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B.Tech. VI Semester (Main/Back) Examination, May-June 2015

Computer Science

6CS1A Computer Networks

Common for IT

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

Min. Passing Marks : 24

Instructions to Candidates:

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

Unit - I

1. a) Explain distance vector routing algorithm and flow based routing algorithm. **(8)**

   b) Explain Link state routing algorithm with example. **(8)**

OR

1. a) Describe the concept of congestion control. Describe Token Bucket Algorithm. **(8)**

   b) List the policies of congestion prevention in transport data link and network layer **(8)**

Unit - II

2. a) What is tunneling and fragmentation? Explain it. **(8)**

   b) Write short note on IPv4 and IPv6 packet format. **(8)**

OR

2. a) Explain the following protocols:

   i) RARP Vs BOOTP

   ii) POP3 Vs IMAP

   b) How are IP addresses assigned? Describe this with suitable example for internet

Unit - III

3. a) Explain the term "upward multiplexing" and "downward multiplexing" with reference to transport layer **(8)**

   b) Discuss the procedure of connection establishment in the transport layer. **(8)**

OR

3. a) Draw the format of the UDP header and explain in brief the various fields **(8)**

   b) Briefly discuss the transport layer services **(8)**

Unit - IV

4. a) Explain Quality of service for transport layer **(8)**

   b) Explain the TCP service model **(8)**

OR

4. Describe the difference between a confirmed service and unconfirmed service. Do the following functions full into the category of confirmed service, unconfirmed service, both types or neither

   i) Connection establishment

   ii) Data transfer in a connection oriented service

   iii) Data transfer in a connectionless service

iv) Connection release

- Justify your answer **(16)**

Unit - V

5. a) Explain HTTP and its message formats. **(8)**

b) Explain architecture of world wide web. **(8)**

OR

5. a) Explain different services of application layer. **(8)**

b) Explain the authoritative and non-authoritative DNS. **(8)**

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B.Tech. VI Semester (Main/Back) Examination, May 2015

Computer Science & IT

6CS2A Design and Analysis of Algorithms

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

Min. Passing Marks : 24

Instructions to Candidates:

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

Unit - I

1. a) Derive the recurrence relation for merge sort algorithm's time complexity. Also , solve it **(8)**

   b) Solve the following optimal merge pattern problem using greedy approach

   5,4,7,2,9,11,4,8 **(8)**

OR

1. a) Describe strassen's method of matrix multiplication **(8)**

   b) consider a knepsack of capacity 10 and items with prices as

   (40,30,20,50) and weights (5,4,6,3). What is the maximum profit that can be earned if fractional items are allowed **(8)**

Unit - II

2. a) Solve the following instance of LCS problem through dynamic programming

   x=ABCDCDBCAD

   y=BACCDCABBD **(8)**

   b) Compare dynamic programming and divide and conquer approach **(4)**

   c) State lower bound theory **(4)**

OR

2. a) Find the optimal parenthesization of multiplication of a matrix chain specified by (4,16,10,8,20). Show all tables and decision steps involved **(12)**

   b) What is backtracking **(4)**

Unit - III

3. a) Find the pattern ABCBC in the text ACABABCABCBCA using KMP matcher **(10)**

   b) Discuss the formulation of simple assignment problem of size n **(6)**

OR

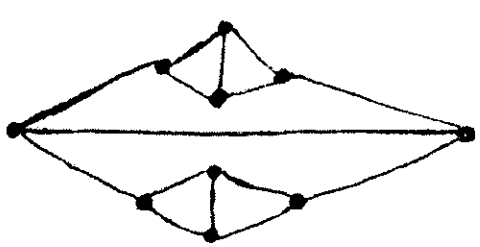
3. a) Describe Boyer moore pattern matching algorithm with appropriate examples of good prefix and bad character **(10)**

   b) What is importance of Rabin Karp string matching algorithm **(6)**

Unit - IV

4. a) Compare Las Vegas and Monte carlo algorithmic approaches **(6)**

   b) Give a randomized solution for Min-cut of following graph **(8)**



   c) State multicommodity flow problem **(2)**

OR

4. a) Solve $f = (x_1 \vee \overline{x_2})(x_3 \vee \overline{x_4})(\overline{x_1} \vee x_3)(x_2 \vee \overline{x_5})(x_4 \vee x_6)(x_4 \vee \overline{x_6})$ using a randomized algorithm. **(10)**

   b) Briefly describe flow shop scheduling and network capacity assignment problem **(6)**

