528

4E2014

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science
4CS1 Principles of Programming Languages
4E2014

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) Discuss the attributes of a Good Programming Languages .
b) Discuss compilation process of program with suitable diagram, with emphasis on each step. 8+8=16

OR

Q.1 a) Discuss general syntactic criteria of a Good Programming Language.
b) Discuss types of grammer with all their pros. & Cons.
c) What do you understand by semantic Rules, Explain with example. 5+6+5=16

UNIT -II

Q. 2 a) Discuss following in Detail:
i) Multidimensional Array
ii) Lists
iii) Structure & Union
iv) Records

4x4=16

P.T.O.

OR

Q.2 a) Explain floating & fixed point real number representation. 4
b) What is type checking. Contract between strong & weak typed languages. 4
c) Discuss point with following problems related to pointers
(i) Garbage
(ii) Dangling Reference 4
d) What is Macro, Discuss its significance with example. 4
4+4+4+4=16

Unit- III

Q.3 a)Discuss Infix, Prefix & Postfix syntaxes for representing the expressions . 8

b) What is exception and how it will handled. Also discuss its advantages(exception handling). 8
8+8=16

OR

Q.3 a) Discuss following with example:
(i) Eager & Lazy evaluation
(ii) Side effect 4x2=8
b) What is the scope of variable. Also discuss problems associated with static & Dynamic scoping. 8
8+8=16

UNIT -IV

Q. 4 a) What is fragmentation, discuss its types and how can we minimize it. 8
b) Discuss Mark & Sweep algorithm for garbage collection. 8
8+8=16

OR

Q.4 a) Discuss stack & Heap storage management in detail. 8
b) Discuss static storage management in detail. 8

UNIT-V

Q.5. Write short notes on following:
a) Hardware support for Parallelism
b) Thread Management 8x2=16

OR

Q.5. a) Process synchronization using monitors & semaphores.
b) Message passing Mechanism for simple mails. 8x2=16

532

4E2015

Total No. of Questions: 5 OR 5 Total No. of Pages: 2

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science
4CS2 Microprocessor & Interfaces
4E2015

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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.

UNIT -I

Q. 1 a) List down the features of 8085. 6
b) Draw the architecture diagram of 8085 microprocessor & explain all its blocks. 10
6+10=16

OR

Q.1 a) Draw and explain the pin configuration of 8085.
b) Classify the memory module of 8085. Differentiate between static RAM and Dynamic RAM.
8+8=16

UNIT -II

Q. 2 a) Explain Arithmetic & Logic Operations with examples.
b) Discuss the following instruction with example.

i)	RET	V)	LHLD addr
ii)	RLC	Vi)	MVI r_1, data
iii)	STAX r_p	Vii)	SUI data (8)
iv)	ADDr	Viii)	CALL addr

8+8=16

P.T.O.

OR

Q.2 a) Write a program to add the contents of two different memory locations & place the results at different memory location.

b) What are addressing modes? Explain all types of addressing modes available in 8085.

8+8=16

UNIT -III

Q. 3 a) Discuss I/O interfacing concept. Explain I/O mapped I/O technique of Interfacing.
b) How will you interface output device in 8085 microprocessor. Draw the required circuit diagram.

8+8=16

OR

Q.3 a) Explain all types of Data transfer schemes.
b) Draw & explain the block diagram of 8255. Name all the programming modes of PPI 8255.

8+8=16

UNIT -IV

Q. 4 a) Discuss DMA Transfer Modes. List down the points of operation of all the modes.
b) Explain the following operating modes of 8257.
(i) Rotating priority mode
(ii) Fixed priority mode
(iii) Extended write mode.

8+8=16

OR

Q.4 a) Write the initialization instruction for 8259A interrupt controller to meet following specifications-
i) Edge triggered, single & ICW4 are not needed.
ii) Mask interrupts IR_1 & IR_3
iii) Interrupt vector address for IRO is 62.80 H
iv) Call address intervals are four bytes.

10

b) Draw & explain the PIN configuration of 8251 A. 6

6+10=16

UNIT -V

Q. 5 a) Explain the Data movement instruction of 8086/8088 with example.
b) Explain the stack memory addressing modes of 8086.

