



B.Sc. (Part III) (Information Technology)
EXAMINATION, 2008

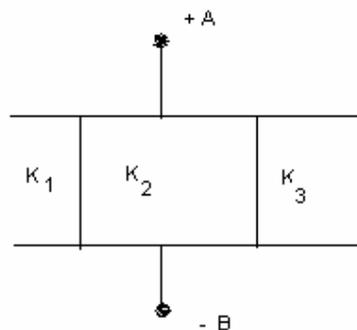
COMPUTER ELECTRIC CIRCUIT AND
ANALYSIS

Time allowed : Three Hours

Maximum Marks: 50

Attempt any five questions. All questions carry equal marks.

1. (a) Define electric field and lines of electric force. A ring of radius 'r' contains 'q' distributed uniformly over its length. Find the electric field at a point on the axis of the ring at a distance 'x' from the centre. $1^{1/2} + 3^{1/2}$
- (b) State Gauss's law of electrostatics. Calculate the electric potential energy of a uniformly charged
 - (i) sphere; and
 - (ii) spherical shell. $1 + 4$
2. (a) What is capacitance? Give the calculation for capacitance of a (i) parallel-plate capacitor; and (ii) spherical capacitor. $1 + 4$
- (b) (i) What are dielectric materials? Define dielectric constant. Calculate the capacitance of a parallel plate capacitor filled with a material of dielectric constant k. $2 + 2$
- (ii) If the space between the plates of a parallel plate capacitor of capacitance 'C' is filled with three dielectric slabs of identical size as shown in figure then find the new capacitance of the capacitor. The dielectric constants of the slabs are K_1 , K_2 and K_3 . 1

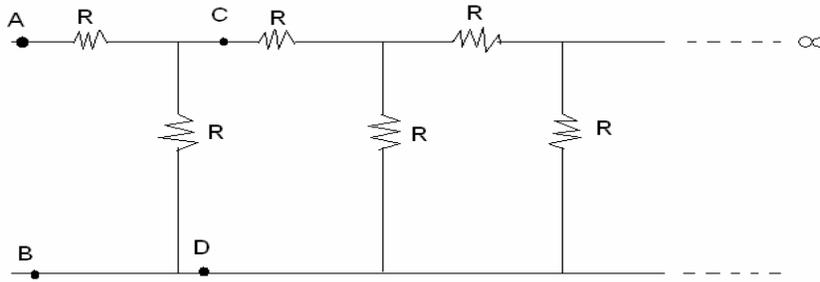


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3. (a) Define resistivity. Give the colour code for carbon resistors. Give the temperature dependence of resistance and resistivity. What are the values of resistivities for Silver, Copper, Gold, Mercury, Silicon and fused quartz at room temperature? $\frac{1}{2} + 1 + 1 + 2^{1/2}$
- (b) (i) Find the equivalent resistance between the points A and B of the infinite ladder shown in the given below figure.



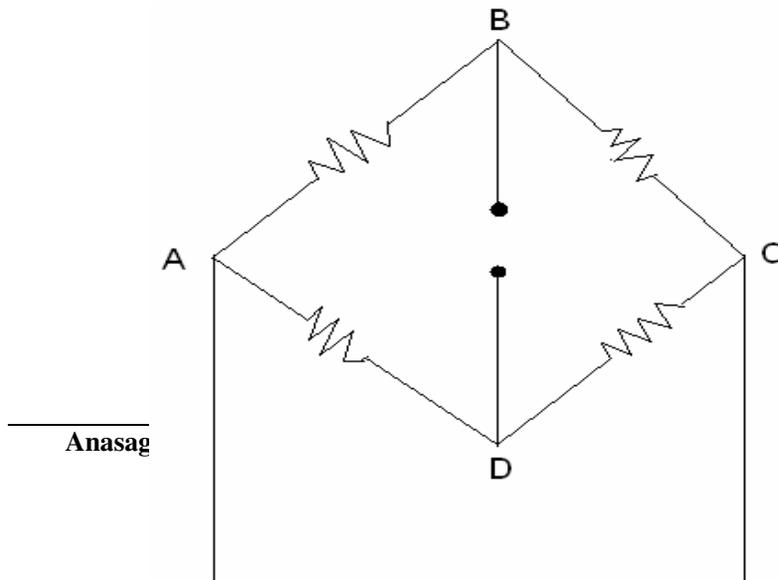
- (ii) A wire of resistance 10Ω is bent to form a complete circle. Find its resistance between two diametrically opposite points. $2^{1/2} + 2^{1/2}$

