[4318] – 301

Seat No.	

T.Y.B.Sc. (Semester – III) Examination, 2013
COMPUTER SCIENCE (Paper – I)
CS – 331 : Systems Programming and Operating System – I
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

***Instructions** :1) **Neat** diagrams must be drawn **wherever** necessary.*
*2) Figures to **right** indicates **full** marks.*
*3) **All** questions are **compulsory**.*

1. Attempt **all** : **(10×1=10)**
   a) "Debugger is a System Program". Comment.
   b) "vi is a structure editor". True/False ? Justify.
   c) Define the term location counter and instruction pointer.
   d) What is the difference between label and sequencing symbol ?
   e) "Static binding leads to more efficient execution of program than dynamic binding". True/False ? Justify.
   f) Define the term 'Activation Record'.
   g) What is the Pool Pointer ? When it is updated ?
   h) "Runtime efficiency of program is better in compilation than interpretation". True/False ? Justify.
   i) Which intermediate code representations of expression are suitable for optimizing compilers ?
   j) What is translated origin ?

2. Attempt **any two** : **(2×5=10)**
   a) Consider the following expressions/code segment
      sum = (a + m) * log (x) * (p – q) ;
      test = p – q * (a + m) * theta ;
      show entries in triple's table.
   b) List various types of editors along with the design of editor.
   c) Explain program relocation in the context of various types of program relocatability.

P.T.O.

3. Attempt **any two** : **(2×5=10)**

   a) Explain various types of assembly language statements with their importance and suitable examples.

   b) "Definition of each macro is a source program is stored as it is in MDT". True/False ? Justify by giving suitable example.

   c) What is code optimization ? Explain various code optimization techniques with suitable examples.

4. Attempt either **A** or **B**.

   A) a) List various types of errors detected by compiler in various phases of compilation. **2**

   b) Give any 2 differences between the instructions STOP and END. **2**

   c) For the following assembly language program, show the entries in various data structures used by 2-Pass Assembler. **6**

```
            START    300
            READ     A
            READ     B
RAMA        MOVER    DREG, A
            MOVER    CREG, = '15'
            MULT     DREG, = '21'
            MOVEM    CREG, C
            BC       ANY, AGAIN
            DIV      AREG, C
            LTORG
            MOVER    AREG, = '66'
            ADD      AREG, B
            DIV      AREG, = '15'
```

```
JMP1        SUB       AREG, C
JMP2        DIV       AREG, = '51'
            ORIGIN    RAMA + 5
            SUB       AREG, C
            ORIGIN    JMP2 + 1
AGAIN       EQU       JMP1
            PRINT     C
            STOP
A           DS        1
B           DS        1
C           DS        1
D           DC        '7'
            END
```

B) a) What is the difference between normal stack and extended stack model ? **2**

b) What is the use of statements AIF and AGO ? **2**

c) List the properties of Intermediate code and show the Intermediate code variant – I and variant – II for the following assembly language program. **6**

```
            START     200
            READ      A
            READ      B
            MOVER     AREG, = '56'
            ADD       AREG, B
            MOVER     BREG, A
            SUB       BREG, A
            MOVEM     BREG, ZERO
            STOP
A           DS        1
B           DS        1
            END
```

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[4318] – 305

Seat No.	

T.Y.B.Sc. (Semester – III) Examination, 2013
COMPUTER SCIENCE (Paper – V)
CS – 335 : Programming in Java – I (New Course)
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

N.B. *: 1) Figures to the **right** indicate **full** marks.*
*2) **All** questions are **compulsory**.*
*3) **All** questions carry **equal** marks.*

1. Attempt **all** of the following : **(10×1=10)**
   a) State the purpose of keyword “throws”.
   b) Can an applet class have a constructor ? Justify your answer.
   c) List any four methods of the Mouse Listener interface.
   d) When do we declare a method or class final ?
   e) State any two difference between abstract class and interface.
   f) What is the standard way to read a text file in Java ?
   g) State any two difference between AWT and Swing.
   h) State the use of keyword “super”.
   i) What is the output of the following program fragment ? Justify.

      ```
      byte x = 2 ;
      x = x * 5 ;
      ```

   j) State the use of clone ( ) method in Java. State its syntax.

2. Attempt **any two** of the following : **(2×5=10)**
   a) What are user-defined exceptions ? Illustrate them with an example.
   b) How do we design create and access a package in Java ? Discuss with a suitable example.
   c) Write a note on static members and static methods.

