



**B.Sc. (Part III) (Information Technology)
EXAMINATION, 2007**

OPERATING SYSTEM

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five questions. All questions carry equal marks.

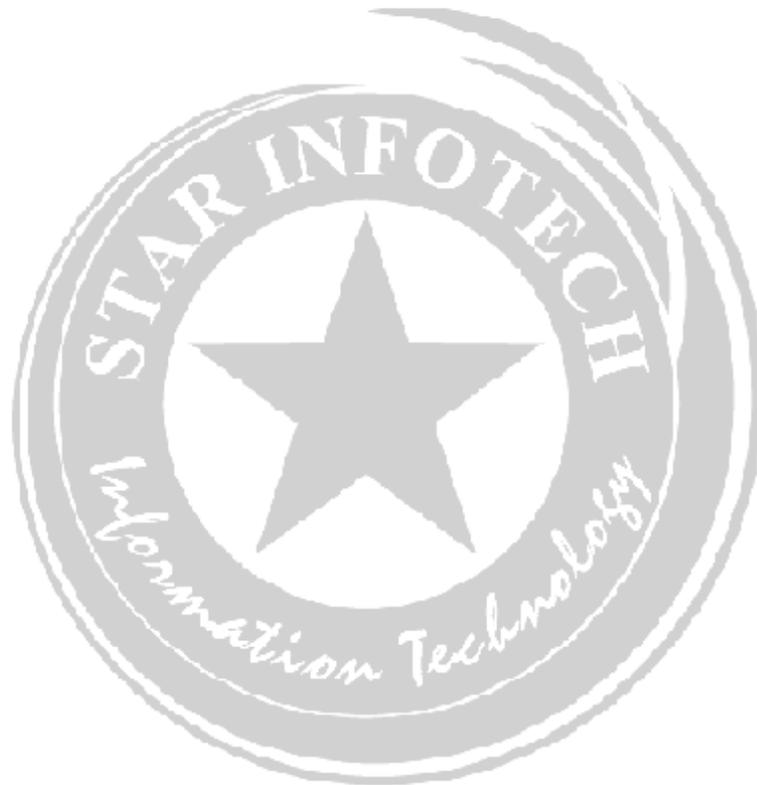
1. (a) Explain the function of operating system.
(b) Explain process management in multiprocessor operating system.
(c) System call
2. Write short notes on :
 - a. Real time system
 - b. Batch processing
 - c. Time sharing
3. (a) What is deadlock ? Explain deadlock detection and prevention ?
(b) Write short notes on any two:
 - (i) Semaphore
 - (ii) Critical region
 - (iii) Resource allocation
4. (a) Explain different disk scheduling algorithm.
(b) Discuss the various threads for system security and how these are handled by the operating system ?
5. Explain the following :
 - a. Swapping
 - b. Paging
 - c. Fragmentation
6. (a) With the help of any GUI based operating system explain the major component of its environment.
(b) Write short notes on :
 - (i) Unix virtual machine
 - (ii) Layer design of DOS
7. (a) Write unix command for following :
 - a. To direct the output to the file as well as to the screen
 - b. To send the message to logged in User
 - c. To set command execution priority

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- d. To display information about the command
 - e. To print the calendar for any year and month
 - f. To run a process in background
- (b) Discuss the unix file system by describing the following:
- (i) Super block
 - (ii) Structure of i-node
 - (iii) Directory structure
 - (iv) Security
8. (a) Create a shell script in Unix system which takes input 20 times from keyboard and display input values on monitor.
- (b) What is shell program. write a shell program to print all the content of an existing file in upper case.





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E - COMMERCE
Time allowed: Three Hours

Maximum Marks: 50

Attempt any Five questions. All questions carry equal marks.