OR

Q.5 a) List down the features of Pentium processor.
b) Write a short note on Dual Core processor 8+8=16

4E2916

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science & Information TEchnology
4CS2 Principles of Programming Languages
4E2916

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 What elements are kept in mind while designing language syntactic structure? 16

OR

Q.1 Explain all Programming Paradigms in details. 16

UNIT -II

Q. 2 Describe type checking and type conversion for elementary data type. 16

OR

Q.2 Write short note on
i) Sequential file
ii) Indexed Sequential files
iii) Lists
iv) Implementation of Array Types

4x4=16

Unit- III

Q.3 What do you mean by structured sequence control? Also discuss the problems in structured sequence control. 16

OR

Q.3 What do you understand by subprogram? Give specification, definition and activation record of the above. 16

UNIT -IV

Q. 4 What do you mean by static and dynamic scope of an identifiers? 16

OR

Q.4 What are Actual and formal Parameters? And Explain methods for Transmitting Parameters. 16

UNIT-V

Q.5. Explain static and Heap Storage Management. 16

OR

Q.5. Write short note on

i) Information hiding
ii) Encapsulation
iii) Garbage Collection
iv) Abstract Data type

4x4=16

538

4E2917

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Back) Exam., July 2014
Computer Science & Information Tech.
4CS3 Discrete Mathematical Structures
4E2917

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) Construct the truth table for the given compound propositions.
(i) $\sim(p \cup 2) \rightarrow 2$ (ii) $(p \cap 2) \rightarrow (p \cup 2)$ 8

b) Define the following
(i) Contradiction (ii) Bicoditional Statement
(iii) Predicate (iv) Tautology

OR

Q.1 a) Check the validity of the following argument:
Lions are dangerous animals
There are lions.
Therefore, they are dangerous animals 8

b) Prove that $\sim(p \cap 2) \rightarrow (\sim(2 \rightarrow p))$ is a tautology without constructing truth table

UNIT -II

Q. 2 a) Computer the square of natural number. 8

b) Using bubble sort, sort the list

x=[34,13,21,3,89] 8

8+8=16

OR

Q.2 a) Give an indirect proof of the theorem "if 3n+2 is odd, then n is odd." 8

8+8=16

b) For any natural number n, prove that

$1^2 + 2^2 + \ldots\ldots\ldots\ldots + n^2 = n(n = 1)(2n = 1)/16$

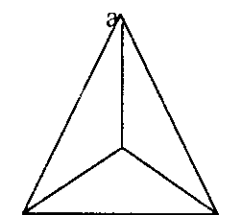
UNIT -III

Q.3 a) A Simple graph with n vertices and m components cannot have more than $\frac{(n-m)(n-m=1)}{2}$ edges

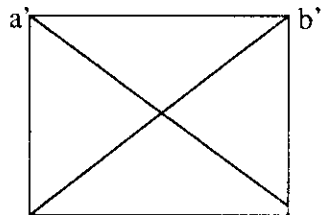
8

b) show that the following graphs are isomorphic

(i)



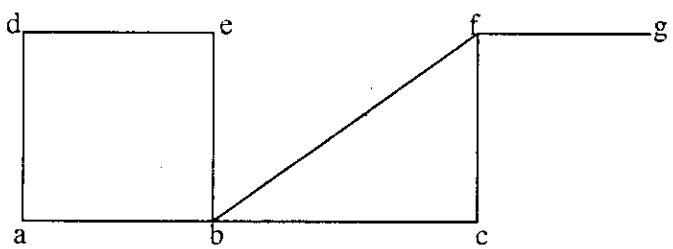
G_1



G_2

OR

Q.3 a) Determine a spanning tree of the graph G as given below



G

4E2016

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science
4CS3 Object Oriented Programming
4E2016

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) What do you understand by object oriented Programming? Describe all the features of Object Oriented Programming. .
b) Differentiate Logic Programming and Dynamic Programming? 8+8=16

OR

Q.1 a) What do you understand by parallel computing? Also describe event Driven programming 10
b) What do you understand by Aspect-oriented programming? How it is differ from object oriented programming? 6
10+6=16

UNIT -II

Q. 2 a) Explain Constructor with suitable example? Also describe the role of destructor in C++ languages? 8
b) What is polymorphism and inheritance? How these are used in object oriented programming? 8
8+8=16

P.T.O.

OR

Q.2 a) What do you understand by classes and objects in objects oriented programming? Explain with suitable examples?. 8

b) What do you understand by data abstraction ? How it is used in object oriented programming? 8

8+8=16

Unit- III

Q.3 a) What is operator overloading? Why it is necessary to overload an operator? What is an operator function? 8

b) What is friend function in C++ ? What are the risks associated with the use of friend function? 8

8+8=16

OR

Q.3 Write a short note on :-

a) Virtual function

b) Function overloading

c) Virtual classes

d) Overloading methods and Run time type casting

4x4=16

UNIT -IV

Q. 4 a) What are the different forms of inheritance ? give an example of each?

b) Difference between C++ program and Java bytes code?

