



[4118] – 304

Seat No.	
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T.Y. B.Sc. (Semester – III) Examination, 2012
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) Will comparison of string “15” and integer 15 work in PHP ?

b) Find the output.

```
< ? php
    $ str = “Welcome”;
    echo ‘You are $ str’;
? >
```

c) What is the difference between equality and identity operators ?

d) Write an anonymous function to find largest of two numbers.

e) What is use of here document ?

f) What is use of Levenshtein algorithm ?

g) What is an iterator ?

h) What is static method ?

i) Which arrays are used to access form parameters from php code ?

j) What is the purpose of filectime () ?

P.T.O.



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

- a) Explain the following string-searching functions
 - i) strpos () ii) strstr ()
 - iii) strpos iv) strrchr ()
 - v) strpos ()
- b) What is an introspection ? Explain any four introspective functions provided by php.
- c) Write a short note on cookies.

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

- a) What is an associative array ? What is the way to loop over elements of an array ? Explain it with proper example.
- b) What is the difference between GET and POST methods in php ? Explain it with proper example.
- c) Write a php script to accept name of directory from the user and display all files in that directory with their name, size, time of last access, time of last modification and number of blocks allocated to the file.

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

- A) i) Write a PHP script to find union of two arrays in myfunc. inc. Use this file in main script to calculate union (use include)
- ii) What is sticky forms ? Explain it with example.
- B) i) Write a PHP script to accept two strings from user. Check whether occurrence of 2nd string appears at the start and end of 1st string.
- ii) How to remove white spaces in string by using built-in functions in PHP. Explain it with proper example.



[4118] – 403

Seat No.	
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T.Y. B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE Paper – III
CS-343 : Computer Networks – II
(2008 Pattern)

Time : 2 Hours

Max. Marks : 40

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

1. Attempt **all** of the following : **(10×1=10)**
- a) Define sub netting.
 - b) What is the purpose of ARP ?
 - c) For following IP addresses give their classes
 - i) 240.128.40.5
 - ii) 15.92.31.3
 - d) State different types of bridges.
 - e) What is piconet ?
 - f) Give two applications of UDP.
 - g) State different devices used in Network layer ?
 - h) Which services are defined by IEEE 802.11 ?
 - i) A host is sending 100 datagrams to another host. If the identification number of first datagram is 1024, what is the identification no. of the last datagram ?
 - j) What are ephemeral port numbers ?

P.T.O.



2. Attempt **any two** of the following : **(2×5=10)**
- a) Which social issues are important in network security ? Explain any one.
 - b) Write a short SMTP.
 - c) Differentiate between wireless LAN and Bluetooth.
3. Attempt **any two** of the following : **(2×5=10)**
- a) Explain services provided by User Agent.
 - b) Explain UDP operation in brief.
 - c) Explain components of Firewall.
4. Attempt **any one** of the following (I or II) : **(1×10=10)**
- I) a) Distinguish between open-loop and closed-loop congestion control.
 - b) Explain Bluetooth Architecture
 - II) a) Explain four cases of using ARP.
 - b) Distinguish between Java applet and Active X control security.



[4118] – 301

Seat No.	
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T.Y. B.Sc. (Semester – III) Examination, 2012
COMPUTER SCIENCE (Paper – I)
CS – 331 : Systems Programming and Operating System – I
(2008 Pattern) (New Syllabus)

Time : 2 Hours

Max. Marks : 40

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

1. Attempt **all**. **(10×1=10)**
- a) "Line editor performs edit operations to cross line boundaries". Justify.
- b) What is the meaning of the following statement in assembly language ?
- ONE DC '1'
- c) What is the syntax of assembly language directive ORIGIN ? When is it useful ?
- d) "No. of positional and keyword parameters are stored in MDT". Justify.
- e) What is the usage of macro expansion counter ?
- f) List the steps involved in synthesis phase of compiler.
- g) Give one advantage of P-code compiler.
- h) Define impure interpreter. What is its advantage over pure interpreter ?
- i) What is the need of program relocation ?
- j) What is object module ?

P.T.O.