P.T.O.

3. Attempt **any two** of the following : **(2×5=10)**

   a) Write a Java program to read the ages of all members of a family, store them in one-dimensional array and display the age of the eldest and the youngest persons.

   b) Write a Java program to copy the contents of one file to another file using command line argument.

   c) Write a Java program to read the lines from console until the given line is “good bye”. Display those lines which contain the word “India” or “Hello”. Also count the number of lines in which pattern is found.

4. Attempt **any two** of the following : **(2×5=10)**

   a) Write a Java program to create an applet which contains a list of courses. Display the selected course in a text box.

   b) Write a Java program to display ten buttons with labels one, two,-------, ten using flow layout. Use array of Buttons.

   c) Write a Java program to illustrate multilevel inheritance such that country is inherited from continent. State is inherited from country. Display the place, state, country and continent.

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[4318] – 303

Seat No.	

T.Y. B.Sc. (Semester – III) Examination, 2013
Computer Science (Paper – III) (New) (2008 Pattern)
CS – 333 : COMPUTER NETWORKS – I

Time : 2 Hours | Max. Marks : 40

***N.B** : 1) **All** questions are **compulsory**.*
*2) Figure to the **right** indicate **full** marks.*
*3) **Use** of calculators / log tables is **allowed**.*

1. Attempt **all** of the following : **(10×1=10)**

a) What the term signal means ? Give its types.

b) Which type of service would be preferred for credit card verification and database query ?

c) State drawbacks of stop and wait protocol.

d) State any two advantages of PPP.

e) Which channelization techniques are used in multiple access method ?

f) Which ports are used for transferring a data file and sending e-mail ?

g) Draw NRZ- L encoding for bit pattern 00110 110.

h) Define 10 Base -T cabling.

i) Specify the purpose of using 802.2 and 802.11 IEEE standards.

j) Define Routing.

P.T.O.

2. Attempt **any two** of the following : **(2×5=10)**

   a) Explain packet switching in detail.

   b) Explain 1- bit sliding window protocol.

   c) Differentiate between server based LAN and peer based LAN.

3. Attempt **any two** of the following : **(2×5=10)**

   a) Given a 12 bit sequence 110111100101 and a divisor of 1001. Find the CRC.

   b) Write note on CSMA/ CD.

   c) Calculate maximum bit rate for a channel having bandwidth 1800 Hz if

      1) S/ N ratio is 0 dB

      2) S/ N ratio is 20 dB.

4. Attempt **any one** of the following : **(1×10=10)**

   I) a) What is gigabit ethernet ?

      b) ALOHA protocol is used to share 56 Kbps satellite channel. If each packet is 1000 bits long. Find maximum through put in packets /sec.

      OR

   II) a) Why serial transmission preferred over parallel transmission ? Explain.

      b) Compare ISO - OSI and internet reference model.

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[4318] – 304

Seat No.	

T.Y. B.Sc. (Semester – III) Examination, 2013
COMPUTER SCIENCE (Paper – IV)
CS – 334 : Web Development and Php Programming – I
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

Instructions *: 1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Attempt **all** of the following : **(10×1=10)**

a) "Php does not require explicit variable declaration". Justify T/F.

b) Find the output

```
< ? Php
 function make ice ($ flavour, $type = "choco")
 {
return "making a bowl of $type $ flavour \n",
}
echo make ice ("raspbery") ;
? > .
```

c) What is Resources ?

d) Which function is used for matching regular expression with a string ?

e) What is purpose of range ( ) ?

f) Which function are used to notify objects that they are being serialized and unserialised ?

P.T.O.

g) State the purpose of $this variable.

h) State the purpose of Pathinfo ( ).

i) How can you associate a variable with a session ?

j) List any two Php HTTP function.

2. Attempt **any two** of the following : **(2×5=10)**

a) How to define variable in Php ? Explain in details scope of variables.

b) Describe the string decomposing function with suitable examples.

c) Write a short note on Cookies.

3. Attempt **any two** of the following : **(2×5=10)**

a) Write a Php script to accept a string tokenizing by comma and print each token in a new line.

b) Write a Php script to accept the directory name and print the contents of that directory.

c) Write a note on any five sorting function in array with example.

4. Attempt **any one** (**A** or **B**) : **10**

A) i) Explain difference between GET method and POST method.

ii) Write a Php script to create shape and it's sub-class triangle, square, circle and display the area of selected shape.

