(Pages : 3) **T – 6444**

Reg. No. : .....

Name : .....

Second Semester M.Sc. Degree Examination, September 2024

Computer Science

CS 522 – COMPUTER NETWORKS AND SECURITY

(2021 Admission Onwards)

Time : 3 Hours Max. Marks : 75

PART – A

Answer **all** questions.

1. Define the concepts of standards in networking.
2. What are the differences between hub and bridge?
3. What are the benefits of IPv6 over IPv4?
4. What are the differences between TCP and UDP protocols?
5. Which are the various types of attacks?
6. With an example explain how an affine cipher works?
7. Find gcd(123,456) using Euclidean algorithm.
8. Describe how Kerberos ensures secure authentication in a network environment.
9. Explain the role of a firewall in network security.

(9 × 3 = 27 Marks)

P.T.O.

PART – B

Answer **any one** question from each module.

Module – I

10. How does fiber optic technology work, and what are its main advantages and disadvantages compared to other guided transmission media? **8**

OR

11. (a) What is Packet switching? What are the advantages of packet switching? **4**

(b) What are the difference between packet switching and message switching? **4**

Module – II

12. Explain in detail about the different layers TCP/IP model. **8**

OR

13. Briefly explain about CSMA protocol. **8**

Module – III

14. What is Advanced Encryption Standard (AES)? Explain the transformations in AES. **8**

OR

15. (a) What will be the encrypted text corresponding to plain text "DONOT OPEN THE BROWN DOOR" using columnar transposition cipher with the keyword as "GAMES"? **4**

(b) Explain with an example how the Caesar cipher works? **4**

Module – IV

16. Consider an ElGamal scheme with prime p = 71 and a primitive root a = 7. If B has public key YB = 3 and A chooses the random integer k = 2, What is the cipher text of M = 30? If now A chooses a different value of k, so that the encoding of M = 30 is C= (59, C2), what is the integer? **8**

OR

17. (a) Explain the steps of RSA encryption. **4**

(b) Find decryption key if using RSA algorithm, given p = 3, q = 11, e = 7 and n = 5. Encrypt the message M = 9. Show the decryption computation as well to arrive back at M. **4**

Module – V

18. Explain the concept of HMAC (Hash-based Message Authentication Code) and its purpose in cryptographic systems. Describe the key components involved in HMAC and how it provides both data integrity and authenticity. **8**

OR

19. Explain the Kerberos authentication protocol and its key components. Describe how Kerberos provides secure authentication and what role the Key Distribution Center (KDC) plays in the protocol. **8**

Module – VI

20. Explain the S/MIME (Secure/Multipurpose Internet Mail Extensions) protocol and its role in securing email communications. Describe the key components of S/MIME and how it ensures confidentiality, integrity and authentication of email messages. **8**

OR

21. Describe Transport Layer Security (TLS) and its importance in securing network communications. Outline the main steps involved in the TLS handshake process and explain how TLS ensures the confidentiality and integrity of data transmitted over a network. **8**

(6 × 8 = 48 Marks)

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Second Semester M.Sc. Degree Examination, September 2024

Computer Science

CS 524 A – COMPUTER FORENSICS AND CYBER LAWS

(2021 Admission Onwards)

Time : 3 Hours Max. Marks : 75

PART – A

Answer **all** questions.

1. Explain the process of capturing and preserving computer forensic evidence.
2. Describe different types of computer forensic systems and their applications.
3. Name the advanced forensic analysis tools used in network forensics.
4. What is the main focus of memory forensics?
5. How to prevent an unauthorized access to computers?
6. What is the key challenge in combating cybercrime?
7. What is the primary function of the digital forensic tool Autopsy?
8. What was the primary trigger for the evolution of the IT Act in India?
9. What are two major issues faced by e-commerce in India?

(9 × 3 = 27 Marks)

P.T.O.

PART – B

Answer **any one** question from each module.

Module – I

10. Discuss the significance of duplication and preservation of digital evidence in computer forensics.

OR

11. Describe the final steps in conducting a computer forensic investigation and completing the case.

Module – II

12. How is forensic photography used in crime scene investigations?

OR

13. Explain the techniques and significance of audio analysis in forensic investigations.

Module – III

14. Describe the impact of viruses and malicious code on computer systems and networks.

OR

15. Differentiate between hacking and cracking in detail.

Module – IV

16. Explain the process and significance of IP tracking in forensic investigations.

OR

17. How to recover deleted emails in a forensic investigation?

Module – V

18. Identify various authorities under the IT Act and their powers.

OR

19. How is jurisdiction determined under the IT Act, 2000?

Module – VI

20. What is the concept of patent rights, and why is it significant?

OR

21. List and explain some key provisions of the Patent Act, 1970, in India?

(6 × 8 = 48 Marks)

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Reg. No. : .....