2. Attempt **any two** :

(2×5=10)

a) Consider the following assembly language program.

```

START      150
READ       A
MOVER      AREG = '0'
COMP       AREG,A
BC         LT, LOOP
LTOrg
ADD        AREG, A
SUB        AREG, = '2'
LOOP:     PRINT A
          STOP
A         DS      1
          END
    
```

Instruction	Assembly
Opcode	Mnemonic
00 —————	STOP
01 —————	READ
02 —————	ADD
03 —————	SUB
04 —————	MOVER
05 —————	COMP
06 —————	BC
07 —————	PRINT

Synthesize the target program and show the contents of symbol table, literal table, pool table.

b) Which data structures of macro are shared among more than one macro ? Explain those data structures.

c) Differentiate between static and dynamic memory allocation.



3. Attempt **any two** : (2×5=10)

- a) Explain relocatable and self relocatable programs in detail.
- b) Give the schematic of an optimizing compiler. Explain any two optimizing transformations.
- c) Construct indirect triples and quadruples for the following.
 - i) $a * b + e \uparrow f / d - c$
 - ii) $y + a * b$

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

- A) a) Differentiate between variant I and variant II intermediate code forms of assembler. 4
- b) Explain the use of expansion time statement ANOP with example. 2
- c) Differentiate between system programming and application programming. 2
- d) What are the actions taken at the block entry in a block structured language ? 2

OR

- B) a) Write a macro to find $Y = X^N$, where X and N are passed as input parameters. 4
- b) What are the drawbacks of single pass assembler ? 2
- c) Explain in brief device driver. 2
- d) Consider a two-dimensional array $a [l_1 : u_1, l_2 : u_2]$, where l_i and u_i are the lower and upper bounds of the i^{th} subscript respectively. How to calculate address of an array element $a [S_1, S_2]$? Give the formula. 2



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Seat No.	
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T.Y. B.Sc. (Semester – III) Examination, 2012
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) Figures to the right indicate full marks.

1. Attempt **all** of the following : **(10×1=10)**
- a) Define Protocol.
 - b) Which topology requires a multipoint connection ?
 - c) Which device operates at transport layer of the OSI model ?
 - d) What is Baud Rate ?
 - e) Define linecoding.
 - f) State disadvantages of piggy backing.
 - g) Which error detection method involves polynomial ?
 - h) What is the maximum throughput of pure ALOHA ?
 - i) What is 1-persistent CSMA ?
 - j) What is multicasting ?
2. Attempt **any two** of the following : **(2×5=10)**
- a) Explain any five goals of computer networks.
 - b) State all functions of network layer.
 - c) Show NRZ-L and NRZ-I encoding pattern for bit stream 0011 0111.

P.T.O.



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

- a) Explain circuit switching.
- b) Write a short note on switched ethernet.
- c) Explain ISDN system for business use.

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

- a) Explain CSMA/CD
- b) Write short note on :
 - a) HDLC
 - b) PPP

OR

- a) Explain CSMA/CA
- b) Show manchester and differential manchester encoding pattern for the bit stream 10111000.



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Seat No.	
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T.Y. B.Sc. (Semester – III) Examination, 2012
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 'Book' with possible attributes and operations with visibility.
 - b) What is meant by object oriented construction ?
 - c) Define Association.
 - d) What is purpose of Design view ?
 - e) What is meant by tagged values ?
 - f) Define Role Names.
 - g) What is meant by Interface ?
 - h) Define fork and joining.
 - i) Define Beta testing.
 - j) What do you meant by components ?
2. Attempt **any two** of the following : **(2×5=10)**
- a) What do you mean by recursive Aggregation ? Explain with suitable example.
 - b) What do you mean by an iterative development ? Give its benefits.
 - c) Draw state chart diagram for Queue implementation.

P.T.O.



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

- a) What is use of deployment diagram ? Explain it with suitable diagram.
- b) Explain stress and volume testing.
- c) Prepare a class diagram for “Medical Shop Management” consisting of at least three classes. Define appropriate relationship, association with multiplicity.

4. Attempt the following :

A) A system is to be designed for a departmental store dealing in consumer items. Members enjoy facility and can purchase items as and when he or she needs them. Store has several counters and one can get almost all kinds of consumer items after visiting these counters.

He/She becomes member by paying initial membership amount and gets a credit card. This has to pay his/her outstanding on quarterly basis. System sends reminders to the members. Defaulters are not allowed to purchase items until the default amount is cleared.

Consider the above case and draw following diagrams.

- i) Use case diagram **3**
- ii) Sequence diagram. **4**
- B) Consider the above case and draw activity diagram. **3**

OR

- B) Explain structural aspects of a collaboration. **3**



[4118] – 401

Seat
No.