1. What is the role of E-commerce in business? Also write the anatomy of E-commerce application.
2. How E-commerce promotes customer to business relations? Write the differences between traditional Vs electronic business applications.
3. Write short notes on :
 - (a) Mobile technology;
 - (b) E-mail.
4. What is sniffer and what does it have to do with E-commerce?
5. What is cryptography? What is public about public key encryption?
6. Discuss various types of electronic payment systems.
7. What is consumer-oriented E-commerce? Explain its various application.
8. Explain architecture of E-commerce? Explain consumer-oriented applications of E-commerce.
9. Discuss various types of electronic payment system.
10. Describe client-server architecture in E-commerce.



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MULTIMEDIA

Time allowed: Three Hours

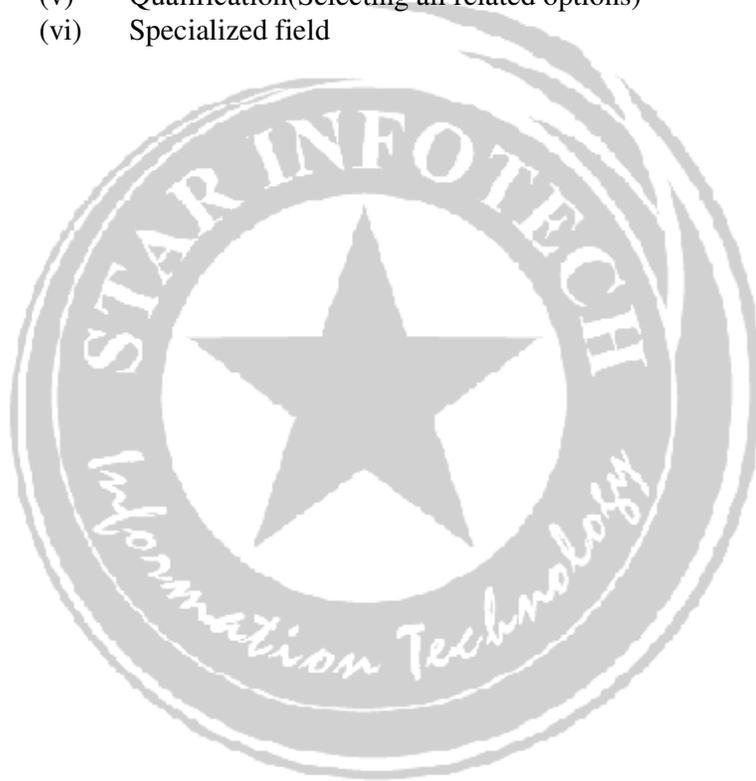
Maximum Marks: 50

Attempt any Five questions. All questions carry equal marks.

1. (a) Describe applications of multimedia in communication and entertainment.
(b) Describe the components and user interface of Multimedia.
2. Write short notes on any four of the following:
 - (i) Video capturing;
 - (ii) DVI technology;
 - (iii) MIDI;
 - (iv) MPEG format;
 - (v) JPEG format;
 - (vi) WMF format.
3. (a) How can sound data be stored digitally? Explain it.
(b) Describe speech generation and speech recognition system.
4. Describe various video formats and provide comparative analysis.
5. Write short notes on any two of the following:
 - (i) Intelligent multimedia system;
 - (ii) Uses of multimedia in training and education;
 - (iii) Information kiosks;
 - (iv) Computer animation.
6. Why are image enhancements needed? Describe any five image enhancement techniques.
7. Describe the following HTML tags with examples:
 - (i) <A Href>
 - (ii) <image>
 - (iii)
 - (iv) <Head>
 - (v) <Frame>



8. (a) Describe the role of style sheets to format the look and feel of the web pages.
- (b) Differentiate the following (any two):
- (i) Block level and Text level elements inHTML;
 - (ii) Cell spacing and Cell padding in a table;
 - (iii) Get and Post methods.
9. Write the HTML code to prepare student information FORM with the following features:
- (i) Name of student;
 - (ii) Student ID;
 - (iii) E-mail address;
 - (iv) Semester (Selecting any one of 6 options);
 - (v) Qualification(Selecting all related options)
 - (vi) Specialized field