8+8=16

OR

Q.4 a) Explain the Java Virtual machine? Also write the advantages of virtual machine in object oriented programming? 8

b) Explain the following:-

i) Applet

ii) Abstract classes 8

UNIT-V

Q.5. a) What is interface ? How it is differentiate with class? What are its applications. 8

b) How does string class differ from string Buffer class? Explain with same methods used in these class?

OR

Q.5. a) What is package ? Explain How you will create a package ? Write all steps to create and import package? 12

b) Explain the string Handling? With example. 4

12+4=16

4E2027

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Back) Exam., July 2014
Computer Science & Information Tech.
4CS3Discrete Mathamatics Structures
4E2027

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 (a) Show that $\sim (p \vee (\sim p \wedge q)) \equiv (\sim p) \wedge (\sim q)$

(b) Determine the validity of the argument :
It is snowing today.
If it snows today, then we will go skiing.
Hence we will go skiing.

8+8=16

OR

Q.1 (a) Show that $(p \wedge q) \rightarrow (p \vee q)$ is a tautology.
(b) Obtain DNF of the statement $\sim (p \vee q) \leftrightarrow p \wedge q$

8+8=16

UNIT -II

Q. 2 (a) Give an indirect proof of the theorem "If 3n+2 is odd, then n is odd".
(b) Show that $\sqrt{2}$ is irrational.

16

OR

Q.2 (a)Show by mathematical induction that $n \geq 1$

$$1+2+3+.....+n=\frac{n(n+1)}{2}$$

(b) Solve the recurrence relation

$$a_n+5a_{n-1}+6a_{n-2}=3n^2-2n+1$$

16

UNIT -III

Q. 3 (a) Prove that a simple graph with n vertices and k components can have at most $\frac{(n-k)(n-k+1)}{2}$ edges.

(b) A graph G is disconnected if and only if its vertex set V can be partitioned into two non-void, disjoint subsets V_1 and V_2 such that there exists no edge in G whose one end vertex is in subset V_1 and other in subset V_2.

16

OR

Q.3 Draw a graph which is
(i) Neither Eulerian nor Hamiltonian.
(ii) Hamiltonian but not Eulerian.
(iii) Eulerian but not Hamiltonian.
(iv) Hamiltonian as well as Eulerian. 16

UNIT -IV

Q. 4 (a) In a survey of 60 people it was found that 25 read News week, 26 read Times and 26 read magazine Fortune. Also 9 read both news week and Fortune, 11 read News week and Times and 8 read Times and Fortune. If 8 read none of the three magazines, determine the number of people who read exactly one magazine.

(b) For any sets A, B and C prove that
(i) $(A-B)\cup(B-A)=(A\cup B)-(A\cap B)$
(ii) $(A-B)-C=A-(B\cup C)$

16

OR

Q.4(a) Let A=Z. The set of integers relation R defined in A by 'aRb' as " a is congruent to b mod ". Prove that R is an equivalence relation.

(b) Let A={1,2,3,4} and R={(1,2),(2,3),(3,4)} be a relation in A. Find its reflexive closure, symmetric and transitive closure.

16

UNIT -V

Q. 5 (a) The intersection of two submonoids of a monoid (S, *) is a submonoid.

(b) Let R be a relation on a semigroup (Z, +) defined by a R b iff . Show that R is a congruence relation.

16

OR

Q.5(a) Show that (Z, +) is an abelien group.

(b) Let G be a group and $a, b \in G$

(i) $(a^{-1})^{-1} = a$ (ii) $(ab)^{-1} = b^{-1}a^{-1}$

16

4E2017

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science
4CS4 System Sowtware Engg.
4E2017

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 Explain instruction format and addressing modes of SIC/XE machine architecture. 16

OR

Q.1 a) Write short notes on data allocation structure and search structure. 8
b) Explain external and inter representation of data. 8
8+8=16

UNIT -II

Q. 2 a) Describe machine independent assembler features in detail. 8
b) Describe how assembler handles literal operands. 8
8+8=16

OR

Q.2 Explain pass-I and pass-II algorithm for assembler. 16

UNIT -III

Q. 3 a) Briefly explain the Bootstrap Loader with the algorithm. 8

b) Describe machine dependent loader features in detail. 8

8+8=16

OR

Q.3 a) With the help of examples how relocation and linking operations are performed. 10

b) Define the following:

