Minimum 16 Practical base on

A: Unit I , Unit II and Unit III (Minimum 8 practical using C Programming Language)
B: Unit IV, Unit V and Unit VI (Minimum 8 practical)

B.Sc. Part-II (Semester-IV)

The Examination in Computer Science of Fourth Semester shall comprise of one theory paper of 80 Marks of three hours duration and internal assessment of 20 Marks. The practical examination will be of 4 Hrs. duration and carry 50 Marks.

The distribution of marks for practical examination is as under:

1. Program writing / execution (on group A & B)   : 30 Marks
2. Practical record   : 10 Marks
3. Viva Voce   : 10 Marks

Total 50 Marks

4S: Computer Science / Computer Application/ Information Technology

RDBMS and PL/SQL

UNIT-I : Fundamental of DBMS : Traditional file approach and comparison with DBMS Architecture of a database system, Data base approaches, storage structures, data representation, data independence, database models: Relational, Hierarchical, network, Relational Algebra, Object Based model, data dictionary and Database Administration.

UNIT-II: Relational Model : Relations, Domains and Attributes, keys, E-R diagrams, Reducing E-R diagrams to tables, function dependency, Entity, Relationship, Mapping Constraints, **Normalization:** 1NF, 2NF, 3NF, 4NF, BCNF.

UNIT-III : Introduction to SQL : Components of SQL, data types, operators, **DDL Commands :** CREATE, ALTER, DROP, RENAME for tables. Data Integrity and types of integrity constraints. **DML Commands:** SELECT, INSERT, DELETE & UPDATE; **Clauses:** ORDER By, GROUP By and Having clause.

UNIT-IV :Functions : Number Functions: AVG, MAX, MIN, SUM, COUNT, TO-NUMBER, GREATEST, LEAST, ABS, MOD, FLOOR, CEIL, TRUNC, SQRT, SIGN, SIN, COS, LOG, EXP.
Character Function : INITCAP, LOWER, UPPER, INSTR, LENGTH, LTRIM, RTRIM, LPAD, RPAD, SOUNDEX, **Conversion Functions:** TO_Number, TO_Character, DECODE. **Date functions:** ADD_Months, Last_Day, Months_Between, Next_Day, Sys_Date, New_Time. Joins : Self join, equijoin and outer join.

UNIT-V: PL/SQL: Features and block structure, variables and constant, data types, control structure. **Cursor:** Concepts of cursor, types, declaring, opening, using cursors, fetching data, closing a cursor, cursor attributes. **Trigger:** create, Types, Creating Before and After Trigger,

UNIT-VI: Transaction: Rollback, commit and save point, rollback segment. Create Procedure and create function. **Securities of Database:** Users, creating users, roles, creating roles, types of privileges, GRANT, REVOKE command, Table and Row Locking.

Books Recommended:

1. Fundamentals of Database Systems (4th Ed) By: Elmasri and Navathe
2. Database System Concepts (4th Ed) By: Korth, Sudarshan, Silberschatz
3. Beginning Databases with PostgreSQL, From Novice to Professional,
   2nd Edition By Richard Stones , Neil Matthew, Apress
4. Introduction to Database Management Systems by Muzumdar TMH
5. Oracle Developer 2000 by Ivan Byross
6. An Introduction to Database Systems by Bipin C. Desai, Galgotia Publication.
7. Database System Using Oracle: A simplified Guide to SQL & PL/SQL : Nilesh Shah, PHI Publication

Practical : Minimum 16 Practical base on

A: Unit II & III (Minimum 8 practical)
B: Unit IV, Unit V and Unit VI (Minimum 8 practical)

Syllabus prescribed for B.Sc. Part II (Semester-III & Iv) Computer Application (Vocational) to be implemented from the Academic Session 2018-19 & onwards.

B.Sc. Part-II (Semester-III)

The Examination in vocational subject Computer Application of Third Semester shall comprise of one theory paper of 80 Marks of three hours duration and internal assessment of 20 Marks. The practical examination will be of 4 Hrs. duration and carry 50 Marks.

The distribution of marks for practical examination is as under:

1. Program based on Computer lab I   : 15 Marks
2. Program based on Computer lab II   : 15 Marks
3. Practical record   : 10 Marks
4. Viva Voce (based on lab I & lab II)   : 10 Marks

                                        Total   50 Marks

3S: Computer Application (Vocational)

OOPS with Java Programming

UNIT I Introduction to OOPS: Object Oriented Programming Paradigm, Basic Concepts of OOPs, Benefits and applications of OOPs. **Introduction to Java :** History, Benefits and applications, features, Java environment, Java Byte codes, Java virtual Machine, Security, Platform independence and portability, Java Support System.

UNIT II
Java character set, keywords, Identifies, constants, variables, operators and expressions, separators, Data types, Type conversion and casting. **Java Statements:** Assignment statement, control statements, structure of Java program.
Methods of Java programming: Application (main) and applet methods, simple Java program.