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VISUAL BASIC PROGRAMMING

Time allowed: Three Hours

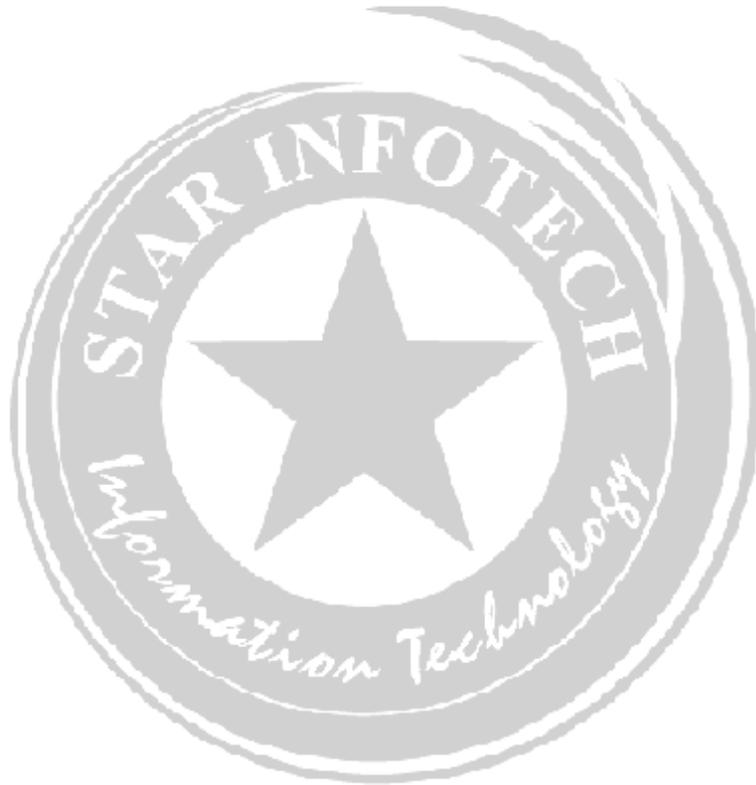
Maximum Marks: 50

Attempt any Five questions. All questions carry equal marks. Draw a picture of Form and Controls wherever required.

1. Explain the IDE(Integrated Development Environment) of Visual Basic.Why is it called an event driven programming language? 10
2. (A) Write down the various data types available in VB. 4
(B) Write down and explain the difference between function, procedure and event procedure in VB.
Write down the syntax to create a function, procedure and event procedure. 6
3. (A) Explain the meaning of SDI and MDI form with suitable example. 5
(b) Write down the difference between Combo Box and List Box with suitable example.
4. Write down the various key press and mouse event with suitable example. 10
5. What is a Recursion? Write a program in VB to display the factorial of a number given by the user in a Text Box on Form. Use a Text Box to take input from the user.
6. (A) Write down and explain the various graphics control available in VB. 6
(B) Write down and explain the message box msgbox() function available in VB.
7. Write short notes on any two data access control available in VB with suitable Example:
(a) ADO
(b) RDO
(c) DAO 10
8. Write a program in VB to create a sequential access file in VB that read the text from user in one text box and display in another Text Box or Rich Text Box. 10



9. Write a program in Visual Basic to implement a simple calculator that perform all the basic arithmetic operations such as addition, subtraction, divisions, multiplication and percentage(%) by drawing a suitable diagram.





