NEHRU COLLEGE OF ENGINEERING AND RESEARCH CENTRE

(Accredited by NAAC, ISO 9001-2015 certified, Approved by AICTE New Delhi, Affiliated to APJKTU) **Pampady, Thiruvilwamala(PO), Thrissur(DT), Kerala 680 588**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY QUESTION PAPERS

VISION OF THE INSTITUTION

To mould true citizens who are millennium leaders and catalysts of change through excellence in education.

MISSION OF THE INSTITUTION

NCERC is committed to transform itself into a center of excellence in Learning and Research in Engineering and Frontier Technology and to impart quality education to mould technically competent citizens with moral integrity, social commitment and ethical values.

We intend to facilitate our students to assimilate the latest technological know-how and to imbibe discipline, culture and spiritually, and to mould them in to technological giants, dedicated research scientists and intellectual leaders of the country who can spread the beams of light and happiness among the poor and the underprivileged.

ABOUT DEPARTMENT

- Established in: 2002
- Courses offered : B.Tech in Computer Science and Engineering

  M.Tech in Computer Science and Engineering

  M.Tech in Cyber Security
- Approved by AICTE New Delhi and Accredited by NAAC
- Certified by ISO 9001-2015.
- Affiliated to the A P J Abdul Kalam Technological University.

DEPARTMENT VISION

Producing Highly Competent, Innovative and Ethical Computer Science and Engineering Professionals to facilitate continuous technological advancement.

DEPARTMENT MISSION

1. To Impart Quality Education by creative Teaching Learning Process
2. To Promote cutting-edge Research and Development Process to solve real world problems with emerging technologies.
3. To Inculcate Entrepreneurship Skills among Students.
4. To cultivate Moral and Ethical Values in their Profession.

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : 3AA171 **(Pages:2)** **Name .....**

Reg. No:.....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2017

Branch:Computer Science **Specialization: Computer Science and Engineering**

08 CS 7011(A) UNIX INTERNALS

Time:3 hours **Max.marks: 60**

Answer all six questions. Part 'a' of each question is compulsory

Answer either part 'b' or part 'c' of each question.

Module I

1a. Illustrate the Structure of the Buffer header. **3**

Answer b *or* c

b. Briefly point out the File Subsystem and Process Subsystem with the help of block diagram of UNIX Kernel. **6**

c. List out the Scenarios – Kernel follows the getblk to allocate a buffer for a disk block and explain any two scenarios with proper examples. **6**

Module II

2a. Distinguish between Inode and Incore Inode based on their fields. **3**

Answer b *or* c

b. Write an algorithm to convert path name to an Inode **6**

c. Illustrates direct and indirect blocks in Inode with suitable examples. **6**

Module III

3a. Mention the syntax and function of the DUP system call. **3**

Answer b *or* c

b. Elaborate the System Call which is used for inter process communication. **6**

c. Discuss the Open System Call and Data structures after execute the Open **6**

Module IV

4a.Write short notes about Process Scheduling. **3**

Answer b *or* c

b. Describe Interrupts and Exceptions in saving the context of a process along with an Algorithm for Handling Interrupts. **6**

c. Explain the working principle of fair share process scheduler with an example. **6**

Module V

5a. Elaborate page stealer process. **4**

Answer b *or* c

b. Discuss about demand paging and its data structures. **8**

c. Explain in detail about swapping memory management policy in Unix system. **8**

Module VI

6a.What is I/O Subsystem? **4**

Answer b *or* c

b. Write short notes on system configuration in UNIX. **8**

c. Explain about disk drivers and terminal driver. **8**

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : 3BB171 **(Pages: 3)** **Name .....**

Reg. No: .....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION December 2017

Branch: Computer Science and Engineering
Specialization: Computer Science and Engineering

08CS 7021(B) SEMANTIC WEB

Time:3 hours **Max.marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Discuss the Limitations of current web	**3**
	Answer b or c	
b	How Semantic web is different from traditional web. Explain with an example.	**6**
c	Explain Semantic search technologies.	**6**

Q.no.	Module 2	Marks
2.a	Justify the role of Ontology in Semantic web	**3**
	Answer b or c	
b	Explain the differences among taxonomies, thesauri, and ontologies.	**6**
c	Differentiate between RDF and RDF schema.	**6**