UNIT III
Classes, defining a class, adding variables and methods, creating objects, accessing class members, constructors, the 'this' keyword, Garbage collection. The finalize() method, method overloading, static members, inheritance, method overriding, abstract methods and classes

UNIT IV
Array: Declaration and initialization of one dimensional and multi-dimension arrays, strings, different operations on arrays. **Packages:** Introduction, Java API packages, creating accessing & using a package, adding a class to a package.

UNIT V
Multithreading: Introduction, creating threads & multiple threads. **Error and Exception Handling :** Introduction, Fundamental of exception handling, types of errors, types of exceptions, uncaught exception, using try and catch, multiple catch clauses, nested try statement, built-in exceptions, creating your own exception.

UNIT VI
Applet Programming: Applet basics, difference between applets and applications, writing applets, applet code, applet life cycle, creating an executable applet, and applet tag, running the applets.

Books Recommended :

1) The Complete Reference JAVA2 by Herbert Schildt (Tata McGraw)
2) The Complete Reference JAVA by Patrik Noughton
3) Programming with JAVA - A Primer : By E.Balguruswamy (Tata McGraw)
4) Programming in JAVA : By S.S.Khandare (S.Chand)
5) Teach Yourself 'Java' in 2 Hrs : By Sams.
6) Java for You : By P. Koparkar

Practical : Minimum 16 Practical base on
Lab I: Unit I , Unit II and Unit III (Minimum 8 practical)
Lab II: Unit IV, Unit V and Unit VI (Minimum 8 practical)

B.Sc. Part-II (Semester-IV)
The Examination in vocational subject Computer Application of Fourth Semester shall comprise of one theory paper of 80 Marks of three hours duration and internal assessment of 20 Marks. The practical examination will be of 4 Hrs. duration and carry 50 Marks.

The distribution of marks for practical examination is as under:

1. Program based on Computer lab I   : 15 Marks
2. Program based on Computer lab II   : 15 Marks
3. Practical record   : 10 Marks
4. Viva Voce (based on lab I & lab II)   : 10 Marks

Total   50 Marks

4S : DATABASE MANAGEMENT SYSTEM

UNIT-I : Fundamental of DBMS : Introduction, Traditional file oriented approach, DBMS components and architecture, data independence, database models: Relational, Hierarchical, network; Object Oriented Model.

UNIT-II : Relational Model : Relations, Domains and Attributes keys, E-R diagrams, Reducing E-R diagrams to tables, function dependency, Normalization Process, Normal forms : 1NF, 2NF, 3NF, 4NF, BCNF.

UNIT-III: Introduction to SQL: Components of SQL, data types, operators **DDL Commands**: CREATE, ALTER, DROP, RENAME, for tables & views. **DML Commands**: SELECT, INSERT, DELETE & UPDATE; **Clauses**: ORDER BY, GROUP BY and HAVING; **DCL and TCL Statements:** Grant, Revoke, Rollback, commit and auto commit, save point, rollback segment.

UNIT-IV: Data Integrity, types of integrity constraints. **Functions: Number Functions** - AVG, MAX, MIN, SUM, COUNT, TO-NUMBER, ABS, MOD, FLOOR, CEIL, TRUNC, SQRT, SIGN, SIN, COS, LOG, EXP. **Character Functions:** INITCAP, LOWER, UPPER, INSTR, LENGTH, LTRIM, RTRIM, LPAD,RPAD, SOUNDEX.   **Date functions**: ADD_MONTHS, LAST_DAY, MONTH_BETWEEN, NEW_TIME, NEXT_DAY, SYS_DATE **Miscellaneous Functions:** GREATEST, LEAST,DECODE, NVL, NULLIF **Joins and Unions:** Self, equi and outer join, unions and intersection.

UNIT-V : PL/SQL : Features and block structure, variables and constant, data types, Identifiers, Operators and expression, Conditional statement, iterative statement. **Cursor :** Concepts of cursor, types of cursor, declaring, opening, using cursors, fetching data, closing a cursor, cursor attributes, Handling Exceptions, Creating Procedures, Creating Function, Managing Subprogram, Creating Packages, Package Concepts,
Triggers: Create Triggers, Types of Triggers, Creating BEFORE and AFTER Triggers, INSTEAD-OF triggers, Trigger Predicates, Inserting, Updating and Deleting Triggers, Enabling, Disabling and Dropping triggers.

UNIT-VI: Securities of Database: Introduction to database security concepts, Methods for database security, Discretionary access control method, Mandatory access control and role base access control for multilevel security, Use of views in security enforcement, Overview of encryption technique for security, Statistical db security.

References:-

1. Fundamentals of Database Systems (4th Ed) By: Elmasri and Navathe
2. Database System Concepts (4th Ed) By: Korth, Sudarshan, Silberschatz
3. MySQL The Complete Reference By Vikram Vaswani
 4. Learning MyS L by O'reilly
5. MySQL in Nut Shell by Dyer 2nd Edition
6. Database System Using Oracle: A simplified Guide to SQL & PL/SQL : Nilesh Shah, PHI Publication

Practical : Minimum 16 Practical base on

A: Unit II & III (Minimum 8 practical)
B: Unit IV, Unit V and Unit VI (Minimum 8 practical)

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