4. (a) State Kirchhoff's laws of electricity. Prove that: 5

$$e_0 = \left[\frac{r_1}{r_1 + r_2} - \frac{r_3}{r_3 + r_4} \right]$$

using Kirchhoff's laws for the following network:

2 + 3





(b) Discuss charging of a capacitor through resistor. A capacitor is connected to a 12 V battery through a resistance of 10Ω . It is found that the potential difference across the capacitor rises to 4.0 V in $1 \mu\text{s}$. Find the capacitance of the capacitor. $2^{1/2} + 2^{1/2}$

5. (a) What are solenoid and toroid? Calculate the magnetic field inside the two giving necessary diagrams for magnetic field lines. $3 + 3$
 (b) Two parallel wires P and Q placed at a separation of $d = 8 \text{ cm}$ carry currents $i_1 = 6 \text{ A}$ and $i_2 = 2 \text{ A}$ in opposite directions. Find the point on the line PQ joining the wires where the resultant field is zero. 4
6. (a) Discuss growth and decay of current in a series L-R circuit. 7
 (b) An inductor coil stores 32 J of magnetic field energy and dissipates energy as heat at the rate of 320 W. When a current of 4A is passed through it. Find the time constant of the circuit when the coil is joined across an ideal battery. 3
7. (a) Give the analysis of series LCR A.C. circuit. Discuss resonance and show that resonant frequency is given by,

$$f = \frac{1}{2\pi} \sqrt{\frac{1}{LC}}$$

- (b) A series LCR, circuit with $L = 100 \text{ mH}$, $C = 100 \mu\text{F}$ and $R = 120 \Omega$ is connected to an AC source of emf $E = (30 \text{ V}) \sin(100 \text{ s}^{-1}t)$. Find the inductance, the peak current and the resonant frequency of the circuit. 4
8. (a) State and prove Thevenin's network theorem. 5
 (b) State and prove Reciprocity theorem for network analysis. 5
9. (a) What is a DC motor? How is it different from single-phase induction motor? Explain theory and working of DC motor giving necessary diagrams. 7
 (b) A transformer has 50 turns in the primary and 100 in the secondary coil. If the primary coil is connected to a 220 V AC supply, what will be the voltage across the secondary coil? 3
10. (a) What is a Multimeter? Discuss theory and working of a multimeter giving necessary diagram. 5
 (b) Discuss the use of an analog multimeter as voltmeter and ohmmeter. 5



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**OPERATING SYSTEM
(B.Sc. I.T.-23)**

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. Discuss the main feature of the following types of operating systems :
 - (a) Distributed system
 - (b) Multi-Processing system
 - (c) Real time system.

2. Explain the following operating system approaches to system design :
 - (a) Layered approach
 - (b) Micro-kernel approach.

3.
 - (a) Explain the architecture of Windows 2000.
 - (b) What is a thread? What resources are used when a thread is created? How do they differ from those used when a process is created?

4.
 - (a) What do you mean by process scheduling? Explain different types of schedulers.
 - (b) What do you mean by the term process state? Explain different states of a process with the help of a diagram.

5. Write short notes on the following :
 - (a) Monitors
 - (b) Interprocess communication
 - (c) Critical section

6.
 - (a) What criteria are used for comparing CPU scheduling algorithms :
 - (b) Explain the following scheduling algorithms:
 - (i) Round-Robin scheduling
 - (ii) Multilevel Queue scheduling

7.
 - (a) Explain the following :
 - (i) Unix file system



- (ii) Vi editor
- (b) Write Unix command for the following:
 - (i) To see the contents of directory page by page.
 - (ii) To change the attribute of the file 'B.Sc.' to read only.
 - (iii) To change the name of a file 'B.Sc.' to 'M.Sc.'
 - (iv) To display the list of all active processes.
 - (v) To check your e-mail.
- 8. (a) Write a shell script to check whether the entered number is a prime number or not.
- (b) Write a shell script to reverse the string.