T.Y. B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE (Paper – I)
CS – 341 : Systems Programming and Operating Systems – II
(2008 Pattern) (New)

Time : 2 Hours

Max. Marks : 40

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

- a) How clustered systems differ from multiprocessor systems ?
- b) What is the main function of microkernel ?
- c) State the role of medium-term process scheduler.
- d) List the names of thread libraries which provide API to application programmer to create and manage threads.
- e) Performance of Round Robin (RR) scheduling algorithm depends on the size of time quantum. Justify.
- f) What is race condition ?
- g) Multi-threaded programs are good candidate for a deadlock. Justify.
- h) What hardware support is needed to implement demand paging ?
- i) List any four file attributes.
- j) Define Reentrant code.

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

- a) What is a virtual machine ? Give two examples of virtual machine. List any three benefits of virtual machine.
- b) What is co-operating process ? Explain in brief two fundamental models of interprocess communication.

P.T.O.



- c) Consider the following set of processes, with the length of CPU burst time and arrival time in milliseconds.

Process	Burst Time	Arrival Time	Priority
P1	4	0	3
P2	3	2	1 (lowest)
P3	7	1	4 (highest)
P4	15	3	2

Illustrate the execution of these processes using preemptive priority algorithm. Draw Gantt chart and calculate average turn around time and waiting time.

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

- a) What is a semaphore ? How semaphore can be used to solve the Dining Philosopher problem of concurrency control ?
- b) Consider the following Snapshot of a system :

	Allocation			Max			Total Resources		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	10	5	7
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer the following questions using Banker's safety algorithm :

- i) What is the contents of matrix need ?
- ii) Is the system in a safe state ?



- c) Compare the memory organization schemes of contiguous memory allocation and pure paging with respect to following issues :
 - i) Memory allocation
 - ii) Hardware support
 - iii) Fragmentation
 - iv) Sharing of data or code
 - v) Protection.

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

- A) i) Explain recovery from a deadlock in brief. 4
- ii) Explain different methods for handling free-space list in file system. 4
- iii) List the two advantages of distributed operating system. 2

OR

B) i) Consider the following page reference string :

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2

How many page faults would occur for the following page replacement algorithm ?

a) LRU (Least Recently Used)

b) Optimal

Assume three frames. 4

- ii) Define dispatch latency time. Explain the function of dispatcher in brief. 4
- iii) List two benefits of multithreaded programming. 2



[4118] – 402

Seat No.	
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T.Y. B.Sc. (Semester – IV) Examination, 2012
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) Multipass compilers are preferable over single pass compilers. Comment.
- b) Give advantages of boot strapping.
- c) Write a regular expression for floating point number in C language.
- d) What is sentinels ?
- e) What do you mean by augmented grammar ?
- f) State the configuration of LR Parser.
- g) Define Attribute Grammar.
- h) State the type of SDD for the following grammar.

Production	Semantic Rule
$A \rightarrow BC$	$A.S = B.b$ $B.i = F (C.c, A.s)$

- i) State uses of DAG.
- j) How to detect a loop in a program ?

P.T.O.



2. Attempt **any two** of the following :

(2×5=10)

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

$$S \rightarrow aAB$$

$$A \rightarrow Aa/b$$

$$B \rightarrow bB/\epsilon$$

b) Consider the following SDD and find the dependency graph for the expression 4+5+10

Production	Semantic Rules
$A \rightarrow PQ$	$Q.inh = P.val$ $A.val = Q.syn$
$Q \rightarrow + PQ_1$	$Q_1.inh = Q.inh + P.val$ $Q.inh = Q_1.syn$
$Q \rightarrow \epsilon$	$Q.syn = Q.inh$
$P \rightarrow digit$	$P.val = digit.lexval$

c) Write a LEX program to find factorial of a given number.

3. Attempt **any two** of the following :

(2×5=10)

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

$$S \rightarrow aAB$$

$$A \rightarrow bA|\epsilon$$

$$B \rightarrow bB|a$$

b) Construct DAG for the following expressions.

1) $b*(a + c) + (a + c) *d$

2) $y + (y + x) / (x - z) * (x - z)$

c) Define SDD and SDT. State the task performed by SDT.