Unit - V

5. Write short notes on any two

a) Complexity classes of decision problems.

b) Approximation algorithms.

c) Cook's theorem and its applications. **(8+8)**

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B.Tech. VI Semester (Main&Back) Examination, May-June 2015

Computer Science

6CS3A Theory Of Computation

Common for IT

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

Min. Passing Marks : 24

Instructions to Candidates:

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

Unit - I

1. a) What do you understand by finite automata and regular expression **(8)**

   b) State the difference between deterministic and non deterministic finite automata **(8)**

OR

1. a) Discuss mealy & moore machines **(8)**

   b) State pumping lemma for regular languages **(4)**

   c) Draw the transition diagram(automata) for an identifier **(4)**

Unit - II

2. a) Check whether the language $L = (0^n1^n / n >= 1)$ is regular or not **(8)**

   b) Construct a DFA that will accept string on {a,b} where the number of b's divisible by 3 **(8)**

OR

2. a) Prove that a language L is accepted by some DFA if L is accepted by some NFA **(8)**

   b) Construct a NFA for regular expression (a/b)*abb and draw its equivalent DFA **(8)**

Unit - III

3. Let G be the grammar

$bAaBs \mid\rightarrow$
$bAAaSaA \mid\mid\rightarrow$
$aBBbSbB \mid\mid\rightarrow$

For the string "baaabbabba" find left most derivation, rightmost derivation and parse tree **(16)**

OR

3. a) Give detailed description of ambiguity in context free grammar **(8)**

   b) If L is context free language then prove that there exists PDA M such that L=N(M) **(8)**

Unit - IV

4. Construct a Turing machine for the language $\{1^n 0 1^m \mid n \geq m\}$ **(16)**

OR

4. Explain how a Turing machine with multiple tracks of the tape can be used to determine the given number is prime or not **(16)**

Unit - V

5. Write short notes on following **(8×2=16)**

a) Linear bounded automation

b) Indexed Languages.

OR

5. Discuss chomsky hierarchy in detail. **(16)**

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B.Tech VI Semester (Main/ Back) Examination, May-June 2015

Computer Science

6CS4A Computer Graphics and Multimedia Techniques

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

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **Five** questions, selecting **one question** from **each unit**. All questions **carry** equal marks. (Schematic diagrams must be shown wherever necessary. any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/ calculated must be stated clearly.*

UNIT - I

1. a) What is scan conversion ? Explain Raster Scan system with the help of Block diagram? **(8)**

   b) Explain Basic principle to draw a circle also Explain mid-point circle Algorithm? **(8)**

(OR)

1. a) Write short note on : Anti aliasing technique? **(8)**

   b) Explain the interactive picture construction technique? **(8)**

UNIT - II

2. a) Explain Cohen-Sutherland line clipping Algorithm with region code details? **(8)**

   b) What do you mean by homogeneous co-ordinates? How these co-ordinates are useful in transformation? **(8)**

(OR)

2. a) What is the difference between scaling and Rotation? **(8)**

   b) Write down flood fill Algorithm for Area filling? **(8)**

UNIT - III

3. a) Explain Depth-Buffer Algorithm to display visible surfaces of polygen? **(8)**

   b) Short - Note on :

      i) B-Spline curves

      ii) Bezier Curve **(4×2=8)**

(OR)

3. a) Explain Scan line Algorithm? **(8)**

   b) What is perspective representation? Explain various types of perspective projection? **(8)**

UNIT - IV

4. a) Write a short Note on the following

      i) Gaurand shading

      ii) Phong shading

      iii) Ray - Tracing Algorithm **(4×3=12)**

   b) Discuss about the difference between CMY and RGB color? **(4)**

(OR)

4. What are diffused and specular reflection? and write down the illumination model that incorporates both these reflections explain all the variables used in this model? **(16)**

UNIT - V

5. a) What are Multimedia authoring tools? **(8)**

   b) Explain the different types of data compression technology? **(8)**

(OR)

5. Write a short Note on :

   i) Animation techniques

   ii) Architectural and telecommunication considerations. **(8×2=16)**

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6E 6025

B.Tech. VI Semester (Main/ Back) Examination, May 2015

Computer Science

6CS5A Embedded Systems Design

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

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **Five** questions, selecting* **one** *question from each **unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessery. any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.*

UNIT - I

1. a) Discuss operating system & memory Technology used in Embedded devices **(8)**

   b) Give clockwise description of PCI Read operation **(8)**

(OR)