1) Linking Loader 2) Dynamic linking 6

10+6=16

UNIT -IV

Q. 4 a) Explain the data structure involved in microprocessor algorithm. 8

b) Explain features of machine independent microprocessor in detail. 8

OR

Q.4 a) Explain MASM microprocessor in detail. 8

b) Explain conditional micro expansion. 8

8+8=16

UNIT -V

Q. 5 Explain recursive descent [parsing. Apply it for the given grammar, with the input string id=id*id

E→E+T|T

T→ T*F|F

F→ (E)|id 16

OR

Q.5 a) What do you mean by ambiguity in grammer? Explain with suitable example. 10

b) Explain data structure used for symbol table. 6

10+6=16

4E2018

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Bio Medical Engg.
4BM6.2 Statics and probability Theory
Commom for 4CS4
4E2018

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) A manufacturer supplies quarter horse-power motors in lots of 25. A buyers, before taking a lot, tests at random a sample of 5 motors and accepts the lot if they are all good; otherwise he rejects the lot. Find the probability that he will;
i) accepts a lot containing 5 defective motors;
ii) reject a lot containing only one defective motors.

4+4=8

b) Calculate the first time moments about the mean for the following distribution:

x	:	6	7	8	9	10	11	12
y	:	3	6	9	13	8	5	4

2+2+2+2+2=8

OR

Q.1 a) Six dice ate throw 729 times. How may times do you expect at least three dice to show a 5 or 6?
b) Write a short note on " rectangular and exponential distribution."

8

UNIT -II

Q. 2 a) Define the following terms by giving an example:
i) Discrete random variables
ii) Probability mass function
iii) distribution function
iv) probability generating function

2+2+2+2+=8

b) four balls are draw simultaneously from a bag containing 6 white, 5 black and 7 red balls. Find the expectation of the number of white balls drawn. 8

OR

Q.2 a) Define mean time to failure in terms of reliability function. If the life time of a component has polf = $\lambda e^{-\lambda t}$, $t \geq 0$. Compute its mean time to failure and variance.

2+3+3+=8

b) Define the poisson process. A radio active source emits particles at a rate of 5 per minute in accordance with poisson process. Each particle emitted has a probability 0.6 of being recorded. Find the probability that 10 particles are recorded in 4- minutes period

2+6=8

UNIT -III

Q. 3 a) Customers arrive at a box office with one ticket window according to a poisson's input process with mean rate of 30 per hour. The time required to serve a customer has an exponential distribution. With mean 90 seconds. Find the average.
i) Line length ii) queue length iii) waiting time in queue iv) time spent by a customer in the system.

2+2+2+2=8

b) Problems arrive at a computer centre in poisson fashion at an average rate of 5 per day. The rules of the computing centre are that any man waiting to get his problem, will also help in solving the problem which is being solved. If the mean time to solve a problem with one man has an exponential distribution with mean time 1/3 day, and if the average solving time is inversely proportional to the number of persons working on the problem, find the expected time a person spents in the centre. 8

OR

Q.3 a) The time spent by a repairman on his jobs has an exponential distribution with mean 30minutes. If he repairs sets in the order in which they come in, and if the arrival of sets is approximately poisson with an average rate of 10 per 8 hour day, what is the repairman's expected idle time each day? How may jobs are ahead of the average set just brought in?
b) If for a period of 2 hours in the day(8 A.M. to 10.00 A.M.) customers arrive in a barber's shop that has space to accommodate only 4 customers. Arrival rate of

customers is 3/hour and service time is 36 minutes/customers. For the above period find:
i) the probability that there is no customer in the shop,
ii) average number of customers in the shop. 8

UNIT -IV

Q. 4 a) Write a short note in discrete parameters markov chain .
b) Write a short note on discrete parameter birth-death process.

8

OR

Q.4 a) Two brands A and B of a product have probabilities 30 % and 70 % respectively at time t=0, if their transition matrix p be $\begin{bmatrix} 0.7 & 0.3 \\ 0.2 & 0.8 \end{bmatrix}$, find their probabilities:
(i) after time t=1 ii) after time t=2 and ii) their steady state probabilities.

8

b) Automata car wash facility operates with only on e bay. Cars arrive according to poisson distribution, with a mean of 4 cars per hour, and may wait in the facilities parking lot if the bay is busy. Find the time spent buy a car in the system and in the waiting if
i) the time for washing and cleaning a car is exponential with a mean of 10 minute.
ii) the time for washing and cleaning a car is constant and equal to 10 minutes. Which facility is batter? 8

UNIT -V

Q. 5 a) Write a short note on open queuing networks. 8
b) Calculate the coefficient of correlation between x and y using the following data:

x	; 1	3	5	7	8	10
y	: 8	12	15	17	18	20

8

OR

Q.5 a) Fit a straight line to the following data:

x	: 1	2	3	4	5
y	: 2	4	6	8	10

8

b) Obtain the line of regression of y on z:

x	: 1.5	1.8	2.6	2.9	3.4
y	: 33	36	40	46	53

8

16

4E2919

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science & Information Tech.
4CS5 Sowtware Engg.
4E2919

