4E4160

4E4160

B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS1A Microprocessors and Interfaces
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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._____   2._____

UNIT-I

Q.1 Define following is 8085 Microprocessor:-

    (a)   Program counter   [2]

    (b)   Stack pointer   [2]

    (c)   General purpose programmable registers   [2]

    (d)   Instruction register   [2]

    (e)   HOLD & HLDA pin   [2]

    (f)   Control & status pins   [2]

    (g)   Flags   [2]

    (h)   PSW   [2]

Q.1 (a) Define multiplexed pins of 8085 Microprocessor. Explain with black diagram Demultiplexing of AD0-AD7 pins of 8085 using tri state gates. [8]

(b) Find memory map of the following 2KB Memory chip. [8]
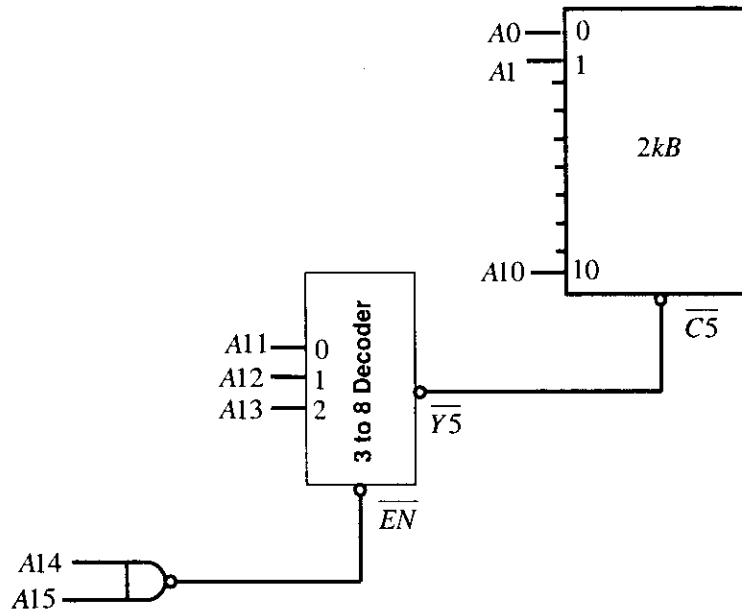
UNIT-II

Q.2 (a) Write a short note on rotate instructions of 8085 Microprocessor. [6]

(b) Find the content of 'C' register after execution of the following assembly language program. [6]

	MVI A,	17H
Loop:	RLC	
	JNC	Loop:
	MOV C,	A
	HLT	

(c) Define direct and indirect addressing modes with appropriate examples. [4]

OR

Q.2 (a) Define instruction cycle, machine cycle and T-state. [4]

(b) Explain instruction cycle of an instruction MVI A, 05 H using Timing diagram. [6]

(c) Find content of register 'C' after execution of the following assembly language program.

[6]

```
MVI A,  67H
MVI B,  24H
ADD B
DAA
MOV C, A
HLT
```

UNIT-III

Q.3 (a) Compute the time delay introduced by following routine:

[6]

			T – States
	MVI A, 0AH	-	7
Loop:	NOP	-	4
	NOP		
	MOV B, A	-	4
	DCR A	-	4
	JNC Loop:	-	10/7
	RET	-	10

Assume : clock frequency of Microprocessor is 3MHZ.

(b) Write an assembly program to implement 16 bit counter. [6]

(c) Differentiate maskable & Nonmaskable interrupts of 8085. [4]

OR

Q.3 (a) Find the content of SP & PC:

(i) after CALL instruction [6]

(ii) after RET instruction, of the following program

| Mem. Address	Instruction
2000H	LXI SP, 3995H
	LXI B, 20A5H
	LXI H, 3927H
	CALL 373A H
	-
	-
373A H	MOV A, B
	RET

(b) Explain working of 8259. [6]

(c) Differentiate vectored and non vectored interrupts of 8085. [4]

UNIT-IV

Q.4 (a) Explain control word format of 8255 in IO mode. [8]

(b) Write a control word of 8255 in IO mode 0, for port A and port B is input and port C is in output port. [4]