1. Discuss Embedded system I/O Architecture, Also discuss I/O with Input and Output port Hardware operation Example. **(16)**

UNIT - II

2. a) What do you understand by Interrupt in Embedded system discuss some common interrupts sources. **(8)**

   b) Discuss function Queue Scheduling Architecture in brief **(8)**

(OR)

2. a) Elaborate setting up Interrupt service Routines and Interrupt vectors. **(8)**

   b) Contrast between Interrupt vectoring and polling **(8)**

UNIT - III

3. a) Discuss Real time performance Issues **(8)**

   b) Discuss Interprocess communication & synchronization in RTOS **(8)**

(OR)

3. Discuss thread scheduling in RTOS. Also discuss the action of scheduler when Interrupt occurs. Take help of suitable diagrams to demonstrate. **(16)**

UNIT - IV

4. a) What are the advantages of using RTOS software architecture for an embedded system. **(8)**

   b) Discuss Hard Real time scheduling considerations. **(8)**

(OR)

4. a) How to save memory space in Embedded system **(8)**

   b) How to avoid creation & destruction of tasks in Embedded system **(8)**

UNIT - V

5. Write short notes on Following : **(8×2=16)**

   a) Compilers & linkers for Embedded system

   b) Instruction set Emulators.

(OR)

5. a) Debugging Techniques

   b) Testing on Host machine. **(8×2=16)**

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B.Tech. VI Semester (Main/ Back) Examination, May 2015

Computer Science

6CS6.1 Advanced Topics in Operating Systems

Common for IT

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

Instructions to Candidates:

*Attempt any **Five** questions, selecting **one** question from each **unit**. All questions* carry ***equal*** *marks. (Schematic diagrams must be shown wherever necessary. any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/ calculated must be stated clearly.*

UNIT - I

1. Explain the following with example from Linux & Windows :
   i) RPC
   ii) Micro Kernel
   iii) Exokernals
   iv) Client - Server Model **(4×4=16)**

(OR)

1. a) Explain the advance concepts of threads and its types. **(8)**
   b) Explain the monolithic layered structure of an operating system. **(8)**

UNIT - II

2. What is file system? Explain various file system implementation methods in operating system. **(16)**

(OR)

2. a) Explain computer security and its classifications. **(8)**
   b) What is disk management? Explain swap-space management? **(8)**

UNIT - III

3. a) Explain various differences in Unix and Linux operating system. **(8)**

   b) What is process management? Explain process scheduling in Linux . **(8)**

(OR)

3. a) Explain network file system and its implementation. **(8)**

   b) Explain the following :

      i) Inter - Process communication.

      ii) Booting & login process. **(4×2=8)**

UNIT - IV

4. a) Explain the system components in window operating system. **(8)**

   b) Explain the following :

      i) MS-DOS Environment

      ii) 16-bit Windows Environment. **(4×2=8)**

(OR)

4. a) Explain the technical improvements of NTFS over FAT file system. **(8)**

   b) Explain the following:

      i) Security Features

      ii) Window registry. **(4×2=8)**

UNIT - V

5. a) What is multiprocessor operating system. Explain its architecture. **(8)**

   b) Explain common audio file format and its types. **(8)**

(OR)

5. a) Explain multimedia file system and its storage mechanisms. **(8)**

   b) What is mobile operating system? Explain Symbian & palm OS. **(8)**

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B.Tech. VI Semester (Main/Back) Examination, May - June 2015

Computer Science

6CS6.2 Artificial Intelligence

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

Min. Passing Marks : 24

Instructions to Candidates:

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

Unit - I

1. a) What is AI and AI techniques? Briefly explain how AI technique can be represented. List out some of task domain of AI ? **(8)**

   b) Define production system. Explain the elements of production system and also explain the characterstics of production system ? **(8)**

OR

1. a) Discuss the algorithm of A* with the advantage over best first search procedure ? **(8)**

   b) Discuss and compare hill climbing and Best - First - search technique ? **(8)**