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) define software engineering and its key elements.
b) Define a system and its characterstics. 16

OR

Q.1 a) Discuss problems and its solution.
b) Discuss with system development
c) Discuss role of system development plan 8+8=16

UNIT -II

Q. 2 Compare waterfall an spiral model for software development. Which one is preferred under what circumstances. 16

OR

Q.2 a) Contrast between software design and coding. 8

b) Discuss advantages of prototype model over waterfall model for software development. 8

8+8=16

UNIT -III

Q. 3 a) Discuss requirement analysis principles in detail. 8

b) What is Data dictionary and discuss its accuracy attributes. 8

8+8=16

OR

Q.3 a) What is protyping and under what circumstances it is used. 8

b) Discuss problem portioning & Abstraction with suitable examples. 8

8+8=16

UNIT -IV

Q. 4 a) Discuss modular design of software's along with concepts of coupling & cohesion. 8

b) Discuss software design principles an concepts. 8

8+8=16

OR

Q.4 a) Discuss relation between completeness and abstraction w.r.t. software design. 8

b) Explain DFD and CFD with suitable example. 8

8+8=16

UNIT -V

Q. 5 Write short notes on following:

a) Object modularization

b) UML 8x2=16

OR

Q.5 a) Notation for class, object, module and process diagram.

b) OOA approach by load & Yourdan.

8x2=16

4E2920

Total No. of Questions: Total No. of Pages:
Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science & Information Tech.
4CS6.1 Analog & Digital Communication
4E920

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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._____ 2._____

UNIT -I

Q. 1 a) How to demodulate AM waves by square law detector. Explain it with suitable circuit diagram. 8
b) The total power content of AM signal is 1000 W. Determine the power being transmitted at carrier frequency and each of sideband when the unmodulation is 100 %. 8

OR

Q.1 a) Explain the working of envelop(diode) detector circuit for AM detection. 8
b) Explain the different method of generation of SSB signal. 8

UNIT -II

Q. 2 a) What is the signal to quantization noise ratio for linear quantization and explain it mathematically. 8

b) Define the companding. Explain the μ-law and A-Law companding. 8

OR

Q.2 a) Explain the delta unmodulation in detail with suitable diagram. 8
b) A television signal having a bandwidth of 4.2 MHz is transmitted using binary PCM system. Given that the number of quantization level is 512.
Determine
(i) Code word length (ii) Final bit rate 8
8+8=16

UNIT -III

Q. 3 a) Derive the expression for spectrum of BPSK and sketch the same. 8
b) Explain the generator and detection of MSK signal. 8

OR

Q.3 a) Draw the block diagram of QPSK and explain it working. 8
b) Explain the generator of ASK signal. 8
8+8=16

UNIT -IV

Q. 4 a) Derive general transmission line equation. 8
b) Explain the working of public switching telephone network system. 8
8+8=16

OR

Q.4 a) Explain the salient features of optical communication system in communication application. 8
b) A step index multicode fiber with a numerical aperature 0.20 support approximate 1000 modes at a 850 nm wave length. Determine
(i) What is diameter of its core.
(ii) How may modes does the fiber supports at 1320 nm. 8
8+8=16

UNIT -V

Q. 5 a) Explain the following terms.
(i) Channel capacity
(ii) Average information.
(iii) Shanon's theorem. 8
b) Explain the operation of syndrome calculator for cyclic codes with suitable block diagram. 8

OR

Q.5 a) Let C be a(7,4) Cyclic code with $g(x) = 1 + x + x^3$ find the generator uratix G1 for C and find the code word for d=(1010). 8
b) Explain the linear block code. 8
8+8=16

4E2019

B.Tech. IV Semester (Back) Exam., July 2014
Computer Science & Information Tech.
4CS6.1Analog and Digital Communication
4E2019

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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.

UNIT -I

Q. 1 a) What are the generation methods for SSB-SC signal. (8)

b) Derive the expression for power relation for AM wave (8)

OR

Q.1 a) The power content of the carrier of an AM wave is 5KWatt. Determine the power content of each of the sideband and the total power transmitted, when the carrier is modulated upto 75%.

(8)

b) How would you recover the message signal from an AM wave that is overmodulated. Justify your answer.