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**RELATIONAL DATABASE MANAGEMENT
SYSTEMS**

Time allowed: Three Hours

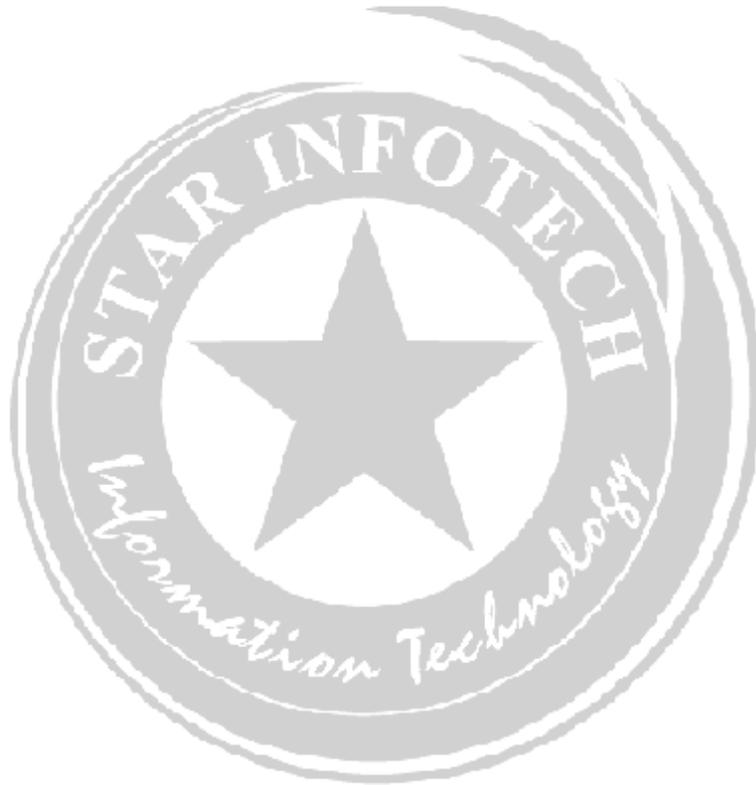
Maximum Marks: 50

Attempt any Five questions. All questions carry equal marks.

1. What is DDBMS? Explain the architecture of distributed processing system 10
2. What is data placement? Explain the placement of DDBMS and other components. 10
3. Write short notes on 3+3+4
 - (i) Serializability;
 - (ii) Dead locks;
 - (iii) Query optimization.
4. Consider the relational database :
Employee (Emp-name, street, city)
Works (Emp-name, company-name, salary)
Manager (Emp-name, manager-name)
Company (Emp-name, city)
Give expression in SQL for the following:
 - (i) Find the names and cities of residence of all employees who work for First Bank Corporation.
 - (ii) Find all employees in the database who live in the same city as the companies for which they work.
 - (iii) Find the company that has the smaller payroll.
 - (iv) Find the company that has the most employee.
 - (v) Find all employees who earn more than the average salary of all Employees of their company. 2+2+2+2+2
5. What is data warehousing? Explain need and architecture of data warehouse. 10
6.
 - (a) Explain security and integrity of database.
 - (b) How privileges grant and revoke on database? 5+5



7. What is stored procedure and function? Differentiate procedure and function. Also write their advantages? 10
8. Differentiate :
a. Before Vs After trigger
b. Database triggers Vs procedures
c. Triggers Vs Declarative integrity constraint. 3+3+4
9. What is concurrency control ? Explain different locking techniques in Detail ? 4+6
10. (a) How can you create package ? Explain with an example.
(b) Write SQL *plus data types. 6+4





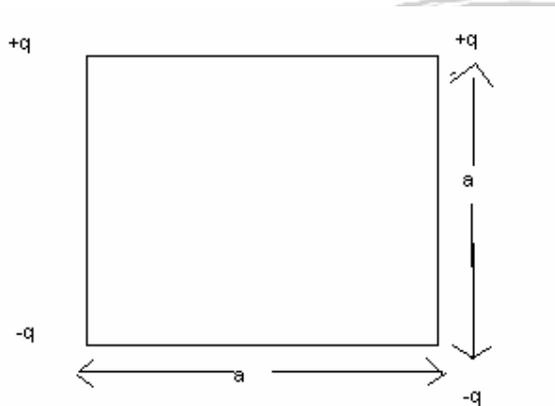
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COMPUTER ELECTRIC CIRCUIT AND
ANALYSIS