(c) Find the address of port A, port B, port C and control register of 8255 for following interfacing. [4]
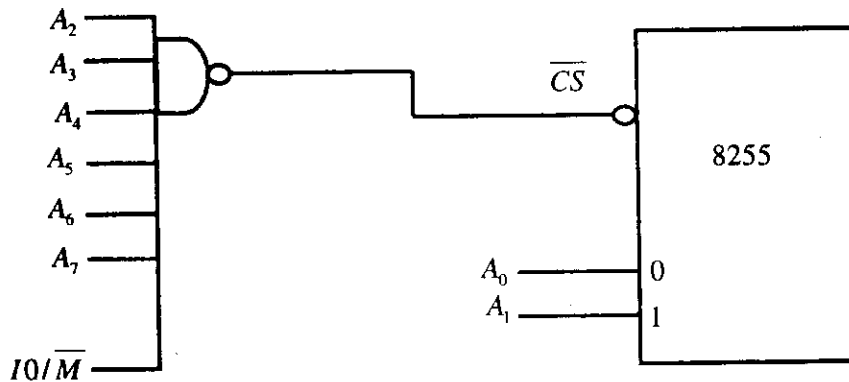
OR

Q.4 (a) Explain operating modes of 8254 with wave forms. [8]

(b) Explain 8279 with block diagram. [4]

(c) Differentiate memory mapped and IO mapped techniques. [4]

UNIT-V

Q.5 Write Short note on :-
(a) USART 8251 [10]
(b) Liquid crystal display [6]

OR

Q.5 Write short note on :-
(a) RS232 C and RS 422A [8]
(b) Centronics [4]
(b) IEEE 488 [4]

4E4161
B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS2A Discrete Mathematical Structures
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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._____   2._____

UNIT-I

Q.1 (a)   Among integers 1 to 1000
   (i)   How many of them are not divisible by 3 nor by 5 nor by 7?   [8]
   (ii) How many not divisible by 5 or 7 but divisible by 3?

   (b) (i)   Let there are 5 separates departments in a departmental store and the total number of employee are 36. Show that one of the departments must have atleast 8 employees.   [4]
   (ii) Define with example.   [4]
       (a)   Countable and uncountable sets
       (b)   Mod functions and Div functions

OR

Q.1 (a)   Prove that $A-B = A \cap B' = B' \cap A'$ [4]
   (b)   Consider the following collection of subsets   [4]
   $\{A_1, A_2, A_3\}$ of a set $A = \{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
   [a]   [$\{ 1, 6, 9\}, \{2, 3, 8\}, \{4, 5, 7, 10\}$]
   [b] $\{1\}, \{2, 4, 8\}, \{5, 7, 9\}$] and
   [c]   [$\{1, 5\}, \{2, 3, 8\}, \{4, 5, 6, 7, 9, 10\}$]
   Determine which one is a partition of a set A

(c) Let f, g, h be mapping from N to N when N is the set of naturals such that

$f(n) = n + 1$, $g(n) = 2n$, $h(n) = \begin{cases} 0, n \text{ is even} \\ 1, n \text{ is odd} \end{cases}$ [8]

(i) Show that f, g and h are functions

(ii) Determine fof, fog, hog and (fog) oh
Where 'o' stands for composition of functions

UNIT-II

Q.2 (a) Define equivalence Relation. If R and S be two equivalence relations in a set A, then prove that R ∩ S is also an equivalence relation in A. [8]

(b) Let $A = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 0 \end{bmatrix}$

Find A ⊙ B and B ⊙ A, if defined [4]

(c) What is closure of relations? Let A = {1, 2, 3, 4} and R = {(1, 2), (2, 3), (3, 4)} be a relation in A. find its reflexive closure, symmetric closure and transitive closure. [4]

OR

Q.2 (a) An equivalence relation R on a set A decomposes A into equivalence classes which are either distinct or completely overlapping and the set A is the union of such distinct equivalence classes. [8]

(b) Let x = {1, 3, 5, 7, 15, 21, 35, 105} and R be the relation '1' (divides) on the set x then x is the poset. Draw the Hasse diagram of the given poset. Determine the following. [8]

(i) LUB of 3 and 7

(ii) GLB of 15 and 35

(iii) Greatest and least element of X.