(8)

UNIT -II

Q. 2 a) Draw the block diagram of ADM. Explain its working and compare it with PCM (8)

b) A PCM system uses a uniform quantizer followed by a 7-bit binary encoder. The bit rate of the system is 50Mb/s. What is the maximum message bandwidth for which system operation is satisfactory. (8)

OR

Q.2 a) What are the different type of errors in delta modulator? How can these be removed. (8)

b) A television signal having a BW of 4.2 Mhz is transmitted using binary PCM system. Given that the number of quantization levels is 512. Determine –
i) Code word length
ii) Transmission BW
iii) Final bit rate
iv) Output signal to quantization noise ratio (8)

UNIT -III

Q. 3 a) Write the power spectral density of BPSK and QPSK signals and draw the power spectrum of each. (8)

b) Explain merits of MSK. (8)

OR

Q.3a) Explain the principle of differential phase shift keying (DPSK) (8)

b) Write the ambiguity in the decoded output in each case of PSK systems? How it is corrected. (8)

UNIT -IV

Q. 4 a) What are transmission line primary and secondary line constant. Explain (8)
b) Describe Electronic exchange (PSTN). (8)

OR

Q.4 a) Explain all type of losses occur in fiber. (8)
b) Write a short note on connector and splicer. (8)

UNIT -V

Q. 5 Write a short note on-
a) Redundancy
b) Block code (8*2)

OR

Q.5 a) a high resolution black and white TV picture consists of about $2*10^6$ picture elements and 16 different brightness levels. Pictures are repeated at the rate of 32 per second. All picture elements are assumed to be independent, and all levels have equal likelihood of occurrence. Calculate the average rate of information conveyed by this TV picture source. (8)

b) Explain Shanon's theorem with example. (8)

534

4E7915

Total No. of Questions: 5 OR 5 Total No. of Pages: 2

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Information Technology
4IT1 Microprocessor & Interfaces
4E2915

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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_____ 2. _____

UNIT -I

Q. 1 a) Draw the block diagram of simple microprocessor based system and explain the function of each block. 10
b) State the advantages of microprocessor and microcontroller. 6

10+6=16

OR

Q.1 a) Describe the functions of following pins in 8085
i) ALE ii) RESET IN/OUT
iii) INTA iv) IO/$\overline{M}$ 12
b) Why ADO-AD_7 lines are multiplexed 4

12+4=16

UNIT -II

Q. 2 a) Explain the classification of the instruction set of 8085 microprocessor with suitable examples. 12
b) Define Macro's and subroutines 4

12+4=16

OR

Q.2 a) Explain how software delays can be implemented using counter's. 6

b) Explain the Hardware Interrupts supported by 8085. 8

c) What do you mean by Masking the Interrupt. 2

6+8+2=16

UNIT -III

Q. 3 a) Explain memory mapped I/O interfacing technique and compare it with I/O mapped I/O interfacing techniques. 8

b) Explain interfacing of input and output device with the help of a diagram.

8+8=16

OR

Q.3 a) Describe the interfacing scheme of 8255 and 8085 in I/O mapped I/O mode also explain the bit set/Reset mode of 8255.

b) What is the difference between A/D & D/A converters.

12+4=16

UNIT -IV

Q. 4 a) Explain the architecture, organization and various modes of operation of a programmable DMA controller 8259. 12

b) What is the need of DMA in microprocessor applications?

12+4=16

OR

Q.4 a) Describe the organization and architecture of 8251(USART) with a functional block diagram.

12

b) Explain the RS232C Serial Communication standard.

4

UNIT -V

Q. 5 Write short notes on (Any four)

a) Direct addressing mode
b) Indirect addressing mode
c) String addressing mode
d) Features of Pentium processor
e) Dual Core Processor
f) Jump instruction in 8086 Microprocessor
g) Push and POP instruction in 8086
h) Instruction format

4*4=16

b) In how many distinct ways can the vertices of a regular hexagon free to move in space be colored using 4 colors. 8

UNIT -IV

Q. 4 a) State and prove addition principle.
b) Show that the set of even positive integers is a countable sets.

8+8=16

OR

Q.4 a)Write short note on duality of a set. 8
b) In a group of 52 persons, 16 drink tea. Find
(i) How may drink tea and coffee both
(ii) How many drik tea but not coffee. 8

UNIT -V

Q. 5 a) Consider the relation given by $a\ R\ b \Rightarrow a \leq b.$

$b\ R\ a \Rightarrow b \leq a$

$\Rightarrow a = b$ on the set $A = \{1,2,3,4\}\ and\ (R, \leq)$

Determine $M_R{}^2$

8

b) Prove that composite of function is associative 8

OR

Q.5 a) If R is an equivalence relation on a set A, then prove that R^{-1} is also equivalence relation on A.