Q.no.	Module 3	Marks
3.a	Explain requirements for web ontology description languages.	**3**
	Answer b or c	
b	Write a simple example for OWL with RDF graph.	**6**

c	Consider the following: My foot is part of my leg. My leg is part of me. Thus my foot is part of me. My leg is part of me. I am part of the Information Management Group. Thus my foot is part of the Information Management Group. The first of these inferences is valid, while the second is not. Why not? How might you formulate an ontology so that only "correct" inferences are drawn. Why do we need OWL?	**6**

Q.no.	**Module 4**	**Marks**
4.a	List three potential applications that would benefit from the Semantic Web environment.	**3**
	Answer b or c	
b	Give typical applications of UDDI registry. Also discuss about UDDI data types.	**6**
c	"SOAP exchange data freely" comment on this?	**6**

Q.no.	**Module 5**	**Marks**
5.a	How does OWL-S manage to meet the following expectations • Automatic discovery of Web services • Automatic invocation of Web services • Automatic composition of Web services • Automatic monitoring of Web services	**4**
	Answer b or c	
b	Where the semantics are expressed in the OWL-S Upper ontologies and How we can validate OWL-S documents?	**8**
c	With suitable diagrams explain the building blocks of OWL-S?	**8**

Q.no.	**Module 6**	**Marks**
6.a	How to link your document with the existing network of FOAF document?	**4**
	Answer b or c	

b	Write a brief notes about Swoogle Architecture	**8**
c	Why we need semantic Markup? Write the procedure for creating semantic markup	**8**

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08 PALAKKAD CLUSTER

Q. P. Code : N3AC171 **(Pages:3)** **Name .....**

Reg. No:.....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2017

Branch: Computer Science and Engineering **Specialization: Cyber Security**

08CS 7213(C) **DATABASE SECURITY**

Time:3 hours **Max.marks: 60**

Answer all six questions. Part 'a' of each question is compulsory

Answer either part 'b' or part 'c' of each question.

Module I

1a.How Database systems are differentiated from File Systems? 3

Answer b or c

b.Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): the NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records, a team captain is also a player, a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 2016) and a score (such as 4 to 2). Construct a clean and concise ER diagram for the NHL database using the Chen notation as in your textbook. List your assumptions. 6

OR

c. Discuss about different types of attributes in E R Modelling with appropriate examples. And also explain how they can be represented in E R diagrams. 6

Module II

2a. Justify Access Control is necessary in Database Security. Analyze the role of MAC. 3

Answer b or c

b. What are different Access Control Mechanisms in Database Systems?Construct the Lampson's Access Control Matrix. 6

OR

c.How access control can be achieved in SQL? 6

Module III

3a. What are the authentication mechanisms in databases? 3

Answer b or c

b.Analyse the different concepts in DAC. 6

c. Discuss Griffiths and Wade mechanisms in databases. 6

Module IV

4a. Define the term Statistical Database queries. 3

Answer b or c

b.Explain about the importance of Sea View Model. 6

c. Discuss about the importance of Auditing in databases. 6

Module V

5a. What are the functions provided by Web services for SQL Injection Security? 4

Answer b or c

b. Discuss in detail about PIR. How this protocol can be used in Distributed Databases? 8

c. Compare CPIR and CSPIR with appropriate examples. 8

Module VI

6a.What is Statistical inferencing in Database? 4

Answer b or c

b.Explain in detail about Privacy in data publishing. 8

c. Write short notes on
i)Virtual Private Databases
ii)Security of outsourced databases 8

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code : **(Pages:)** **Name .....**
Reg. No:.....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION December 2017
Branch: COMPUTER SCIENCE & ENGINEERING Specialization:CYBER SECURITY

08CS 7223(C) SECURITY POLICIES AND ASSURANCE

Time:3 hours **Max.marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	**Module 1**	**Marks**
1a.	Describe three other ways the first student could copy the second students homework assignment, even assuming that the file access control mechanisms are set to deny him permission to read the file.	**3**

Answer b or c

b. Why we are using policy languages?Explain different types of policy language. **6**

or

c. Given the security levels TOP SECRET,SECRET,CONFIDENTIAL and UNCLASSIFIED, and the categories A,B,C specify what type of access (read,write,both or neither)is allowed in each of the following situations.Assume that discretionary access controls allow anyone access unless otherwise specified.

i) Paul, cleared for(TOP SECRET,{A,C}),wants to access a document classified (SECRET,{B,C}).

ii) Anna, cleared for (CONFIDENTIAL,{C}) wants to access a document (CONFIDENTIAL,{B}).