UNIT-III

Q.3 (a) Define the following with examples. [12]

(i) Direct proof.

(ii) Proof by contra-position.

(iii) Prof by exhausting cases.

(iv) Proof by contradiction.

(b) Sort the list x = [34, 13, 21, 3, 89] using bubble sort algorithm. [4]

Q.3 (a) Prove by mathematical induction that $6^{n+2} + 7^{2n+1}$ is divisible by 43 for each positive integer n. [8]

(b) What is Linear and binary search algorithm. Show the correctness proof of linear and binary search algorithm. [8]

UNIT-IV

Q.4 (a) Prove that the number of vertices of odd degrees in an undirected graph is always even. [4]

(b) If G be a cyclic- free (acyclic) graph with n-vertices and r connected components, then G has n-r edges. [4]

(c) Define Adjacency matrix and Incidence matrix with example. [8]

OR

Q.4 (a) (i) Give an example of connected graph that has [4]
(a) A Hamiltonian cycle but no Euler circuit
(b) A Euler circuit but no Hamiltonian cycle

(b) (ii) What is the length of shortest path between the vertices a to z in the following weighted graph [4]
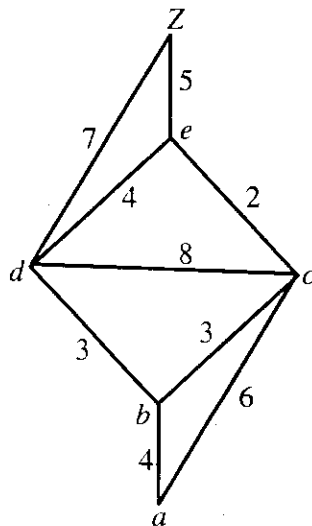
(c) (i) A woman bracelet is formed by placing three beads- red, white and blue, on a circular piece of wire. Bracelets are considered equivalent if one can be obtained from other by planar rotations. Find the pattern inventory of these bracelets. [4]

(ii) By using Kruskal's algorithm determine a minimal spanning tree in the
following graph. [4]
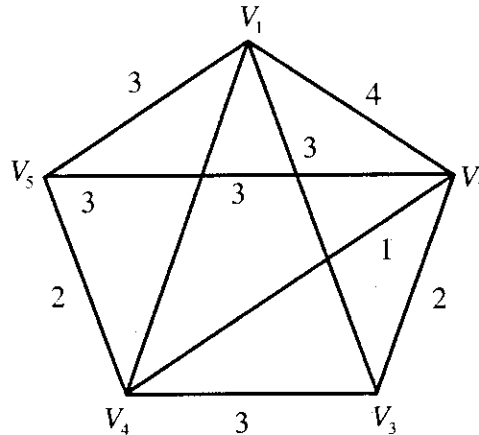
UNIT-V

Q.5 (a) Prove that $(\sim p \wedge q) \to [\sim(q \to p)]$ is a tautology with constructing truth table. [8]

(b) Obtain the principle disjunctive normal form of $(p \wedge q) \vee (\sim p \wedge r) \vee (q \wedge r)$ by
constructing truth table. [8]

OR

Q.5 (a) Translate each of these statements into logical expressions using predicates,
quantifiers and logical connectives. [6]
   (i)   No one is perfect
   (ii)   Non everyone is perfect
   (iii) All your friends are perfect
   (iv)   One of your friend is perfect
   (v)   Everyone is your friend and perfect
   (vi)   Not every body is your friend or someone is not perfect.

(b) Explain the converse, contra positive and inverse of the given implication "If it is
snows today, then I will stay at home. [4]

(c) Test the validity of the argument.
"If there was a ball game, then travelling was difficult. If they arrived on time,
then travelling was not difficult. They arrived on time. Therefore, these was no
ball game. [6]

4E4162

4E4162
B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS3A Statistics & Probability Theory
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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. Normal distribution Table   2. Scientific calculator

UNIT-I

Q.1 (a) A bag has 4 white and 3 black balls while another bag has 3 white and 5 black balls. A ball is drawn from the first bag and without noting its colour, is put into the second bag. Then a ball is drawn from the second bag. Find the probability that it is white.   [8]