8

b) Define the following with example
i) Harse diagram ii) Symmetric relation
iii) Closure properly iv) Anti symmetric relation 8

4E2026

B.Tech. IV Semester (Old Back) Exam., July 2014
Information Technology
4IT4 Sowtware Engineering
4E2026

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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.

UNIT -I

Q. 1 a) Explain the various tools used in the analysis phase of SDLD? 8
b) Explain system specification? 8
8+8=16

OR

Q.1 a) Define system? What are its characterstics? 4
b) Explain various problems in system development. 4
c) How do you madel the system architecture? Explain completely with diagram? 8+8=16

UNIT -II

Q. 2 Compute the function point value for a project with the following information domain charactestics?
(i) number of user Inputs → 24
(ii) Number of user outputs → 16
(iii) Number of user Inquires → 22
(iv) Number of files → 4
(v) Number of External interface → 2
Assume the complexity weight factor is average and the various complexity Adjustment values as:-
3,3,0,5,2,4,4,4,5,5,4,3,4,6 12
b) Differentiate between software Design & Coding? 4
12+4=16

OR

Q.2 a) How RMMM plan in beneficial for Risk Management? 8
b) Explain spiral Model of SWDLC and also define the advantage and disadvantage of this model? 8
8+8=16

UNIT -III

Q. 3 a) Why requirement analysis is important in development of a software? Describe analysis principles in details? 8

b) What is behavioral Modeling Explain? 8

8+8=16

OR

Q.3 a) Define fine Desirable characterstics of a good SRS documents and the important issues tha. is document should address? 8

b) Write a short note on :-

i) Data dictionary

ii) Data flow diagram

4x2=8

8+8=16

UNIT -IV

Q. 4 a) Explain the concept with example?

i) Abstraction

ii) Modularity

iii) Information hiding 3x4=12

b) Explain Design Documentation? 4

12+4=16

OR

Q.4 a) Explain Cohesion & Coupling? 8

b) Explain software design principles concepts. 8

8+8=16

UNIT -V

Q. 5 a) List out the various activities that are Encompassed by system design process under object oriented design ? And explain each briefly? 8

b) Describe class & object relationship in object oriented design? 8

8+8=16

OR

Q.5 a) What is UML ? Explain how it is useful in object oriented. Modeling? 8

b) write short note on Data Modeling? 8

8+8=16

4E2922

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Infortmation Technology
4IT6.1 Open source technology
4E2922

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 24

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._____ 2. _____

UNIT -I

Q. 1 What is open source technology? Discuss about the evolution and development of OST and contemporary technologies in detail. 16

OR

Q.1 a) Write and explain various applications of open source technology.
b) Discuss about the risk factors incorporated with OST. 10+6=16

UNIT -II

Q. 2 a) Explain the philosophy of software freedom, also differentiate free software, OSS & closed software in detail. 16

OR

Q.2 a) Describe the concept of open Audio, Video, 2D & 3D graphics incorporated to open source software. 12
b) Write short note on system tools. 4
12+4=16

Unit- III

Q.3 Explain open source development model along with its features in detail. 16

OR

a) Discuss about open source Hardware, open source design. 8

b) How starting and maintaining an open source project can be handled explain. 8+8=16

UNIT -IV

Q. 4 Discuss various issues of licenses and patents for open source technology in detail 16

OR

Q.4 (a) What is license ? Explain how can we create our own license. 8

(b) Write short note on copyrights and copy lefts. 8

Unit –V

Q.5. Discuss about the social and financial impacts of open source technology? Also describe economics of FOSS. 16

OR

Q.5. Write short notes on

(a) Open source as a Business strategy

(b) Problems with traditional commercial software

8+8=16

545

4E2921

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014

Computer & IT

4IT 6.2 Linear Integrated Circuits

4E2921

Time: 3Hours **Maximum Marks: 80**

Min Passing Marks: 24

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._____ 2._____

UNIT -I

Q. 1 a) Discuss the following op-amp parameter :

i) Gain-Bandwidth product ii) SVRR

iii) CMRR iv) Output short-circuit current

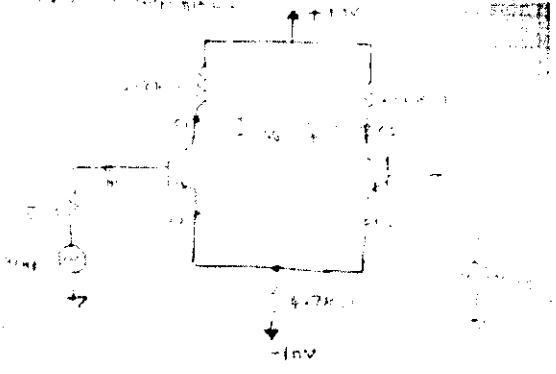
4x2=8

b) Draw the schematic diagram of Schmitt trigger and compare its working with window detector. 8

OR

Q.1 a) Draw circuit diagram and discuss current mirror circuit in differential amplifier stages. 8

b) For given dual input, balanced-out put differential amplifier.



