

3E1655	Roll No. _____	Total No of Pages: 4
<p>3E1655</p> <p>B. Tech III Sem. (Main/Back) Exam. Jan. 2016</p> <p>Computer Science & Engineering</p> <p>3CS4A Linux Shell Programming</p> <p>CS, IT</p>		

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

UNIT-I

Q.1 Write command for the following queries.

[8×2=16]

- (a) List all files in a directory
- (b) List all files having a ".txt" extension
- (c) List all files in a directory including their size, date and permissions
- (d) Copy "fileA" to "fileB"
- (e) Rename "fileA" to "fileB"
- (f) Delete "fileA"
- (g) Delete all files in a directory and all its subdirectories
- (h) Search for a "RTU" in a file named "DATABASE"

OR

- Q.1 (a) How do you set the permissions of a file so that [2×4=8]
- (i) everyone can read a file but only the owner can write to?
 - (ii) everyone can write to a file but only the owner can write to?
- (b) Explain the following commands with suitable example. [4×2=8]
- (i) Whatis
 - (ii) Who
 - (iii) Sort
 - (iv) Finger

UNIT-II

- Q.2 (a) What are links and symbolic links in UNIX file system? [6]
- (b) Explain the basic forms of each loop. [6]
- (c) What is 'inode'? [4]

OR

- Q.2 (a) Explain the following operations in a file with suitable example. [5×2=10]
- (i) Creation
 - (ii) Insertion, deletion
 - (iii) Searching
 - (iv) Substitution
 - (v) Reading & writing files
- (b) Explain the following commands. [3×2=6]
- (i) yank
 - (ii) put
 - (iii) delete

UNIT-III

- Q.3 (a) Explain the x-windows client server architecture. [10]
 (b) Explain the remote computing and customization of X work environment. [6]

OR

- Q.3 (a) Write a function in C to create a connection between the X client and X server. [8]
 (b) Discuss event handling in X-Windows. Explain keyboard and mouse management. [8]

UNIT-IV

- Q.4 (a) What is a "shell"? Name at least three different ones (shells) and briefly their difference. [8]
 (b) Explain the following terms in shell:- [4×2=8]

- (i) pipe
- (ii) filters
- (iii) redirection operators
- (iv) keywords

OR

- Q.4 (a) How do you execute a shell script - name at least three different methods. [8]
 (b) What is shown by STDOUT & STDERR at start of process execution? [4]
 (c) How do you create special files like named pipes and device files? [4]

UNIT-V

- Q.5 (a) Write a program that checks if any of a list of users given on the command line is logged in. For each user it should say whether he/she is logged in or not. [10]

(b) What does the following script do:-

(6)

```
#!/bin/sh
While who |grep -s $1 >/dev/null
do
sleep 60
done
echo "$1 has logged out"
```

OR

Q.5 (a) Write a shell script that checks whether a given file exists. If so, copy the file to another name that is the original name + the .backup extension. [8]

(b) Write a shell script that checks whether a given file exists. If so, compress the file via the 'gzip' command, otherwise show an error message. [8]

Roll No. _____

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B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Computer Engineering & Information Technology
3CS6A & 3IT6A Advanced Engineering Mathematics-I

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. Graph Paper2. NIL**UNIT-I**Q.1 (a) State Kuhn -Tucker conditions. Use them to minimize [8]

$$f(x, y, z) = x^2 + y^2 + z^2 + 20x + 10y$$

$$\text{s.t. } x \geq 40$$

$$x + y \geq 80$$

$$x + y + z \geq 120$$

(b) Define optimization techniques and write its various engineering applications. [8]

ORQ.1 (a) Find the maxima of the function $f(X) = 2x_1 + x_2 + 10$ subject to $g(X) = x_1 + 2x_2^2 = 3$ using Lagrange's multiplier method. [8]

- (b) The lower corner of a leaf in a book is folded over so as just to reach the inner edge of the page. Show that the fraction of the width folded over when the area of the folded part is minimum is $\frac{2}{3}$. [8]