(b) The chance that a doctor will diagnose a disease correctly is 70%. The chances of death of patient after correct diagnosis is 35% while after wrong diagnosis it 80%. If a patient dies after taking his treatment, find the probability that he was diagnosed.   [8]

(i) Wrongly

(ii) Correctly

Q.1 (a) Find the moment generating function of the random variable X whose p.m.f. is given by:-

$P(X = x) = \frac{1}{8} {}^3Cx;$ x = 0, 1, 2, 3 and then find μ_1' and μ_2' [8]

(b) Thirteen cards are drawn simultaneously from a pack of 52. If are count 1, face cards 10 each and other according to their denominations, find the expectation of the total score of the 13 cards. [8]

UNIT-II

Q.2 (a) Find mean & variance of Poisson distribution. [8]

(b) Define normal distribution. The distribution of weekly wages of 500 workers in a factory is approx. normal with the mean and s.d. of ₹75 and ₹15. Find the number of workers who receive weekly wages. [8]

   (i) More than ₹90

   (ii) Less than ₹45

OR

Q.2 (a) Find the mean and variance of normal distribution. [8]

(b) The following data shows the number of seeds germinating out of 10 on damp filter for 80 set of seeds. Fit a binomial dist^n to this data. [8]

x:	0	1	2	3	4	5	6	7	8	9	10
f:	6	20	28	12	8	6	0	0	0	0	0

UNIT-III

Q.3 (a) Find the correlation coefficient between x & y when it is given:

that: n = 15, Σx = 50, Σy = -30, $\Sigma x^2 = 290$, $\Sigma y^2 = 300$, Σxy = -115. [8]

(b) Ten competitors in a beauty contest are ranked by three judges in the following order.

Judge 1   1   6   5   10   3   2   4   9   7   8

Judge 2   3   5   8   4   7   10 2   1   6   9

Judge 3   6   4   9   8   1   2   3   10 5   7

Use the rank correlation coefficient to discuss which pair of judges have the nearest approach to common taste in beauty. [8]

Q.3 (a) Fit a parabola of second degree, taking x as an independent variable to the following data.

x   1.0   1.5   2.0   2.5   3.0   3.5   4.0

y   1.1   1.3   1.6   2.6   2.7   3.4   4.1   [8]

(b) Find the two lines of regression and coefficient of correlation for the data given below.

$n = 18, \Sigma x = 12, \Sigma y = 18, \Sigma x^2 = 60, \Sigma y^2 = 96, \Sigma xy = 48.$ [8]

UNIT-IV

Q.4 (a) Customers arrive at a box office with one ticket window according to a poisson input process with mean rate of 30 per hour. The time required to serve a customer has an exponential dist ^{n} with mean 90 seconds. Find

(i) Average line length

(ii) Average queue length

(iii) Average waiting time in queue

(iv) Average time spent by a customer in the system   [8]

(b) If for a period of 2 hours in a day, customers arrive in a barber's shop that has a space to accommodate only 4 customers. Arrival rate of customers is 3 per hour and service time is 36 minutes per customer. Find for the above period.

(i) The probability that there is no customer in the shop.

(ii) Average number of customers in the shop.   [8]

OR

Q.4 (a) A petrol pump has 2 pumps. The service time follows the exponential distribution with a mean of 4 minutes and vehicles arrive for service in Poisson fashion at the rate of 10 per hour. Find   [8]

(i) The probability that an arrival of a vehicle would have to wait.

(ii) The expected percentage of idle time for each pump.

(b) In a shop there are two computers for carrying out the job work. The average time per job on each computer is 20 minutes per job and the average arrival rate is 2 jobs per hour. Assume the job times to be distributed exponentially. If the maximum number of jobs accepted on a day be 6, then find   [8]

(i)   The expected number of jobs waiting for computer.

(ii) The total time lost per day.

UNIT-V

Q.5 (a) Write a short note on discrete parameter birth death process.   [8]

(b) Three advocates A, B, C, have at t = 0; 450, 500, 600 clients respectively. During one year though no new client has been added, migrations from one to the other have taken place as follows: [8]

From A	50 have gone to B	and 25 to C
From B	50 have gone to A	and 100 to C
From C	25 have gone to A	

Prepare the transition probability matrix and find the number of clients associated with A, B, C after one year.