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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. (a) What is visual programming? What makes GUI tools easier to work with when compared to non-GUI tools? (7)
(b) You want your PC to beep after every 2 seconds. How can this be done? (3)
2. (a) Explain the difference between procedure and function. Write a program for adding Two numbers using procedure and function method. (7)
(b) What are property procedure? Explain with example. (3)
3. (a) Explain what do you understand by dynamic array in VB? How are they declared? What is the use of the keyword preserve? (7)
(b) What is environment object? (3)
4. Answer the following questions in short:
 - (a) What is the difference between a class and an object? (2)
 - (b) What happen when you use the new keyword inside an object declaration? (2)
 - (c) What happens if you load a picture into a picture box control is larger than the picture? (2)
 - (d) What does the image control's key methods? (2)
 - (e) How do you configure IDE to automatically force variable declaration? (2)
5. (a) What is dialog box? Explain and compare modal and modalless dialog box. Also explain predefined dialog boxes. (5)
(b) What are parent and child forms in MDI form? Explain the process of adding a child form to MDI? (5)



6. Write down the difference between the following:
- (a) Combo and List box
 - (b) SDI and MDI
 - (c) Text box and Label
 - (d) Scroll bar and Slider control
 - (e) Check box and Option button
7. (a) What is API? How do trap on API function in VB project? (7)
- (b) How do you use the Windows API function GET Current Directory in VB application for returning the path where the Windows Directory is located? (3)
8. (a) Write the SQL query to retrieve all the person's records whose last names start with 'A'(the field name in the person table are as 'Fname' 'Lname') (5)
- (b) Create an application that adds and deletes controls at runtime. (5)





**B.Sc. (Information Technology) (Part III)
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**RELATIONAL DATABASE MANAGEMENT
SYSTEM
(B.Sc. I.T.-21)**

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. What do you understand by the term 'deadlock' ? Explain different types of lock based protocols. (2+8)
2. (i) What is RDBMS ? Discuss major advantages of any DBMS package.
(ii) Explain DDL, DML, and DCL with suitable example. (4+6)
3. Consider the following relation database :
 a. Emp(Empcode, Ename, deptno, designation, salary)
 b. Dept(deptno, dname, tot_o_emp)
 Give SQL commands for the following:
 (i) List the total salary, maximum and minimum salary of employee designationwise.
 (ii) List employees who earn salary greater than the average salary for their department
 (iii) List employee details earning second highest salary.
 (iv) Display the department details that has no employee
 (v) List all employees, their designation and department no, who are having same job/designation as that of any employee of department no. 20 (2+2+2+2+2)
4. Differentiate between
 a. Column and group functions of SQL
 b. Commit and Rollback
 c. Predefined exception and userdefine exceptions (3+3+4)
5. Write a note on database security and integrity. (10)
6. Explain the following SQL commands (any two) :
 a. Select
 b. Create table
 c. Different types of joins (5+5)
7. Write short notes (any two)

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- a. Query optimization
- b. DDBMS
- c. Integrity constraint
- d. Packages

(5+5)