Unit - II

2. a) Discuss various approaches and issue in knowledge representation ? **(8)**

   b) Explain the Algorithm of predicate logic resolution ? **(8)**

OR

2. a) Explain Non - monotonic resoning and discuss various logic associated with it ? **(8)**

   b) Explain the difference between propositional and predicate logic ? **(8)**

Unit - III

3. a) Explain Fuzzy logic and rule based system ? **(8)**

   b) Explain baye's theorem and what is mean by conditional probability ? **(8)**

OR

3. a) A problem solving search can proceed either forward and backward. What factors determine the choice of directions for a particular problems ? **(8)**

   b) Short note on: Semantic networks scripts schemas. **(8)**

Unit - IV

4. Explain the algorithm of MINIMAX search procedure and discuss the following:

   i) Alpha Beta Cutoff

   ii) Waiting for quiescence **(8×2=16)**

OR

4. a) What are the steps in natural language processing ? List and explain them briefly ? **(8)**

   b) Explain the following in detail:

   i) Syntactic processing

   ii) Semantic processing **(8)**

Unit - V

5. a) Discuss winston's learning program ? **(8)**

   b) Discuss "Explanation based generalization" [EBG] with the help of classical chess example. **(8)**

OR

5. a) Write a short note on : Version space ? **(8)**

   b) Discuss any two from the following:

   i) Learning in problem solving.

   ii) Learning from example.

   iii) Expla nation based learning. **(8)**

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6E 6094

B.Tech. VI Semester (Old Back) Examination, May-June 2015

Computer Science &Engineering

6CS4(O) Programming In Java

CS,IT

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

Min. Passing Marks : 24

Instructions to Candidates:

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

Unit-I

1. a) What do you mean by object oriented programming ? What are its principles? Explain the features of JAVA that are supported by oops principles ? **(10)**

b) Explain how type casting and type conversion is implemented in JAVA. **(6)**

OR

1. a) Explain the following operators in JAVA.

i) Bit wise operator

ii) Boolean operator

iii) Relational operators

iv) Arithmetic operators. **(2×4)**

b) Describe the followings:

i) JAVA byte code

ii) JAVA virtual machine **(2×4)**

Unit-II

2. a) Describe the following selection statements in JAVA - (using an examples).

   i) If-else-if ladder

   ii) Switch statement (2×4)

   b) What is single and multilevel inheritance in JAVA. Explain using a suitable example (8)

OR

2. a) How objects are used as parameters in JAVA . Explain using an appropriate example. (8)

   b) Describe the overloading and overriding methods in Java. (8)

Unit-III

3. a) What is a packages? How it is defined in JAVA. How does the JAVA run time system know where to look package that you create? (8)

   b) How interfaces are implemented in JAVA. (8)

OR

3. a) What are the various operations defined on strings In JAVA. (8)

   b) Explain string buffer class in Java using an appropriate example. (8)

Unit-IV

4. Explain the following statements:

   i) Try

   ii) Catch

   iii) Throw

   iv) Finally (4×4)

OR

4. Explain file handling in JAVA. Give an example that shows all the operations that are performed on file in JAVA. (16)

Unit-V

5. What is a thread? How it is different from a process? How thread is defined in JAVA? Explain thread synchronization and thread join in JAVA using suitable examples. **(2+2+2+5+5)**

OR

5. What are applets in JAVA. List the advantages of using applets. Describe the paint method using an example. **(4+4+8)**

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B.Tech. VI Semester (Main/ Back) Examination, May -June 2015

Information Technology

6IT5A Information Theory & Coding

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

Min. Passing Marks : 24

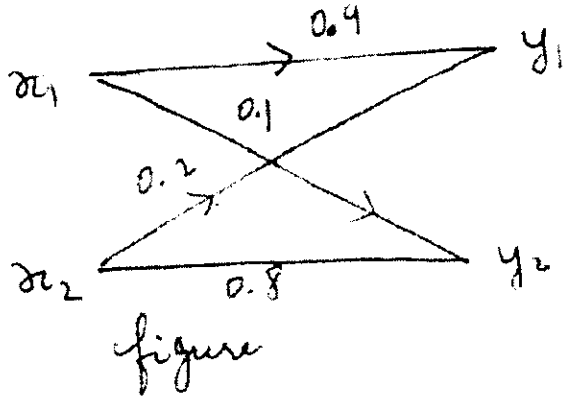
Instructions to Candidates:

*Attempt any **Five questions**, selecting **one** question from **each unit**. All **questions carry equal** marks. (Schematic diagrams must be shown wherever **necessary**. any data you feel missing suitably be assumed and stated clearly.) **Units of quantities** used/ calculated must be stated clearly.*

UNIT - I

1. **a)** Write short note on "Mark - off's process" **(4)**

b) Consider a discrete memoryless binary channel shown in figure below:



figure

i) Find channel matrix of channel

ii) Find $P(y_1)$ and $P(y_2)$ when $P(x_1) = P(x_2) = 0.5$

iii) Find $P(x_1, y_2)$ and $P(x_2, y_1)$ when $P(x_1) = P(x_2) = 0.5$ **(4×3=12)**