B) i) Write a Php script to accept Employee details (Eno, Ename, Add.) on first page. On second page accept earning (Basic, DA, HRA). On third page Print Employee Information (Eno, Ename, Add, Basic, DA, HRA, total)

ii) What is Inheritance ? Explain with suitable example.

[4318] – 306

Seat No.	

T.Y. B.Sc. (Semester – III) Examination, 2013
COMPUTER SCIENCE (Paper – VI)
CS – 336 : Object Oriented Software Engineering
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

Instructions *: 1)* ***All*** *the questions are* ***compulsory****.*
2) ***Neat*** *diagram must be drawn* ***whenever*** *necessary.*
3) ***Black*** *figures to the* ***right*** *indicate* ***full*** *marks.*

1. Attempt **all** of the following : **(10×1=10)**

a) Define the object "Employee" with possible attributes and operations with visibility.

b) Define object interaction.

c) Give names of any two initial researchers of UML.

d) What is meant by a model ?

e) What is the use of role in association ?

f) What is the purpose of packages ?

g) Define Actor.

h) What is meant by tagged values ?

i) Give any two standard stereotypes that apply to components.

j) What is meant by driver module ?

P.T.O.

2. Attempt **any two** of the following : **(2×5=10)**

   a) Differentiate between Aggregation and Generalization.

   b) Consider a “Fixed Deposit” system, which allows customer to perform various transactions. Discuss different scenario’s and draw a sequence diagram.

   c) Write a short note on “Object Oriented Design : Booch Method”.

3. Attempt **any two** of the following : **(2×5=10)**

   a) Explain the usage of component diagram with suitable example.

   b) Prepare a class diagram for “E-shopping System” consisting of at least three classes. Define appropriate relationship, association with multiplicity.

   c) Write short note on “Object Oriented Testing Strategies”.

4. Attempt the following :

   A) A simple flight simulator to be built, using a bit mapped display which present a prespective view from the cockpit of small airplane periodically updated to reflect the motion of the plane. The world in which flights take place includes mountains, rivers, lakes, roads, bridge, a radio tower and of course a runway. Control inputs are from two joysticks. The left joystick operates the radar and engine. The right one control ailerons and elevator. Consider the above case and draw following diagrams :

      i) Use case diagram. **3**

      ii) Activity diagram. **4**

   B) Discuss the components of collaboration diagram. **3**

      OR

   B) Draw state diagram for considering different scenarios for ice cream vending machine. **3**

[4318] – 302

Seat No.	

T.Y. B.Sc. (Semester – III) Examination, 2013
Paper – II : Computer Science (2008 Pattern)
CS-332 : THEORETICAL COMPUTER SCIENCE AND COMPILER CONSTRUCTION – I

Time : 2 Hours Max. Marks : 40

N.B. *: 1) Black figures to the **right** indicate **full** marks.*
*2) **All** questions carry **equal** marks.*
*3) Assume suitable data, if **necessary**.*
*4) **All** questions are **compulsory**.*

1. Attempt **all** of the following : **(1×10=10)**

a) If A = {E} then what is the value of |A| ?

b) State any two operations on languages.

c) Differentiate between Moore and Mealy machine.

d) Describe in English the set accepted by the following FA.

e) Write RE for the set A = {aa, aaaa, aaaaaa....}

f) Define Left Linear Grammar.

g) Define ID for PDA.

h) State true or false : Every recursive language is recursively enumerable.

i) Find nullable symbols in the following CFG.

$S \rightarrow AB \mid aBb$

$A \rightarrow aA \mid \varepsilon$

$B \rightarrow AD \mid aAb$

$D \rightarrow bD \mid \varepsilon$

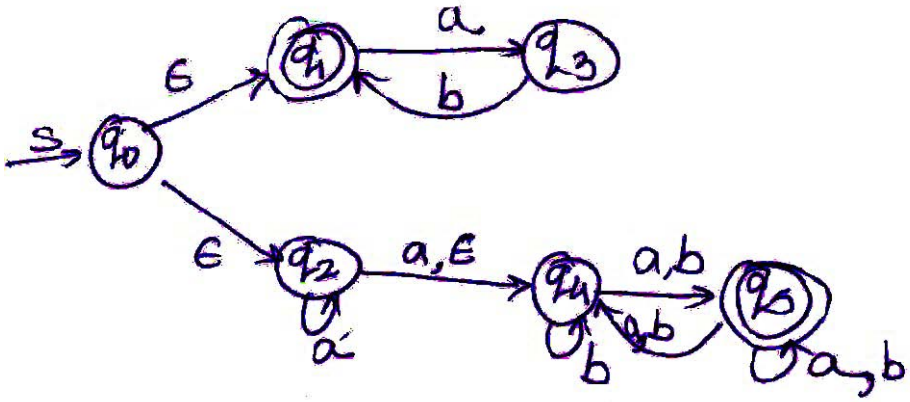
j) Give diagrammatic representation of TM.