UNIT-II

- Q.2 (a) Write the dual of the following LPP and hence solve it - [8]

$$\text{Max. } z = 3x_1 - 2x_2$$

$$\text{s.t. } x_1 \leq 4$$

$$x_2 \leq 6$$

$$x_1 + x_2 \leq 5$$

$$-x_2 \leq -1$$

$$x_1 + x_2 \geq 0$$

- (b) Solve the following LPP by graphical method [8]

$$\text{Max. } z = 8000x_1 + 7000x_2$$

$$3x_1 + x_2 \leq 66$$

$$x_1 + x_2 \leq 45$$

$$x_1 \leq 20$$

$$x_2 \leq 40$$

$$x_1 + x_2 \geq 0$$

OR

- Q.2 (a) Use Big - M method to solve - [8]

$$\text{Max. } z = 3x_1 + 2x_2 + x_3$$

$$-3x_1 + 4x_2 + x_3 = 7$$

$$-3x_1 + 2x_2 + 2x_3 = 8$$

$$x_1, x_2, x_3 \geq 0$$

- (b) Solve the following transportation problem using VAM and check the optimality. [8]

	D ₁	D ₂	D ₃	D ₄	Supply
S ₁	19	30	50	10	7
S ₂	70	30	40	60	9
S ₃	40	8	70	20	18
Demands	5	8	7	14	34

UNIT-III

- Q.3 (a) If p is prime and K is not a multiple of p , then show that k has a multiplicative inverse. [5]
- (b) Determine the least non-negative residue x in the congruence $5^{101} \equiv x \pmod{31}$. [5]
- (c) The necessary and sufficient condition for a non - empty subset H of a group $\{G, *\}$ to be a subgroup is $a, b \in H \Rightarrow a * b^{-1} \in H$. [6]

OR

- Q.3 (a) Prove that if $\{G, *\}$ is a finite cyclic group generated by an element $a \in G$ and is of order n , then $a^n = e$. Also n is the least positive integer for which $a^n = e$. [8]
- (b) If S is the set of ordered pairs (a, b) of real numbers and if the binary operations \oplus and \odot are defined by the equations - [8]
- $$(a, b) \oplus (c, d) = (a + c, b + d)$$
- $$\text{and } (a, b) \odot (c, d) = (ac - bd, bc + ad)$$
- prove that (S, \oplus, \odot) is a field.

UNIT-IV

Q.4 (a) Use convolution theorem to evaluate [8]

$$\mathcal{L}^{-1} \left\{ \frac{s}{s^2 + a^2} \right\}$$

(b) Solve the differential equation by Laplace transform $(D^2 - 3D + 2) x = 1 - e^{2t}$
 where $x(0) = 1, \left(\frac{dx}{dt} \right)_{t=0} = 0$ [8]

OR

Q.4 (a) Find Laplace – inverse of $\frac{s^3 + 6s^2 + 14s}{(s+2)^4}$ [8]

(b) Solve the pde using Laplace – transform

$$\frac{\partial u}{\partial t} = 2 \frac{\partial^2 u}{\partial x^2}, \quad \text{given } u(0, t) = 0 = u(5, t) \text{ and } u(x, 0) = 10 \sin 4\pi x. \quad [8]$$

UNIT-V

Q.5 (a) Use Stirling's central difference formula to find y_{28} , given that -

$$y_{20} = 49225, \quad y_{25} = 48316, \quad y_{30} = 47236$$

$$y_{35} = 45926, \quad y_{40} = 44306. \quad [8]$$

(b) Use Runge – Kutta method to solve -

$$\frac{dy}{dx} = x + y^2, \quad \text{given at } x = 0; y = 1 \quad [8]$$

OR

Q.5 (a) Evaluate $\int_0^6 \frac{dx}{1+x^2}$, using Simpson's $\frac{3}{8}$ rule. Also, find the actual value by integration and compare the results. [8]

(b) Find the root of the equation $xe^x = \cos x$, using Regula – Falsi method, correct to three decimal places. [8]

3E2078	Roll No. _____	Total No of Pages: 3
3E2078		
B. Tech III Sem. (Back) Exam. Jan. 2016		
Computer Science & Engineering		
3CS6.3 (O) Elective - Management Information Systems		
CS, IT		

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____

2. NIL _____

UNIT-I

- Q.1 (a) List and describe four reasons why information systems are so important for business today. [8]
- (b) Define MIS. Explain the concept of impact and effectiveness of MIS. [8]