4. Attempt the following :

a) Check whether following grammar is LR(1) or not. 6

$$S \rightarrow ABd$$

$$A \rightarrow aA/a$$

$$B \rightarrow bB/\epsilon$$

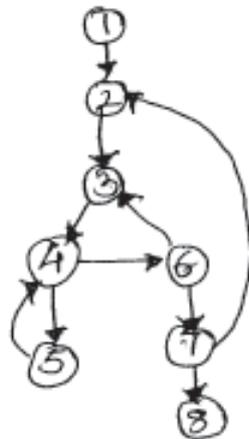
OR

a) i) Write YACC specification ,to solve the expression using following grammar 3

$$E \rightarrow E + E / id$$

ii) Differentiate between RDP and predictive parser. 3

b) Compute set of Dominator nodes for the following flow graph. 4



OR

b) Check whether the following grammar is OPP or not. 4

$$S \rightarrow aAb$$

$$A \rightarrow dB/d$$

$$B \rightarrow Aaf$$



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Seat No.	
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T.Y. B.Sc. (Semester – IV) Examination, 2012
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) Black figures to the **right** indicate **full** marks.
3) **All** questions carry **equal** marks.

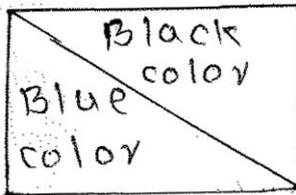
1. Attempt **all** of the following : **(10×1=10)**
- a) Which functions are used to fetch result from query in PEAR DB ?
 - b) What is DSN ?
 - c) Name the different operations performed on any picture.
 - d) “XML is case sensitive”. Justify T/F.
 - e) Give any two examples of Raster Graphics.
 - f) What is XML Parser ?
 - g) Write any two Ajax application.
 - h) What is Binding ?
 - i) Which are the two parts while message are sent using SMTP ?
 - j) What is the callback function ?

P.T.O.



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

- a) Write a note on PEAR DB.
- b) Write php script to generate following picture with the specified colors.



c) Explain any five advantages of XML over HTML.

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

a) Consider the following entities and their relationships.

Book (book-No, book-Name, price)

Publisher (PNo, Pname, Paddr)

Book-Publisher (book-No, PNo)

Write a Php script which accept publisher name and will display book details published by the publisher.

b) Explain the structure of an Email Message.

c) Explain uses of web services.

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

A) i) Write a note on Ajax web application model.

ii) Write a php script to read item-XML file (contain INo, Iname, I-desc, Price) and print item details in tabular format (use simple XML)

B) i) Explain the four basic patterns of operation supported by WSDL. 3

ii) What is java-script object ? 2

iii) Write an Ajax program to search student name according the character typed and display list using array. 5



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Seat No.	
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T.Y.B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE (Paper – V)
CS – 345 : Programming in Java – II
(2008 Pattern) (New)

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 : **(1×10=10)**

- a) State two attributes of Font Metrics class.
- b) Name the methods used for inter-thread communication.
- c) What is the advantage of using Prepared statement over statement ?
- d) What is purpose of JSP directives ?
- e) Which interface should bean class implements ?
- f) Which method is used to send the cookie from server to the client ? State syntax.
- g) Name the methods in the lifecycle of a servlet.
- h) What is the use of callable statement ?
- i) What is the difference between datagram socket and stream socket ?
- j) Which interface implements by Tree set class ?

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

- a) Explain scripting elements in JSP.
- b) Explain thread life cycle. How to create a thread ? Give suitable example.
- c) Write a JAVA program to read n strings into Array list Collection. Display the elements of collection in reverse order.

P.T.O.



3. Attempt **any two** of the following : **(2×5=10)**
- a) Write a servlet which accepts a font name and name of background color from user and use this information to display text in the specified font and change the background color of the HTML page to the specified color.
 - b) Write a JDBC program to display all details of the student table (roll, name, marks). Also perform insertion and updation operation on student database.
 - c) Write a program to display the server machines date and time on the client machine.
4. Attempt **any one** of the following (**A** or **B**) : **(1×10=10)**
- A) 1) Write a servlet code to get information about the server such as name of server, server port number and server version. **4**
 - 2) Write a note on thread priorities. **4**
 - 3) State four constructors of Hashset class. **2**
 - B) 1) What are the different ways of session Handling in servlet programming. Explain any one ? **4**
 - 2) Write a graphics program to accept the name of an image and display it on a panel. **4**
 - 3) What is the purpose of the JAR and manifest files ? **2**



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Seat No.	
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T.Y.B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE (Paper – V)
CS – 345 : Programming in Java – II
(2008 Pattern) (New)

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 : **(1×10=10)**

- a) State two attributes of Font Metrics class.
- b) Name the methods used for inter-thread communication.
- c) What is the advantage of using Prepared statement over statement ?
- d) What is purpose of JSP directives ?
- e) Which interface should bean class implements ?
- f) Which method is used to send the cookie from server to the client ? State syntax.
- g) Name the methods in the lifecycle of a servlet.
- h) What is the use of callable statement ?
- i) What is the difference between datagram socket and stream socket ?
- j) Which interface implements by Tree set class ?