OR

Q.5 (a) A man while going to office he uses either of the two modes of transportation either a city bus or his scooter. The transition probability is given by   [8]

$$P = \begin{array}{c} \text{Bus} \\ \text{scooter} \end{array} \begin{bmatrix} \text{Bus} & \text{Scooter} \\ 0 & 1 \\ 1/2 & 1/2 \end{bmatrix}$$

The initial state of probability distribution i.e. on first day is

$$P(1) = \begin{bmatrix} \dfrac{5}{6}, & \dfrac{1}{6} \end{bmatrix}$$

Find

(i)   The probability that he takes a bus on the third day.

(ii) The probability that he goes by scooter in the long run.

(b) A house wife buys three kinds of cereals: A, B, C. she never buys the same cereals on successive weeks. If she buys cereals A, then the next week she buys cereal B. However, if she buys B or C, then the next week she is three times as likely to buy A as to the other brand. Find the transition probability matrix.   [8]

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B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS4A Software Engineering
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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) Define system Engineering? Explain System Development Life Cycle Phases.   [3+5=8]

   (b) Explain System Analysis & Computer system Engineering.   [8]

OR

Q.1 (a) Discuss problem that occur while developing a system and suggest possible solution.   [8]

   (b) Explain the three key elements of Software Engineering. Define Software Engineering.   [8]

UNIT-II

Q.2 (a) Explain Spiral Model in detail. Also differentiate between Prototype Model and Water Fall Model. [5+3=8]

(b) Discuss the merits & demerits of various Model of software Engineering Models? [8]

OR

Q.2 (a) Explain all the phases of Software Development Life cycle? [8]

(b) Explain the Prototype Model? Under what circumstances is it beneficial to construct a prototype model? [5+3=8]

UNIT-III

Q.3 (a) Explain the requirement management phase of the requirement Engineering. [8]

(b) Write short note on: [2+2+2+2=8]

(i) QFD (Quality, Function, Deployment) and Use – Cases

(ii) FSM (Finite State Machine)

(iii) Software requirement Specification

(iv) Data Dictionary

OR

Q.3 (a) Explain Major elements of DFD's and CFD's. [8]

(b) Explain the behavior modeling as a part of Structured Analysis of Software Development. [8]

UNIT-IV

Q.4 (a) Distinguish between Cohesion and Coupling. Explain with both Cohesion & Coupling Spectrums. [8]

(b) Describe Effective Modular design in Brief. [8]

Q.4 (a) Explain Problem Partitioning and Abstraction as the Major aspects of design Fundamentals. [8]

(b) Explain the Software Design Process [8]

UNIT-V

Q.5 (a) Define Unified Approach? Explain UML with all its diagram and advantages. [2+6=8]

(b) Explain Object Oriental Analysis and its Approach and Explain class and Object Relationship Model. [4+4=8]

OR

Q.5 Consider a student Information System as an Example. Explain the following UML diagrams in details, with the help of neat sketches.

(a) Use Case diagram

(b) Class, Object diagram

(c) Sequence diagram

(d) Deployment diagram [4+4+4+4=16]

4E4164

4E4164

B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS5A Principles of Communication
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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) Explain in detail VSB?   [8]

(b) A 400 Watt carrier is modulated to a depth of 75 percent. Calculate the total Power in the modulated wave?   [8]

OR

Q.1 (a) Explain in detail Pre – emphasis and De – emphasis?   [8]

(b) Find the carrier and modulating frequencies, the modulation index and maximum deviation of the FM wave represented by the voltage equation

$V = 12 \sin (6 \times 10^8 t + 5 \sin 1250t)$.   [8]

UNIT-II

Q.2 (a) Write short note on sampling theorem? [8]

(b) Explain in detail PAM, PWM Modulation schemes? [8]

OR

Q.2 (a) Write short notes on Aliasing and interpolation? [8]

(b) Explain Time division Multiplexing? [8]

UNIT-III

Q.3 (a) Compare PCM and delta Modulation? [8]

(b) Write short note on TL carrier System? [8]