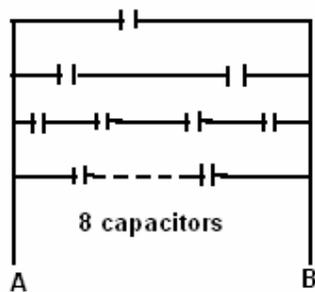
Time allowed : Three Hours
Maximum Marks: 50

Attempt any five questions. All questions carry equal

1. (a) Explain the physical meaning of potential and potential difference. (5)
(b) Calculate the electric potential energy of the system of charges shown in figure below : (5)

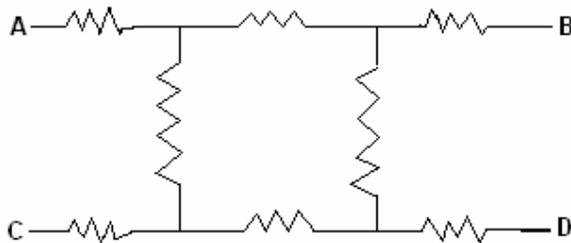


2. (a) Three capacitors C_1 , C_2 , C_3 are connected in series. Derive an expression for the Equivalent capacitance. (5)
(b) In the given network each capacitor is of 1 F Determine the equivalent Capacitance between A and B. (5)





3. (a) What is the drift velocity of electron and relaxation time of free electron in a metallic conductor carrying a current. Establish a relation between them. (6)
- (b) The resistance of a wire is $R \Omega$. What will be its resistance if stretched n times of its initial length. ? (4)
4. (a) Find the resistance between (i) A and B (ii) A and C of the network shown in the figure (4)



- (b) Discuss charging and discharging of capacitor through resistor. (6)
- 5 (a) State Bio- Savart's law for the magnetic field produced at a point due to current element. Obtain an expression for magnetic field induction at the point situated at a distance of x meter from the center of a circular coil of n turns and r radius carrying a current of I amperes (6)
- (b) The electron in a hydrogen atom circle along the proton with the speed of 2.18×10^5 m/s in an orbit of radius 5.3×10^{-11} m. Calculate (4)
- (i) the equivalent current ;]
- (ii) magnetic field produced at the proton
- Given charge on electron is 1.6×10^{-19} and $\mu_0 = 4 \pi \times 10^{-7} \text{ TmA}^{-1}$
6. (a) What are magnetic lines of forces ? Give their important properties Derive an expression torque acting on a bar magnet held at an angle with direction of uniform magnetic field (6)
- (b) A wire of length 60 cm and mass 10 g is suspended by two vertical wires at its ends in a magnetic field of 0.4 T. What is the magnitude of current required to Remove the tension in supporting wires? 4



7. (a) What is meant by r.m.s. value of A.C.? Derive an expression of r.m.s. value of alternating current and e.m.f. 6
- (b) An electric lamp which runs at 80 volts d.c. and consumes 10 ampere is connected to 100 volt, 50 Hz A.C. mains. Calculate the inductance of the choke required. 4
8. (a) Calculate energy stored in an inductor in an A.C. circuit. Show that average power consumed per cycle in an A.C. circuit containing pure inductor is zero. 6
- (b) An LCR series circuit with 100Ω resistance is connected to an A.C. source of 200 volts and angular frequency 300 radian/sec. When only the capacitance is removed, the current lags behind the voltage by 60° . When only the inductance is removed, the current leads the voltage by 60° . Calculate the current and the power dissipated in LCR circuit? 4
9. (a) What is transformer? Explain its theory and working. Discuss the main uses. 6
- (b) A small d.c. motor operating at 200 V draws a current of 5.0 Amp and its full Speed of 3000 r.p.m. The resistance of the armature of the motor is 8.5Ω . Determine the back e.m.f. of the motor. Obtain the power input, power output And efficiency of motor. 4
10. (a) State and prove maximum power transfer theorem. 5
- (b) State and prove Norton's theorem 5