OR

- Q.1 Explain following in corporate with MIS - [4x4=16]
- (a) E – Commerce
 - (b) E – Communication
 - (c) E – Collaboration
 - (d) Security threats controlling & management

UNIT-II

Q.2 What is the role of decision making in management information system. Explain in detail along with the negative and positive impacts of decision making. [16]

OR

Q.2 (a) Explain the concept of business process Re-engineering incorporated to MIS with an appropriate example. [12]

(b) Write short note on OO – Technology. [4]

UNIT-III

Q.3 A transport and logistics company has decided that it no longer requires a head office and its strategic aim is to become a virtual organization. Discuss various MIS Technologies that could be used to create a virtual organization. [16]

OR

Q.3 Explain the following -

(a) Production management [6]

(b) Marketing management [5]

(c) Financial management [5]

UNIT-IV

Q.4 (a) What is ERP. Explain ERP system along with benefits. [12]

(b) Write short note on EMS. [4]

OR

Q.4 Explain the SAP Technologies in manufacturing sector along with its other application areas. [16]

UNIT-V

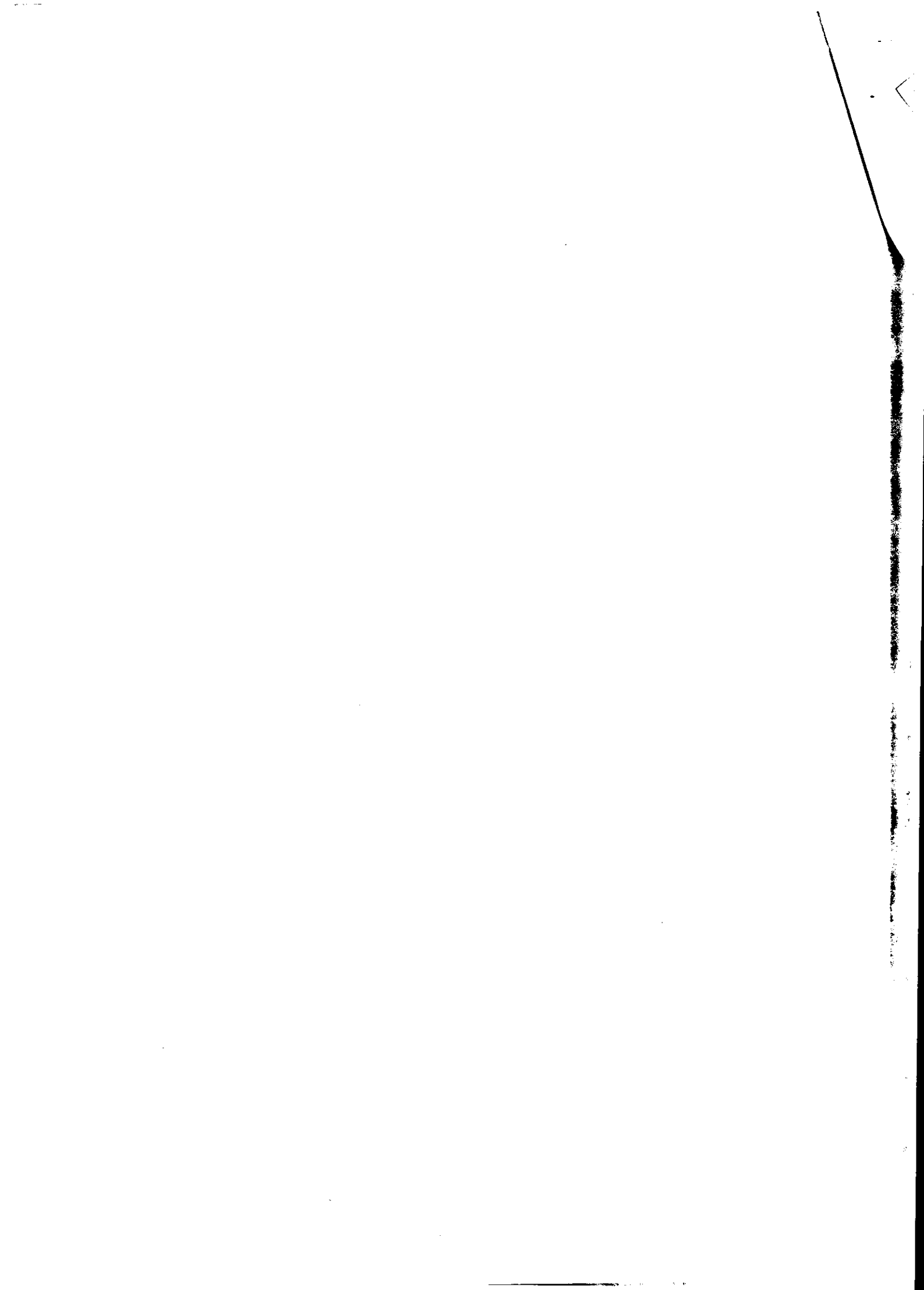
[8×2=16]