P.T.O.

2. Attempt **any two** : **(2×5=10)**

   a) Construct DFA to accept the set of all strings over {a, b, c} such that string ends with 'bba' or 'bac'.

   b) Convert following NFA with ∈ moves to DFA.



   c) Construct FA for RE : ab* (a+b)*+ba*.

3. Attempt **any two** : **(2×5=10)**

   a) Construct CFG for L = $\{a^x b^y c^z | x>y+z\}$

   b) Rewrite following CFG after eliminating useless symbols

   $S \rightarrow 0A1/BD$

   $A \rightarrow 0AA/011$

   $B \rightarrow 0B1/B0$

   $D \rightarrow A0$

   $E \rightarrow 1D/0$

   c) Construct PDA for L = $\{a^n bc^m / n, m \geq 1, n<m\}$

4. A) Attempt **any two** : **(2×5=10)**

   a) Construct Moore machine to accept all strings over {a, b} and produces output 'A' if string ends in 'abb', produces output B if string ends in 'bba' else produces output 'C'.

   b) Convert the following grammar to GNF.

   $S \rightarrow SA|a$

   $A \rightarrow BA/b$

   $B \rightarrow AA/a$

c) i) Show that CFL's are closed under concatenation.

ii) Show that CFL's are closed under Kleene closure.

OR

B) Attempt **any two** : **(2×5=10)**

a) Minimize the following DFA

M = ({q_0, q_1, q_2, q_3, q_4, q_5}, {0, 1}, δ, q_0, {q_3, q_5}) where δ is given by

δ	**0**	**1**
q_0	q_1	q_2
q_1	q_3	q_4
q_2	q_5	q_1
q_3	q_3	q_4
q_4	q_5	q_1
q_5	q_3	q_4

b) Construct TM for L = {$a^n b^m c^n$/n,m≥1}.

c) Differentiate between FA and PDA.

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[4318] – 401

Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – I)
CS-341 : System Programming and Operating System – II
(2008 Pattern) (New)

Time : 2 Hours Max. Marks : 40

***Instructions** :1) **All** questions carry **equal** marks.*
*2) **All** questions are **compulsory**.*
*3) Figures to the **right** indicate **full** marks.*
*4) **Neat** diagram must be drawn **wherever** necessary.*
*5) Assume suitable data, **if** necessary.*

1. Attempt **all** of the following : **(1×10=10)**

a) Differentiate between interrupt and trap.

b) What is privileged instruction ? Give suitable example.

c) Which scheduler controls the degree of multiprogramming ? How ?

d) Define term kernel-thread and user-thread.

e) What is dispatch latency ?

f) What is semaphore and what is purpose of it ?

g) What is TLB miss ?

h) Define physical address space.

i) Justify : “System must avoid deadlock”.

j) Justify : “Newly created directory will have two entries automatically in it” ?

P.T.O.

2. Attempt **any two** of the following : **(5×2=10)**

a) Consider the following snapshot of the system

Process	**CPU Burst Time**	**Priority**	**Arrival Time**
P1	10	3	0
P2	5	0 (high)	4
P3	2	1	3
P4	16	2	5
P5	8	4 (low)	2

Schedule the above set of processes according to

i) Non Preemptive Priority Scheduling Algorithm

ii) Preemptive Priority Scheduling Algorithm

Draw proper Gantt chart and find average turnaround time and waiting time.

b) Explain the following terms in context of process

1) Inter-process Communication
2) Priority queue
3) Process creation
4) Throughput
5) Dispatcher

c) Consider the following snapshot of the system

Process	**Allocation**					**Max**			
	A	B	C	D		A	B	C	D
P0	0	3	2	4		6	5	4	4
P1	1	2	0	1		4	4	4	4
P2	0	0	0	0		0	0	1	2
P3	3	3	2	2		3	9	3	4
P4	1	4	3	2		2	5	3	3
P5	2	4	1	4		4	6	3	5

A system has total 10, 20, 12, 15 instances of resource type A, B, C, D respectively.

