# Shivaji University

(Faculty of Science)

Implemented from Academic year 2013- 14

# Bridge Course for students admitted directly to MCA (Science) Part II through Lateral Entry

Bridge Course:-

The bridge course for the students admitted to MCA (Science) Part II by lateral entry.

1. The student shall have to appear for one theory paper and one practical paper as mentioned below:

| Sr. No. | Subject | Marks | | Total |
|---|---|---|---|---|
| | | Theory | Practical | |
| 01 | Bridge course paper-I | 100 | ---- | 100 |
| 02 | Bridge course Lab-I | ---- | 100 | 100 |
| | Total | 100 | 100 | 200 |

2. The nature of question paper shall be as follows:-

Theory Examination will be of 100 marks with following pattern:

Q1. Objective type questions----10 of two marks each

Question -1 will be compulsory

Q2. (10+10)

a.

b.

Q3. (10+10)

a.

b.

…….

Q7. Short note on any two. (10+10)

a.

b.

c.

d.

Students shall have to attempt any four questions from Question 2 to question 7.

3. Practical examination shall be conducted by University appointed Examiners. Format of practical examination will be as follows:

- There will be six questions of 25 marks with sub questions.
- Students should attempt any four.
- Duration of practical examination will be of four hours.

4. This bridge course shall be completed by the student as prescribed by university authorities. MCA degree shall not be awarded unless the students successfully completes the Bridge Course.

5. Examination will be conducted by University.

6. The student has to secure 40% marks in both theory and practical Examination in order to pass the bridge course.

7. Examination fee shall be made applicable as per University rules. The respective University department / affiliated college shall arrange for the contact sessions (10 contact sessions per paper) for completing the Bridge Course. However the College/Department shall not charge any fee for the conduct of Bridge Course.

**Department of Computer Science, Shivaji University, Kolhapur**

Master of Computer Application

Bridge Course Paper

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Unit – I ( 15 )

CISC and RISC with characteristics, advantages and disadvantages The Number System: Decimal, Binary, Octal, and Hexadecimal number system, Conversion from one to other number system, 1's,2's, 9's and 10' s Complements, Signed and unsigned number representations, Fixed-point and Floating-point representation of numbers,

Unit – II ( 15 )

Introduction to Programming: Complexity of algorithms, Big O notation, Types of algorithms ( Greedy, Backtracking, Divide and conquer, Dynamic programming)

Concept of OOP's: Virtual functions and classes, static and dynamic polymorphism, Exception handling, Templates,

Introduction to RDBMS : Basic Queries ( Insert, Update, Delete), Concept of Primary Key and Foreign Key, PL/SQL Programming, Cursor, Trigger.

Unit – III ( 15 )

Mathematical Foundation: Permutation and Combination, Binomial Coefficients and its Applications, Recurrence Relation and Solutions, Principle of Inclusion And Exclusion, Set Theory, Relations and Functions, Mathematical Logic.

Introduction to LPP : Simplex Method and Big-M Method, Transportation Problems – North West Corner Rule and Modi Method.

Unit – IV ( 15 )

Computer Organization: Logic Gate, Flip Flop, Combinational and Sequential Circuits – Multiplexer, De multiplexer, Encoders.

Computer Architecture: CPU organization – Register Organization, Stack Organization, Instruction Format, Pipeline and Vector Processing. Memory Organization – Memory Hierarchy and Virtual Memory, Cache Memory.

## Reference Books :


1. Introduction to algorithms, Third Edition. By Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, PHI
2. Fundamental of Computer – P.K.Sinha
3. Let Us C – Yashwant Kanetkar.
4. Object Oriented Programming Through CPP – Balguru Swamy.
5. SQL and PL/SQL programming by Ivan Bay Ross
6. A.Doerr, Discrete Mathematics for Computer Science.
7. Computer System Architecture – M.Morris Mano.


## Lab Exercises –

### Assignment – 1 – ( using C)

Programs based on number system

### Assignment – 2 – ( using C ) –

Examples of greedy method, backtracking, Divide and conquer, and dynamic programming.

### Assignment – 3 – ( using C ++) –

Programs based on C++ concepts as given in unit-II of syllabus

### Assignment – 4 – ( using Oracle) –

Programs based on RDBMS concepts as given in unit-II of syllabus