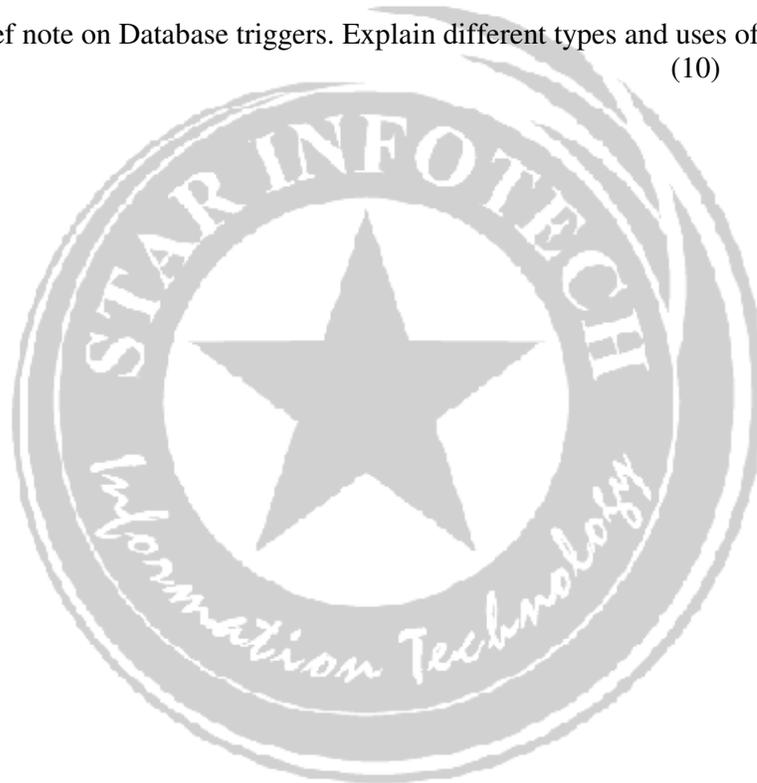
8. Write down the purpose of the following functions with example:
- a. Ceil
 - b. LPAD
 - c. INITCAP
 - d. ASCII
 - e. UID

(2+2+2+2+2)

9. (i) What is oracle ? Explain the advantages of Oracle database.
(ii) Explain error handling in PL/SQL.

(5+5)

10. Write a brief note on Database triggers. Explain different types and uses of triggers.
(10)





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E-COMMERCE
(B.Sc. I.T.-33)

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. What is the role of media convergence in a developing country level India ? Explain its evaluation and benefits. (5+2+3) (10)
2. Describe the anatomy of E-Commerce applications. (10)
3. What are the various technologies used for mobile commerce ? Also mention any three wireless applications used in modern area. (7+3)
4. Discuss EDI standards and write any five benefits of EDI. (5+5)
5. What are security aspects of EDI ? (10)
6. Describe client server network security threads in E-Commerce. (10)
7. Briefly discuss E-bussiness models based on relationship of transaction parties. (10)
8. Outside tge firewall what are the major technologies used to insure internet security. (10)
9. Write short notes :
 - a. Consumer oriented application
 - b. Encrypted Documentary
 (5+5)



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**MULTIMEDIA
(B.Sc. I.T.-35)**

Time allowed : Three Hours

Maximum Marks : 50

Attempt any Five question . All questions carry equal marks.

1. (a) Illustrate the term of multimedia and also discuss the history of multimedia.
(b) Write advantages and disadvantages of multimedia system. (4+6)
2. Explain with suitable diagram the term used in multimedia “Framework for multimedia system”. (10)
3. (a) Explain various types of multimedia authoring tools.
(b) List out the various hardware requirements for multimedia. (6+4)
4. Explain user interface. Describe various user interface of multimedia. (10)
5. Write short notes on following : (2.5*4)
 - a. Digital versatile disc
 - b. Optical character recognition
 - c. Icon based authoring tools
 - d. Video capturing
6. What is audio compression and decompression ? Where is it used . (10)
7. Explain the following terms : (2*5)
 - a. Virtual Reality
 - b. Artificial Intelligency
 - c. Touch screen
 - d. Morphing
 - e. Speech Recognition
8. Write short notes on any three : (3+3+4)
 - a. Use of multimedia in Health Care and Entertainment.
 - b. Intelligent multimedia system
 - c. Speech Synthesis
 - d. JPEG and MPEG standard
9. Define the following tags:
 - a. Marquee
 - b. Embed src



- c. `Img src`
- d. `Style`
- e. `A href`

(2*5)

10. (a) What is list ? Explain various types of list tags with example in html.
(b) How can a table be created using HTML tags ? Explain with example.
(5+5)