iii) Jesse, cleared for (SECRET,{C}), wants to access a document classified (CONFIDENTIAL,{C}).

iv) Sammi, cleared for (TOP SECRET ,{A,C}),wants to access a document classified (CONFIDENTIAL,{A})

v) Robin has no clearances (and so works for UNCLASSIFIED level), wants to access a document classified (CONFIDENTIAL,{B}). **6**

Q.No	**Module 2**	**Marks**

2a. Define a Secure system. List out the goals of Integrity policies? **3**

Answer b or c

b. Describe about Chinese wall model. Compare it with other models. **6**

or

c. Develop a construction to show that a system implementing the Chinese Wall model can support Bell-LaPadula model.` **6**

Q.No	**Module 3**	**Marks**

3.a. List the three different entities in Clinical information systems security policy. **3**

Answer b or c

b. Explain about building a secure and trusted system using a lifecycle model. **6**

or

c. Show that the clinical information system model's principles implement the clark Wilson enforcement and certification rules. **6**

Q.No	**Module 4**	**Marks**

4.a. A computer security expert contends that most break-ins to computer systems today are attributable to flawed programming or incorrect configuration of systems and products.If this claim is true ,do you think design assurance is as important as implementation and operational assurance?Why or why not? **3**

Answer b or c

b. Suppose you are the developer of a computer product that can process critical data and will likely run in a hostile environment. You have an outstanding design and development team,and you are very confident in the quantity of their work.

a) Explain why you would add assurance steps to your development environment.

b) What additional information would you need in order to decide whether or not the product should be formally evaluated? **6**

or

c.Describe in detail about assurance and trust**.** **6**

Q.No	Module 5	Marks

5.a. Write in short about Exploratory programming. **4**

Answer b or c

b. A company develops a new security product using the extreme programming software development methodology. Programmers code ,then test, then add more code ,then test. and continue this iteration. Every day they test the code base as a whole. The programmers work in pairs when writing code to ensure that atleast two people review the code. the company does not adduce any additional evidence of assurance. How would you explain to the management of this company why their software is in fact not “high-assurance” software?

8

or

c. Why is the Waterfall model of software engineering the most commonly used method for development of trusted systems? **8**

Q.No	Module 6	Marks

6.a. How we can add security later into the system? **4**

b.Explain in detail about assurance requirements definition and analysis. **8**

or

c.Discuss in detail about how we can build documentation and specification. **8**

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A

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017

Computer Science and Engineering
(Computer Science and Engineering, Information Security)
01CS7157 : Ad-hoc and Sensor Networks (Elective IV)

Answer *any two full* questions from *each* part
Limit answers to the required points.

Max Marks.: 60 Duration: 3 hours

PART A

1. a. Which modulation mechanism is better, amplitude modulation or frequency modulation? Give reasons to support your answer. 4
   b. Discuss the concept of data gathering in ad-hoc sensor networks. 5
2. a. Explain rumor routing .In the implementation of rumor routing, an agent has the table shown in Table 1, and arrives at node A with Table 2 from node B. What will be the status of the tables after updating. 5

Table 1. Agent table

Event	Distance
E1	4
E2	2

Table 2. Node table

Event	Distance	Direction
E1	3	D
E2	3	C
E3	3	D

   b. Explain the architecture of cellular networks. 4
3. a. Draw and explain the protocol stack of blue-tooth standard. 5
   b. Explain energy and detection advantage of sensor network over traditional centralized approach? 4

PART B

4. a. What are the issues in designing MAC protocols. 4
   b. With the help of an example topology explain how faster convergence is achieved in DSDV. 5
5. a. Differentiate between Contention-based protocols with reservation mechanisms and Contention-based protocols with scheduling mechanisms. 5
   b. Explain the flow of control packets in the route maintenance of DSR protocol. 4
6. a. Explain the frame structure of Distributed Packet Reservation Multiple Access Protocol. 4
   b. Compare and contrast destination sequenced distance vector routing and dynamic source routing. 5

PART C

7. a. Discuss major issues and challenges in providing QoS in Ad-hoc wireless networks. 6
   b. Explain battery aware mac protocol. 6
8. a. Explain the need of energy management schemes in ad-hoc networks. 6

	b.	What are the limitations of the IEEE 802.11 MAC protocol that prevent it from supporting QoS traffic?	6
9.	a.	What are the requirements of a Secure Routing Protocol for Ad Hoc Wireless Networks?	6
	b.	Explain coarse feedback scheme in INORA QoS framework.	6