Q.5 Explain following (Any two) -

- (a) Database and client server architecture
 - (b) Electronic payment system
 - (c) Web enabled business management
 - (d) MIS in web environment
-

[3E2078]

[1100]



3E1654

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3E1654

**B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Computer Engineering & Information Technology
3CS5A & 3IT4A Object Oriented Programming
Common for EE & EX**

Time: 3 Hours

**Maximum Marks: 80
Min. Passing Marks: 24**

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) State the important features of object oriented programming. Compare the object oriented programming with structured programming. [8]
- (b) Explain the syntax for accessing members of structures using structure variables with help of suitable example. [8]

OR

- Q.1 (a) Write a program that demonstrates a function that uses a pointer to a structure variable as a parameter. [8]
- (b) Explain following with their syntax:
- (i) Structures as function arguments. [4]
- (ii) Structures as user defined types. [4]

UNIT-II

- Q.2 (a) Explain the concepts of classes and objects in OOPs. [4]
- (b) What is a friend function? Write a program to define member function outside a class using scope resolution operator. [12]

OR

- Q.2 (a) What is constructor? How to invoke a constructor function? With an example distinguish between parameterized constructor and copy constructor. [8]
- (b) Describe the importance of destructor function. Write a program of dynamic memory management using **new & delete** operators. [8]

UNIT-III

- Q.3 (a) What are the restrictions and limitations for operator overloading? [6]
- (b) List the operators that cannot be overloaded. Define a complete class by name distance with feet and inches as data member and overload += operator and two objects. [10]

OR

- Q.3 (a) Define operator overloading. How many arguments are required to overload unary and binary operators, respectively? [8]
- (b) What is conversion function? Write a program using two classes and show how to convert data one type to another. [8]

UNIT-IV

- Q.4 (a) What does inheritance mean in C++? How can we make private member inheritable without modifying. [8]
- (b) How to call virtual function with same name but different parameters. [8]

OR

- Q.4 (a) What is a virtual function? When do we make a virtual function "Pure" Explain with example. [8]
- (b) Write short note on following: [4]
- (i) Dynamic Binding [4]
- (ii) Virtual Destructors

UNIT-V

- Q.5 (a) What is meant by multiple inheritances? Write a C++ program for demonstrating multiple inheritances. [8]
- (b) Write a program to illustrate the concepts of virtual base classes in multiple inheritances. [8]

OR

- Q.5 (a) What is template class and template function? Use suitable example to explain them. [8]
- (b) Write short note on following with example: [4]
- (i) Pointer to class and class members. [4]
- (ii) Exception handling

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3E1651	Roll No. _____	Total No of Pages: 4
<p>3E1651</p> <p>B. Tech III Sem. (Main/Back) Exam. Jan. 2016</p> <p>Computer Science & Engineering</p> <p>3CS1A Electronic Devices & Circuits</p> <p>CS, IT</p>		

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

UNIT-I

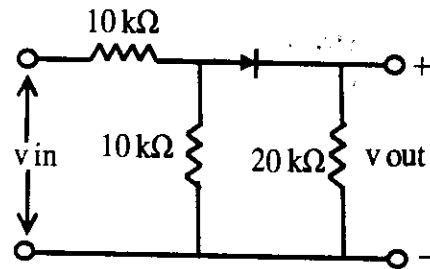
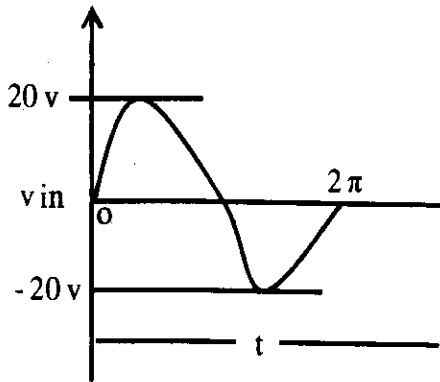
Q.1 (a) Explain the concept of charge densities in a semiconductor. Also explain Fermi Dirac distribution. [10]