Answer the following using Banker's algorithm :

i) What is content of Need and Available matrix ?

ii) Is the system in a safe state ?

iii) If a request from process P1 arrives for (2, 2, 3, 3), can it be granted immediately ?

3. Attempt **any two** of the following : **(5×2=10)**

   a) What is critical section problem ? What are the conditions that must be satisfied while designing solution to critical section problem ? List various ways to handle it.

   b) Consider page reference string as follows :

      7, 5, 6, 2, 9, 5, 7, 6, 2, 7, 6, 5, 2, 7, 2, 7, 8

      Assume 3 frames. Find the number of page faults according to :

      i) Optimal page replacement algorithm

      ii) Least Recently Used (LRU) page replacement algorithm

   c) Explain the term starvation in context of deadlock, CPU scheduling and synchronization

4. Attempt **A** or **B** of the following :

   A) i) Consider the following segment table :

Segment	Base	Limit
0	750	420
1	1780	535
2	3130	81
3	7070	70
4	6166	320

Map the following logical addresses to physical addresses. Consider the first leftmost digit as segment number.

a) 4666

b) 280

c) 0251

d) 1025

e) 3003 **5**

ii) List the system calls related with system accounting/information and explain any two. **3**

iii) Explain in brief multi-level queue scheduling. **2**

OR

B) i) Explain Linked and Indexed file allocation methods along with merits and demerits. **5**

ii) Define Hit ratio. Hit ratio of finding page in TLB is 77% hit ratio; It takes 24ns to search TLB, and 90ns to access memory. Compute the effective access time. **3**

iii) List the advantages of multi processor system. **2**

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[4318] – 401

Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – I)
CS-341 : System Programming and Operating System – II
(2008 Pattern) (New)

Time : 2 Hours Max. Marks : 40

***Instructions** :1) **All** questions carry **equal** marks.*
*2) **All** questions are **compulsory**.*
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*4) **Neat** diagram must be drawn **wherever** necessary.*
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1. Attempt **all** of the following : **(1×10=10)**

a) Differentiate between interrupt and trap.

b) What is privileged instruction ? Give suitable example.

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P1	1	2	0	1		4	4	4	4
P2	0	0	0	0		0	0	1	2
P3	3	3	2	2		3	9	3	4
P4	1	4	3	2		2	5	3	3
P5	2	4	1	4		4	6	3	5

A system has total 10, 20, 12, 15 instances of resource type A, B, C, D respectively.

Answer the following using Banker's algorithm :

i) What is content of Need and Available matrix ?

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      7, 5, 6, 2, 9, 5, 7, 6, 2, 7, 6, 5, 2, 7, 2, 7, 8

      Assume 3 frames. Find the number of page faults according to :

      i) Optimal page replacement algorithm

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a) 4666

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ii) List the system calls related with system accounting/information and explain any two. **3**

iii) Explain in brief multi-level queue scheduling. **2**

OR

B) i) Explain Linked and Indexed file allocation methods along with merits and demerits. **5**

ii) Define Hit ratio. Hit ratio of finding page in TLB is 77% hit ratio; It takes 24ns to search TLB, and 90ns to access memory. Compute the effective access time. **3**

iii) List the advantages of multi processor system. **2**

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[4318] – 404

Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – IV)
CS – 344 : Web Development and Php Programming – II
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) Figures to the ***right*** *indicate* ***full*** *marks.*
3) ***All*** *questions carry* ***equal*** *marks.*

1. Attempt **all** of the following : **(10×1=10)**

   a) Write syntax and example of database independent method to connect mysql database.

   b) DB::isError($database) is used to show errors in database query. Justify True/False.

   c) What is raster graphics ? Give an example of raster graphics.

   d) Which are content type values for image values for image formats ?

   e) Give names of two XML parser.

   f) When IMAP4 protocol is used in email handling ?

   g) Which protocol is used to describe and locate Web services ?

   h) Write two types of uses of web services.

   i) Write syntax of script tag.

   j) Give any two applications of Ajax.

2. Attempt **any two** of the following : **(2×5=10)**

   A) Write a PHP script to accept email address and validate it. Also print domain name of the email and result of validation.

   B) Write short note on SOAP.

   C) Explain prepare and execute command in database handling.

P.T.O.

3. Attempt **any two** of the following : **(2×5=10)**

   A) Write a PHP script to read student.xml file which contains student roll no, name, address, college, course. Print students details of specific course in tabular format after accepting course as input.