OR

Q.3 (a) Explain in detail ADM? [8]

(b) Explain DPCM? [8]

UNIT-IV

Q.4 (a) Write short note on raised cosine Spectrum? [8]

(b) Explain ASK, FSK in detail? [8]

OR

Q.4 (a) Write short note on Inter Symbol Interference? [8]

(b) Explain in detail QPSK and MSK? [8]

UNIT-V

Q.5 (a) Explain CDMA in detail? [8]

(b) Find the Processing gain of the system when data rate is 7.8 Kbps and the spread or chip rate is 9.6 Mbps. BPSK technique used for modulation? [8]

OR

Q.5 (a) Explain the DSSS and FHSS? [8]

(b) Write short notes on PN Sequence and CDMA? [8]

4E165

4E4165

B.Tech. IV-Sem (Main & Back) Exam; June-July 2016
Computer Science & Engineering
4CS6A Principles of Programming Languages
Common with CS, IT

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks (Main & Back): 26
Min. Passing Marks (Old Back): 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.*

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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 need of Programming Language? And also explain types of programming paradigms? [8]

(b) What are main features of good programming language? [8]

OR

Q.1 (a) Define Binding and Binding time? What are the different types of binding in respect of programming? [8]

(b) What is compiler? Explain phases of compilers for given expression

R := K + T * 30 [8]

UNIT-II

Q.2 (a) Explain type checking and type conversion with suitable Example? [8]

(b) What are files? Explain various types of files? [8]

OR

Q.2 (a) Explain the Implementation of structure and union? [8]

(b) What is difference between array and vector? Explain multi-dimensional Array? [8]

UNIT-III

Q.3 (a) What is Exception handling? Explain difference Between Exception and Compilation Error? [8]

(b) What is SUB-Program? Explain difference between simple and reursive SUB Program? [8]

OR

Q.3 (a) What are the actual and formal parameters? Explain with suitable example? [8]

(b) What is sequence control? Example sequence control for recursive SUB Program? [8]

UNIT-IV

Q.4 (a) What do you mean by static and dynamic scope of a data member? [8]

(b) Explain various parameters transmission:-

(i) Call by value

(ii) Call by reference [8]

<div align="center"><u>**OR**</u></div>

Q.4 (a) What is difference between local and shared data? [8]

(b) Write short notes ON Tasks? [8]

<div align="center"># <u>UNIT-V</u></div>

Q.5 (a) Explain static and stack- Based storage management? [8]

(b) Explain storage management fixed and variable size heap data element? [8]

<div align="center"><u>**OR**</u></div>

Q.5 Explain with example (ANY FOUR):- [4×4=16]

(a) Garbage Collection

(b) Type definition

(c) Abstract Data type

(d) Information hiding

(e) ENCAPSULATION

4E2016

4E2016

B.Tech. IV Sem (Old Back) Exam; June-July 2016

Computer Science & Engineering

4CS3 (O) Object Oriented Programming

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks (Main & Back): 26

Min. Passing Marks (Old Back): 24

Instructions to Candidates:-

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(Mentioned in form No.205)

1. <u>NIL</u>   2. <u>NIL</u>

UNIT-I

Q.1 (a) Explain the concept of programming paradigm.   [8]

(b) Differentiate between Aspect oriented programming and dynamic Programming.   [8]

OR

Q.1 (a) Discuss the need and objective of parallel computing.   [8]

(b) Explain event driven programming with example.   [8]

UNIT-II

Q.2 What is destructor? What is its role? Explain different type of destructor with suitable example. [16]

OR

Q.2 (a) Explain the role of classes and objects in C++ language. [8]

(b) What is abstraction? Explain the process with example. [8]

UNIT-III

Q.3 (a) Explain friend function & virtual function with example. [8]

(b) What do you mean by Run time type casting? Explain. [8]

OR

Q.3 (a) Discuss STL (their list, map, algorithms). [8]

(b) What do you mean by function and operator overloading? Give example. [8]

UNIT-IV

Q.4 Write short note on —

(a) Java byte code and virtual machine.