(b) Find the conductivity of n-type Ge at room temp, assuming one donor atom in each 10^8 atoms. The density of Ge is $5.32 \times 10^3 \text{ Kg/m}^3$ and the atomic weight is 72.6 Kg/K-mol. Comment on the result.

$[e = 1.6 \times 10^{-19} \text{ C}, \mu_e = 0.38 \text{ m}^2/\text{v-s}, \mu_n = 0.18 \text{ m}^2/\text{v-s}]$ [6]

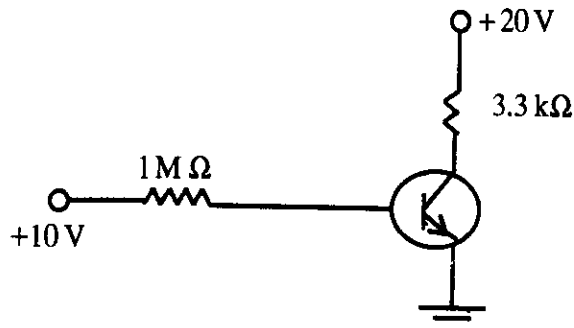
OR

- Q.1 (a) Describe in detail the concept of Mass action law & Hall effect in detail, [10]
- (b) Sketch the output voltage waveform for the circuit shown below. Assume the diode ideal. [6]



UNIT-II

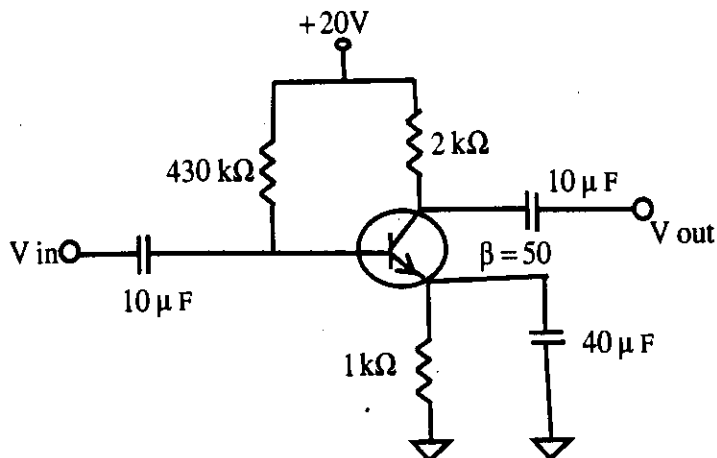
- Q.2 (a) Draw the load line for the following fig (given below). What is I_c at saturation point? Find V_{ce} at cut off point. [6]



- (b) Explain DC & AC analysis of C_e & C_B amplifiers. [10]

OR

Q.2 (a) For the Emitter bias network given below, determine I_B , I_C , V_{CE} , V_E , V_B & V_C [8]



(b) Explain the working concept of Ebers-Moll model. [8]

UNIT-III

Q.3 (a) Explain the phenomena of $F \in T$ as voltage variable resistor. [8]

(b) Describe in detail the concept of equivalent circuits & biasing of MOSFET's. [8]

OR

Q.3 (a) Explain Miller's Theorem for Semiconductors amplifiers. [8]

(b) Explain the phenomena of Cascading Transistor amplifiers. [8]

UNIT-IV

Q.4 (a) An amplifier with a gain of 60 dB has an output impedance of 10 kΩ. It is required to modify its output impedance to 1 kΩ. What type of feedback has to be applied? Calculate the feedback factor. Also find the percentage change in the overall gain, for a 10% change in the open loop gain of the amplifier. [8]

- (b) Explain the concept of current-shunt feedback amplifier by help of suitable diagram & Chnac Graf. [8]