(OR)

1. a) Discuss the classification of channels in detail **(4)**

   b) What is entropy? Prove that

   $$Y(X,Y) = H(X/Y) + H(Y) = H(Y/X) + H(X)$$ **(12)**

UNIT - II

2. a) Define code word length. State and prove noiseless coding theorem **(8)**

   b) The following set of messages with their probabilities is given below:

   $X = \{n_1, n_2, n_3, n_4\}$

   $p = \left\{\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{8}\right\}$ find the average code word length of a suitable binary code to above message **(8)**

(OR)

2. a) Apply Huffman's encoding procedure to the following message ensemble and determine the average length of the encoded message

   $[n] = \{n_1, n_2, n_3, n_4, n_5, n_6, n_7, n_8, n_9, n_{10}\}$

   $p[x] = \{0.18, 0.17, 1.16, 0.15, 0.10, 0.08, 0.05, 0.05, 0.04, 0.02\}$ The encoding alphabet is $A = \{0,1,2,3\}$ **(8)**

   b) Apply shannon fano encoding procedure to the following message ensemble:

   $[n] = \{n_1, n_2, n_3, n_4, n_5, n_6, n_7, n_8, n_9\}$

   $p[n] = \{0.49, 0.14, 0.14, 0.07, 0.07, 0.04, 0.02, 0.02, 0.01\}$ and find its average word length. **(8)**

UNIT - III

3. a) Differentiate between systematic and non - systematic codes. Give suitable examples **(8)**

   b) Explain types burst and random error correcting codes? **(8)**

(OR)

3. Write short note on:

   a) BCH code

   b) Repeated codes **(8×2=16)**

UNIT - IV

4. With the help of systematic diagram and generator polynomial explain the generation of cyclic code. Also prove that the code generated by

$c(X) = g(X)d(X)$ is a cyclic code and by $C(X) = X^{n-K} + p(X)$ is a systematic cyclic code

$g(X) \rightarrow$ Generator polynomial

$d(X) \rightarrow$ Data polynomial

$p(X) \rightarrow$ Remainder polynomial after dividing $X^{n-K}d(X)$ by $g(X)$ **(16)**

(OR)

4. a) In (7,4) cyclic code with $g(X) = 1 + n + n^3$ sequence (1110011) is received. Find the data word sent **(8)**

b) Describe cyclic code syndrome calculation with (n-k) shift register **(8)**

UNIT - V

5. a) Compare cyclic codes and convolutional codes in brief **(8)**

b) Write short note on Maximum likelihood decoding of convolutional codes **(8)**

(OR)

5. a) Compare code tree and trellis diagram with suitable examples **(4)**

b) A rate 1/3 convolutional encoder has generating vector as

$n_1 = (100)$, $n_2 = (111)$ *and* $n_3 = (101)$

i) Construct the encoder for the given configuration

ii) Draw the state and trellis diagrams.

(12)

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B.Tech. VI Semester (Old Back) Examination, May - 2015

Information Technology

6IT4(O) Web Technology

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

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **Five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessery. any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/ calculated must be started clearly.*

Unit - I

1. a) How you create website for individuals. Explain in details. **(10)**

   b) Describe cyber laws of web applications in detail **(6)**

(OR)

1. Explain the following terms used in web development process **(8)**

   i) Object

   ii) Web team

   iii) Target wer

   iv) Protocol

UNIT - II

2. a) Explain XML Document Structure in Document Object Model (DOM) **(8)**

   b) Define Document Object Model (DOM). With the (DOM). With the DOM standard. **(8)**

(OR)

2. a) Explain Java script function, Array with suitable Example. **(8)**

b) Explain the following object used in Java script (8)

i) Number Object

ii) String Object

iii) Array Object

iv) Math Object

UNIT - III

3. a) Explain the properties and advantage of Java Beans (8)

b) Explain the EJB in detail (8)

(OR)

3. a) Explain the process of request and response with HTTP (8)

b) What are the security issues with HTTP (8)

UNIT - IV

4. a) How you declare variable and methods in JSP. Explain with suitable Example. (8)

b) Explain Error handling and debugging process in JSP. (8)

(OR)

4. Explain the process of sharing session and Application data between JSP pages in detail. (16)

UNIT - V

5. a) How you access a database from JSP page (8)

b) Describe struts frame work (8)

(OR)

5. a) Explain how you develope Java beans in a JSP page. (8)

b) Explain JDBC. (8)