(b) Operators and data types [8×2=16]

OR

Q.4 (a) Explain the single and multilevel inheritance give example in support of your answer. [10]

(b) How can we return &pass objects as parameter. Give example. [6]

UNIT-V

Q.5 What do you mean by string constructor? Discuss various string operations? [16]

OR

Q.5 What are Applet fundamentals? Explain using paint method &drawing polygons. [16]

4E2017

4E2017

B.Tech. IV-Sem (Back) Exam; June-July 2016
Computer Science & Engineering
4CS4 (O) System Software

Time: 3 Hours   ·Maximum Marks: 80 ·
                                        Min. Passing Marks (Main & Back): 26
                                        Min. Passing Marks (Old Back): 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_____   1. NIL_____

UNIT-I

Q.1 (a) Write a difference among high level, low level and assembly language in detail.   [8]

(b) Explain types and structure of editors in detail with suitable example.   [8]

OR

Q.1 (a) Explain the internal and external representation of instruction and data in detail. Also explain various addressing modes.   [8]

(b) Explain the language processing activity in detail.   [8]

UNIT-II

Q.2 Explain pars I and pars II of two a two pars assembles with the help example. [16]

OR

Q.2 (a) Describe the data structure used by an assembler. [8]

(b) Explain the use of literals in assembly language. How does they differs from immediate operands and constants. [8]

UNIT-III

Q.3 (a) Explain the design of linker in detail. [8]

(b) What are the basic functions of a loader? Explain boot strap loader with an algorithm. [8]

OR

Q.3 (a) What are the various machine dependent and independent features of loader explain. [8]

(b) What is program relocation? Explain in detail. [8]

UNIT-IV

Q.4 (a) What is the need for macro facility in assembly language programming? Define macro expansion in detail. [8]

(b) Explain design and pars structure of a macro assembler. [8]

OR

Q.4 (a) Write a macro to evaluate the expression A * B + C * D using conditional macro expansion. [8]

(b) Write a short note on MASM macro processor. [8]

UNIT-V

Q.5 (a) What is regular expression? Briefly explain all the characters that form regular expression. [8]

(b) Show the step by step parsing of the following string using operator precedence parsing. [8]

| id * (id + id) * id -|

OR

Q.5 Write a short note on-

(a) Recursive descent parser [8]

(b) Symbol table management [8]

4E2923

B.Tech. IV-Sem (Back) Exam; June-July 2016

Computer Science & Engineering

4CS6.3(O) Logic & Functional Programming

Common with CS, IT

4E2923

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks (Main & Back): 26

Min. Passing Marks (Old Back): 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._____   2._____

UNIT-I

Q.1 (a) Explain first order predicate login.   [8]

(b) What do you mean by contradiction and prove that the following preposition is a

contradiction. $(p \rightarrow q) \wedge (p \wedge \neg q)$ [2+6=8]

OR

Q.1 (a) Explain quantifiers in detail. Give an example also.   [8]

(b) Explain tautology with example and show that following prepositions are

tautology using truth table. $(p \wedge q \wedge r) \Rightarrow (r \Rightarrow p)$ [4+4=8]

UNIT-II

Q.2 (a) Explain facts and rules of prolog programming. [8]

(b) What do you mean by search strategy? Explain DFS search strategy. [2+6=8]

OR

Q.2 (a) Explain conjunction and disjunction. [8]

(b) Explain backtracking in prolog with suitable example. [8]

UNIT-III

Q.3 (a) Define unification. How it is achieved in prolog? [2+6=8]

(b) Explain recursion in prolog and define the basic rules of recursion. [4+4=8]

OR

Q.3 (a) Explain the sorting in prolog with an example. [8]

(b) Explain parsing in prolog. [8]

UNIT-IV

Q.4 (a) Explain the lazy and eager evaluation. [8]

(b) Explain lambda calculus in detail with an example. [8]

OR

Q.4 (a) Define the functional programming. What are the characteristics of functional languages? [2+6=8]

(b) Explain semantics of lambda expressions with an example. [8]

UNIT-V

Q.5 (a) What is list in Haskell? Is different from any other language? Explain. [2+6=8]

     (b) Explain the type classes. [8]

OR

Q.5 (a) Explain the Monad's law. [8]

     (b) Write a program in Haskell using I/O. [8]