OR

- Q.4 (a) Explain feedback amplifiers with its classification & concept. [8]
- (b) An amplifier with an open loop voltage gain of 1,000 delivers 10 W of output power at 10% second harmonic distortion when the input single in 10mV. If 40dB '-ve' voltage series feedback is applied and the output power is to remain at 10W. Determine - [8]
- (i) The required input single
 - (ii) percentage second harmonic distortion
 - (iii) close loop & voltage gain

UNIT-V

- Q.5 (a) Explain Design of Mono-stable multi-vibrators. [8]
- (b) Explain a wien bridge oscillator with its diagram and applications. [8]

OR

- Q.5 (a) Draw and explain Schmitt trigger. [8]
- (b) Explain an oscillator, its classification & criterion. [8]
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3E1652

Roll No. _____

Total No of Pages: 4

3E1652

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Computer Engineering & Information Technology
3CS2A & 3IT2A Data Structures and Algorithms
Common for EX, EC, EI

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

UNIT-I

Q.1 (a) What is an Algorithm? Explain time and space analysis of an algorithm with suitable example. [8]

(b) What do you understand by best, worst and average case analysis of an algorithm? [8]

OR

Q.1 (a) Why are asymptotic notations important? Explain the concept of Big-oh, theta & omega in brief. [8]

(b) Explain row major & column major form of array with suitable example. [8]

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UNIT-II

- Q.2 (a) Explain transposition of sparse matrices with algorithms of varying complexity. [8]
- (b) Write down an algorithm for insertion & deletion operation performed on the deque. [8]

OR

- Q.2 (a) What do you mean by tower of Hanoi problem? Explain with suitable example. [8]
- (b) Transform the following expression in Postfix Notation:
 $A * (B + D) / E - F * (G + H / K)$ [8]

UNIT-III

- Q.3 (a) Write an algorithm to delete a node from doubly linked list, where a node contains one data and two address (previous & next) portion. [8]
- (b) How can a polynomial such as $5x^4 - 3x^2 + 9x - 11$ be represented by a linked list? [8]

OR

- Q.3 (a) Explain the advantages of binary search over sequential search. [8]
- (b) Discuss concepts of Head Node in linked lists in brief with suitable example. [8]

UNIT-IV

- Q.4 (a) What is binary tree? Mention the properties of a binary tree. Define the following- [8]
- (i) Strictly binary tree
- (ii) Complete binary tree

- (b) The in-order & pre-order traversal sequence of nodes in a binary tree are given below: [8]

In-order: E A C K F H D B G
 Pre-order: F A E K C D H G B

Draw the binary tree. State briefly the logic used to construct the tree.

OR

- Q.4 (a) Explain concept of balance factor in AVL tree with suitable example. [4]
 (b) Insert the following keys in the order given below to build them into an AVL tree. [4]

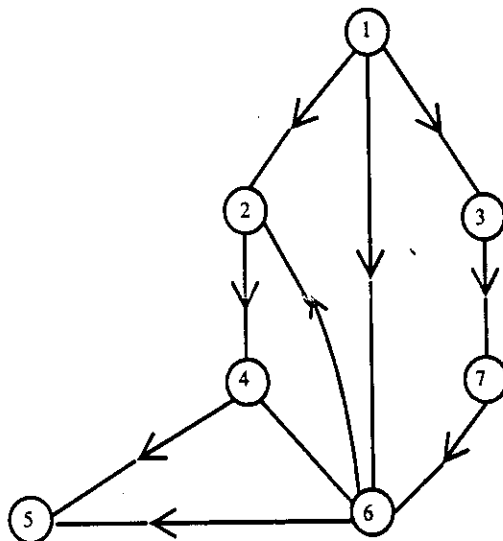
g, h, s, l, e, m, t, u.

Mention different rotations used and balance factor of each node.

- (c) Write an algorithm for inorder traversal of a threaded binary tree. [8]

UNIT-V

- Q.5 (a) Find -
 (i) BFS Traversal
 (ii) DFS Traversal



For Given Graph. Explain in brief.

[12]

- (b) Explain with a suitable example the principle of operation of heap sort. [4]

OR

- Q.5 (a) What is sorting? Write an algorithm to sort the real numbers using insertion sort and selection sort. What is the time complexity for both selection and insertion sort? [2+8+2=12]
- (b) What is difference between an internal sorting and external sorting? [4]
-