   B) TVSerial(tno, title, channelname)

      Playtime(pno, day, fromtime, totime, status)

      TVSerial and Playtime have one to many relationship. Write a script to accept title of TVSerial, change status of that serial as done and print playtime details in tabular form.

   C) Write a PHP script to accept string, Font name and draw vertical string with user specified font.

4. Attempt **any one** (**A** or **B**) : **(2×5=10)**

   A) 1) Write a short note on role of ajax engine in synchronization of Ajax programs.

      2) Give 4 operation types defined by WSDL.

      OR

   B) 1) Employee(id, name, address, designation, salary)

      Write an ajax program to accept name and salary of employee and increase employee salary by 10% in the database.

      2) Write any five database specific methods for handling mysql database.

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[4318] – 402

Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – II)
CS – 342 : Theoretical Computer Science and Compiler Construction – II
(2008 Pattern) (New Course)

Time : 2 Hours Max. Marks : 40

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **All** questions carry **equal** marks.*
*3) **All** questions are **compulsory**.*

1. Attempt **all** of the following : **(10×1=10)**

a) Draw the neat labelled transition diagram for recognizing integer constant.

b) Define cross-compiler.

c) List all the phases of compiler in sequence.

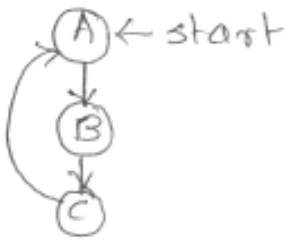
d) What is the o/p of LEX program ?

e) Name the most powerful parser in Bottom up parser.

f) What is the purpose of augmenting the grammar ?

g) Differentiate between DAG and syntax tree.

h) What is the dominator of node 'A' in the following flow graph ?



i) Define synthesize and Inherited attribute.

j) What are the two classes of SDD's ?

P.T.O.

2. Attempt **any two** of the following : **(5×2=10)**

a) Check whether the given grammar is SLR (1) or not.

$S \rightarrow Aa \mid bAc \mid dc \mid bda$

$A \rightarrow d$

b) Construct DAG for the following expressions

i) $((x+y)*x+(2/(x+y)))*((x+y)*x)$

ii) $2+3*4+(3*4)/5$

c) Consider the following Syntax Directed Translation

Production	**Semantic Rule**
$E \rightarrow E + T$	$E_1.val = E_2.val + T.val$
$E \rightarrow T$	$E.val = T.val$
$T \rightarrow T * P$	$T_1.val = T_2.val * P.val * P.num$
$T \rightarrow P$	$T.val = P.val * P.num$
$P \rightarrow (E)$	$P.val = E.val$
$P \rightarrow 0$	$P.num = 1$ $P.val = 2$
$P \rightarrow 1$	$P.num = 2$ $P.val = 1$

Solve the following :

i) What is E.val for string $1 * 1 + 1$?

ii) What is E.val for string $1 * 0$?

3. Attempt **any two** of the following : **(2×5=10)**

a) Check whether the given grammar is LL (1) or not

$S \rightarrow AaAb / BbBa$

$A \rightarrow E$

$B \rightarrow E$

b) Write LEX Program to find sum of first ‘N’ natural nos.

c) Explain the ways to control side effects in SDD’s.

4. Attempt the following :

a) Check whether the given grammar is LALR (1) or not

$S \rightarrow 3A4$

$A \rightarrow 1A1/1$ **6**

OR

a) 1) Differentiate between Top-Down and Bottom up parsing. **3**

2) Consider the following grammar and i/p string. Parse the string using shift-reduce parser. Show the contents of stack, input and action at each stage. **3**

$S \rightarrow TL$;

$T \rightarrow$ int / float

$L \rightarrow L$, id / id

Input string $\rightarrow$ int id, id ;

b) Consider the following precedence relation table **4**

	id	–	*	$
id		·>	·>	·>
–	<·	·>	<·	·>
*	<·	·>	·>	·>
$	<·	<·	<·	

Draw the graph of precedence function and precedence function table.

OR

b) Construct a Recursive Descent Parser for the following CFG **4**

$S \rightarrow abSa \mid aaAb \mid b$

$A \rightarrow b$.

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Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – II)
CS – 342 : Theoretical Computer Science and Compiler Construction – II
(2008 Pattern) (New Course)

Time : 2 Hours Max. Marks : 40

***Instructions** : 1) Figures to the **right** indicate **full** marks.*
*2) **All** questions carry **equal** marks.*
*3) **All** questions are **compulsory**.*

1. Attempt **all** of the following : **(10×1=10)**

a) Draw the neat labelled transition diagram for recognizing integer constant.

b) Define cross-compiler.

c) List all the phases of compiler in sequence.