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

- a) Explain scripting elements in JSP.
- b) Explain thread life cycle. How to create a thread ? Give suitable example.
- c) Write a JAVA program to read n strings into Array list Collection. Display the elements of collection in reverse order.

P.T.O.



3. Attempt **any two** of the following : **(2×5=10)**
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4. Attempt **any one** of the following (**A** or **B**) : **(1×10=10)**
- A) 1) Write a servlet code to get information about the server such as name of server, server port number and server version. **4**
 - 2) Write a note on thread priorities. **4**
 - 3) State four constructors of Hashset class. **2**
 - B) 1) What are the different ways of session Handling in servlet programming. Explain any one ? **4**
 - 2) Write a graphics program to accept the name of an image and display it on a panel. **4**
 - 3) What is the purpose of the JAR and manifest files ? **2**



[4118] – 406

Seat No.	
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T.Y. B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE
CS 346 : Business Applications (Paper – VI)
(2008 Pattern)

Time : 2 Hours

Max. Marks : 40

1. Attempt **all** of the following :

(1×10=10)

- a) Define six sigma.
- b) Write the features of Quotation.
- c) What do you mean by EOQ ?
- d) What is sales analysis ?
- e) Define ATM.
- f) What is recruitment ?
- g) Define lead time ?
- h) What is market segmentation ?
- i) State any two use of Biometric.
- j) What is saving account ?

2. Attempt **any two** of the following :

(2×5=10)

- a) List the advantages of ERP.
- b) What are the problems appear in Appraisal ? Explain any two of them in detail.
- c) Write a short notes on E-Banking.

P.T.O.



3. Attempt **any two** of the following : **(2×5=10)**
- a) Briefly explain the processing of ‘customer order processing’.
 - b) Explain activities of SCM.
 - c) What are the inputs to MRP ?
4. Attempt the following :
- a) In the Distillation Plant, distilled water is prepared, which is basically used in preparation of medicines, salines and batteries. The order is placed for test tube, vessels, flasks, coiled glass tube etc. The supplier processes the sales order and generates bill. The distillation plant pays bill and get the receipts. Suggest a suitable business process, to model the above situation and ensure a smooth flow, within the production process. To specify a business process :
 - a) Suggest main process using any diagram. **2**
 - b) Suggest atleast 3 input documents in detail. **3**
 - c) Suggest atleast 2 report layouts in detail. **2**
 - b) How to make training effective ? **3**
- OR
- b) Discuss benefits of Marketing Segment. **3**



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Seat
No.

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T.Y. B.Sc. (Semester – IV) Examination, 2012
COMPUTER SCIENCE
CS 346 : Business Applications (Paper – VI)
(2008 Pattern)

Time : 2 Hours

Max. Marks : 40

1. Attempt **all** of the following :

(1×10=10)

- a) Define six sigma.
- b) Write the features of Quotation.
- c) What do you mean by EOQ ?
- d) What is sales analysis ?
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2. Attempt **any two** of the following :

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P.T.O.



3. Attempt **any two** of the following : **(2×5=10)**
- a) Briefly explain the processing of ‘customer order processing’.
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- a) In the Distillation Plant, distilled water is prepared, which is basically used in preparation of medicines, salines and batteries. The order is placed for test tube, vessels, flasks, coiled glass tube etc. The supplier processes the sales order and generates bill. The distillation plant pays bill and get the receipts. Suggest a suitable business process, to model the above situation and ensure a smooth flow, within the production process. To specify a business process :
 - a) Suggest main process using any diagram. **2**
 - b) Suggest atleast 3 input documents in detail. **3**
 - c) Suggest atleast 2 report layouts in detail. **2**
 - b) How to make training effective ? **3**
- OR
- b) Discuss benefits of Marketing Segment. **3**