And transistor with $\beta_{ac} = \beta_{dc} = 100$ and $V_{BE} = 0.715$ V typical.

i) Determine the I_E and $V_{CE}\varphi$ values ii) Determine the voltage gain

iii) Determine the input and output resistances. 8

8+8=16

UNIT -II

Q. 2 a) Draw block diagram of voltage controlled oscillator and discuss each block. 8
b) What is frequency stability? Explain its significance. 3
c) Draw circuit diagram and discuss phase shift oscillator. 5

OR

Q.2 a) Design a differentiator to differentia an input signal that varies in frequency from 10 Hz to about 1 KHz. If a sine wave of 1 V peak at 1000 Hz is applied to the differentiator, draw its output wave from. 8
b) Draw and discuss block diagram of voltage to frequency converter. 8

UNIT -III

Q. 3 a) Draw the schematic diagram of wide-band reject filter and discuss operation with the help of frequency response. 8
b) Design a first order low-pass filter so that it has a cut-off frequency of 2KHz and pass-band gain of 1. 8

OR

Q.3 a) Describe first order low-pass butter worth filter and state about its practical application. 8
b) Compare feature of band pass and band reject filter along with suitable mathematical expression. 8

UNIT -IV

Q. 4 a) Draw the circuit diagram and describe FSK demodulator. 8
b) Draw the block diagram of a phase locked loop and discuss it. 8

OR

Q.4 Discuss the application of PLL.
i) Frequency synthesizer
ii) FM detector 2x8=16

UNIT –V

Q. 5 a) Discuss a stable Multivibrator as a square wave oscillator using 555 timer along with the choice of R and C in circuit. 8
b) Draw and discuss block diagram of 555 timer. 8
8+8=16

OR

Q.5 a) Draw and discuss block diagram of voltage regulator IC.
b) Compare positive and negative regulator with suitable mathematical expression. 8+8=16

4E2923

Total No. of Questions: Total No. of Pages:

Roll No. _____

B.Tech. IV Semester (Old Back) Exam., July 2014
Computer Science & Information Tech.
4CS6.3 Logic & Functional Programming
4E2923

Time: 3Hours **Maximum Marks: 80**

Min Passing Marks: 24

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._____ 2. _____

UNIT -I

Q. 1 a) Show that (p^q) →(P v Q) is tautology without using truth table.

b) Show that ~(p v (p^ q)) =((~p)^(~q)).

(Where '^' is AND and "v" is OR)

4x4=16

OR

Q.1 a) What do you understand by qualification? Discuss all types of qualifiers. 8

b) Show that (p^q)^(p v q) is contradiction of fallacy. 8

8+8=16

UNIT -II

Q. 2 a) How compound goals are evaluated by prolog. Explain with suitable example. 8

b) What are the rules in Prolog? Explain with few examples. 8

8+8=16

OR

Q.2 a) Explain how backtracking works in prolog with the help of suitable example. 8

b) Convert following facts in Prolog

a) Ajay is tall

b) The square root of 16 is 4 or -4.

c) Himani likes Ice-cream.
d) Purvi lives at 16 streets in Pune. 4x2= 8
8+8=16

UNIT -III

Q. 3 a) Explain the use of cut predicate and fail predicate with the help of a program. 8

b) Write prolog program which display numbers from N to 0. N is supplied by user. 8
8+8=16

OR

Q.3 a) What do you understand by state space and searching in state space? Explain through example. 8
b) What is parsing? How it can be done in prolog. 8
8+8=16

UNIT -IV

Q. 4 a) What is Lambda calculus? Discuss its syntax and expression using Example. 8

b) What is Lambda function? What are reductions in Lambda calculus? 8

OR

Q.4 a) Discuss Eager and Lazy evaluation strategies using examples. 8
b) Compare imperative and functional programming language. 8
8+8=16

UNIT -V

Q. 5 a) What is Haskell? What are various features of Haskell? 8
b) Discuss the concept of Monad in Haskell. 8
8+8=16

OR

Q.5 a) Discuss various types of array and related function. 8
b) Discuss guarded equation and polymorphic functions in Haskell. 8
8+8=16