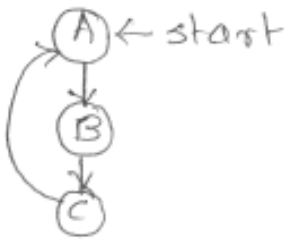
d) What is the o/p of LEX program ?

e) Name the most powerful parser in Bottom up parser.

f) What is the purpose of augmenting the grammar ?

g) Differentiate between DAG and syntax tree.

h) What is the dominator of node 'A' in the following flow graph ?



i) Define synthesize and Inherited attribute.

j) What are the two classes of SDD's ?

P.T.O.

2. Attempt **any two** of the following : **(5×2=10)**

a) Check whether the given grammar is SLR (1) or not.

$S \rightarrow Aa \mid bAc \mid dc \mid bda$

$A \rightarrow d$

b) Construct DAG for the following expressions

i) $((x+y)*x+(2/(x+y)))*((x+y)*x)$

ii) $2+3*4+(3*4)/5$

c) Consider the following Syntax Directed Translation

Production	**Semantic Rule**
$E \rightarrow E + T$	$E_1.val = E_2.val + T.val$
$E \rightarrow T$	$E.val = T.val$
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$P \rightarrow (E)$	$P.val = E.val$
$P \rightarrow 0$	$P.num = 1$ $P.val = 2$
$P \rightarrow 1$	$P.num = 2$ $P.val = 1$

Solve the following :

i) What is E.val for string $1 * 1 + 1$?

ii) What is E.val for string $1 * 0$?

3. Attempt **any two** of the following : **(2×5=10)**

a) Check whether the given grammar is LL (1) or not

$S \rightarrow AaAb / BbBa$

$A \rightarrow E$

$B \rightarrow E$

b) Write LEX Program to find sum of first ‘N’ natural nos.

c) Explain the ways to control side effects in SDD’s.

4. Attempt the following :

a) Check whether the given grammar is LALR (1) or not

$S \rightarrow 3A4$

$A \rightarrow 1A1/1$ **6**

OR

a) 1) Differentiate between Top-Down and Bottom up parsing. **3**

2) Consider the following grammar and i/p string. Parse the string using shift-reduce parser. Show the contents of stack, input and action at each stage. **3**

$S \rightarrow TL$;

$T \rightarrow$ int / float

$L \rightarrow L$, id / id

Input string $\rightarrow$ int id, id ;

b) Consider the following precedence relation table **4**

	id	–	*	$
id		·>	·>	·>
–	<·	·>	<·	·>
*	<·	·>	·>	·>
$	<·	<·	<·	

Draw the graph of precedence function and precedence function table.

OR

b) Construct a Recursive Descent Parser for the following CFG **4**

$S \rightarrow abSa \mid aaAb \mid b$

$A \rightarrow b$.

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[4318] – 403

Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper – III)
CS – 343 : Computer Networks – II
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

Instructions *: 1)* ***Neat*** *diagrams must be drawn* ***whenever*** *necessary.*
2) Black figures to ***right*** *indicate* ***full*** *marks.*
3) ***All*** *questions are* ***compulsory****.*

1. Attempt **all** of the following : **(1×10=10)**

   a) What is generic domain ?

   b) What is window size of TCP segment ?

   c) Give port number of HTTP, SMTP.

   d) What is the purpose of NaTing ?

   e) Define cryptanalysis.

   f) What act as guard during communication security in an network ?

   g) Hub is physical layer device like repeaters-comment.

   h) What is the value of HLEN if the size of header is 40 bytes ?

   i) Define Frame Tagging.

   j) Which standard is used for wireless LAN ?

2. Attempt **any two** of the following : **(2×5=10)**

   a) Which protocol is used to find MAC address from an given IP address ? Explain in detail.

   b) Explain advantages of VLAN.

   c) Which pull protocol is used to retrive message from mail server ? Explain in detail.

P.T.O.

3. Attempt **any two** of the following : **(2×5=10)**

   a) Which social issues are important in network security ? Explain any one.

   b) Explain the most common scenario used in Email Architecture.

   c) What is congestion ? Which congestion prevention policies are used in Data Link Layer Protocol ?

4. Attempt **any two** of the following : **(2×5=10)**

   a) Which services are provided by TCP to application layer ? Explain it.

   b) A company is granted the block 164.25.40.0126 which contains 64 addresses. The company wants to divide these addresses into three groups, containing 32, 16 and 16 addresses respectively. Design the subnets.

   c) Explain Bluetooth Architecture.

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Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
COMPUTER SCIENCE (Paper V)
CS-345 : Programming in Java II
(2008 Pattern)

Time : 2 Hours | Max. Marks : 40

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) ***All*** *questions carry* ***equal*** *marks.*
3) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Attempt **all** the questions : **(1×10=10)**

   a) What is the use of SetAutoCommit () ?

   b) State any two differences between array and vector.

   c) State three methods use for session tracking.

   d) What is the use of notifyAll () method ?

   e) Which interface should be an class implements ?

   f) Define JAR.

   g) "Order in which elements are added to the collection, in same order they will display when collection object is printed". Justify.

   h) State two disadvantages of TYPE 2 driver.

   i) How to send cookie from server to client.

   j) State any two methods of socket class.

2. Attempt **any two** : **(2×5=10)**

   a) Write a graphics program to accept a string in textfield from the user and change the font of the string by selecting the font from the font list which contains available font names.

P.T.O.

b) Write a servlet to get information about the server such as name of server, server port number, server version.

c) Write a Java program to read n strings into Arraylist collection and sort the elements of collection in descending order (use comparator).

3. Attempt **any two** : **(2×5=10)**

a) What is session ? Explain session tracking with an example.

b) Write a program to create two threads which will display message 'n' number of times. While creating thread pass the message and n as parameters. Message should appear in alternate order.

c) Write a note on JSP directives.

4. Attempt **any one** (**A** or **B**) : **(1×10=10)**

A) 1) Write a JDBC program that insert following details in the student table. student-id, student-name, course.

Insert 5 records from console and display the table. **4**

2) Explain the Server socket class and Datagram socket class in Java. Also state the methods of both classes. **4**

3) What is Java Beans ? State its two features. **2**

B) 1) Write a JDBC program to display information about the table such as column labels, number of columns and column type. **4**

2) Create the Hashtable that will maintain the mobile number and student name. Display the contact list. **4**

3) Differentiate between doGet () and doPost () methods. **2**

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Seat No.	

T.Y. B.Sc. (Semester – IV) Examination, 2013
(Computer Science) (Paper – VI)
CS-346 : BUSINESS APPLICATIONS
(2008 Pattern)

Time : 2 Hours Max. Marks : 40

*Instructions : 1) Neat diagrams must be drawn **wherever** necessary.*
*2) Black figures to the **right** indicate **full** marks.*
*3) **All** questions are **compulsory**.*

1. Attempt **all** of the following : **(1×10=10)**
   a) Define Market segmentation.
   b) How to prepare Quotation ?
   c) Define Manpower Planning.
   d) Discuss any 2 benefits of ATM.
   e) Define TQM.
   f) Discuss On Job Training.
   g) "Purchase Indent is also called as Purchase Requisition"– state true or false and justify.
   h) State advantages of ERP.
   i) List the steps of opening the Savings Account.
   j) Write the contents of Invoice.

2. Attempt **any two** of the following : **(2×5=10)**
   a) What are consequences of Sales Analysis ?
   b) "Six sigma standards are applicable only to the total quality management system." State true or false and justify.
   c) What is e-banking ? Explain in details, use of e-banking to banking industry.

P.T.O.

3. Attempt **any two** of the following : **(2×5=10)**

   a) Name the activities involved in target marketing.

   b) Write a short note on Bio-metric devices.

   c) Explain the activities in SCM.

4. Attempt the following :

   a) Hindustan Lever Ltd. (HLL) is the company producing multiple products like soap, toothpaste, shampoo, etc. Each product requires different raw materials which are purchased from different suppliers. Company places purchase orders to different suppliers after receiving purchase indents.

   After material is received from the suppliers, it is send to QC department for checkups. During this lot of time is spend and situations may arise that the right material is not available during production. To improve the current situation company wants an automated system. To specify the business process :

   1) Suggest main processes using any one diagram from DFD/HIPO chart / class diagram. **2**
   2) Suggest at least 3 input documents in detail. **3**
   3) Suggest at least 2 report layouts in detail. **2**

   b) Give the format of Goods Receipt Note (GRN). **3**

   OR

   b) Which documents are verified and prepared during receipt of material ? **3**

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