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Second Semester M.Sc. Degree Examination, September 2024

Computer Science

CS 521 – DATABASE MANAGEMENT SYSTEMS

(2021 Admission Onwards)

Time : 3 Hours Max. Marks : 75

PART – A

Answer all questions

1. Explain the different views of data in a Database Management System (DBMS).
2. What is data independence in DBMS and what are its types?
3. What is a cursor in PL/SQL?
4. Explain about the different types of triggers.
5. Discuss the limitations of the relational model in database management systems (DBMS).
6. What are the needs of Object-Oriented Database Management Systems?
7. Which are the different types of attributes?
8. What is OLAP?
9. What do you mean by an outlier? Give an example.

(9 × 3 = 27 Marks)

P.T.O.

PART – B

Answer **one** full question from each module

Module – I

10. Explain the Relational Data Model and discuss its key concepts. **8**

OR

11. (a) Differentiate between Data Definition Language (DDL) and Data Manipulation Language (DML) in a DBMS, providing examples of each. **4**

(b) Write an SQL query to find all students who have scored more than 75 marks in any subject and discuss how DML and DDL commands are utilized in this query. **4**

Module – II

12. Given a relation R(A, B, C, D) and Functional Dependency set $FD = \{AB \rightarrow CD, B \rightarrow C\}$, determine whether the given R is in 2NF? If not convert it into 2 NF. **8**

OR

13. What is a stored procedure in SQL? With an example explain the steps in developing a stored procedure. **8**

Module – III

14. Discuss the advantages and limitations of Object-Oriented Database Management Systems (OODBMS). Provide examples to illustrate the benefits and challenges associated with using OODBMS. **8**

OR

15. Explain the purpose and key features of Object Query Language in Object-Oriented Database Management Systems (OODBMS). **8**

Module – IV

16. Explain in detail the KDD process in Data Mining. **8**

OR

Using Apriori algorithm find the frequent itemset from the below given transaction dataset. Assume minimum support count as 2. **8**

Tid	Items Bought
T1	Coffee, Tea, Bun
T2	Eggs, Tea, Chocolate
T3	Coffee, Eggs, Tea, Chocolate
T4	Eggs, Chocolate
T5	Cream

Module – V

18. Find the first attribute of split if a decision tree is constructed using decision tree algorithm for the below given dataset. Assume 'Play tennis' is the class attribute **8**

Day	Outlook	Temp	Humidity	Wind	Play Tennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

OR

19. Explain in detail how classification can be performed using back propagation algorithm. **8**

Module – VI

20. Using K means algorithm find the clusters formed by the data objects in the below given dataset. Assume $k = 2$ and let objects A and B be the initial centroids. **8**

Object	X	Y
A	1	1
B	2	1
C	4	3
D	5	4

OR

21. Explain in detail the steps in a text mining algorithm. **8**

($6 \times 8 = 48$ Marks)

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Reg. No. : .....

Name : .....

Second Semester M.Sc. Degree Examination, September 2024

Computer Science

CS 523 – SOFTWARE ENGINEERING

(2021 Admission Onwards)

Time : 3 Hours Max. Marks : 75

PART – A

Answer **all** questions. Each question carries **3** marks.

1. Write the characteristics of software.
2. How can we document the requirements?
3. What is mean by cohesion?
4. Write short note on function oriented design.
5. Give details about activity diagram.
6. Write short note on methods.
7. How to select a design pattern?
8. What is Black box testing?
9. What is the concept of continuous delivery?

(9 × 3 = 27 Marks)

P.T.O.

PART– B

Answer **any one** question from each module. Each question carries Eight marks

Module – I

10. Explain the predictive waterfall model with example.

OR

11. Explain COCOMO with examples.

Module – II

12. Explain the types of user interfaces.

OR

13 How can we develop the DFD model of a system? Explain.

Module – III

14. Explain the different approaches for developing dynamic systems.

OR

15. Explain the benefits of object oriented methodology.

Module – IV

16. Explain the concepts of Agile development methodology.

OR

17. Explain the basic concepts of design patterns.

Module – V

18. Explain the following :

    (a) Boundary value Testing

    (b) Testing the non-functional requirements

OR

19. Explain about Defect life cycle.

Module – VI

20. Explain the prerequisites for continuous integration.

OR

21. How can we manage the dependencies and software configuration?

(6 × 8 = 48 Marks)

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Reg. No. : .....

Name : .....

Second Semester M.A. Degree Examination, September 2024

English Language and Literature

EL 522 : LITERATURES OF INDIA

(2022 Admission Onwards)

Time : 3 Hours Max. Marks : 75

I. Answer any **five** of the following questions in about **50** words.

1. Write about "the king of heroic anklets".
2. What are the themes of the *Voice of the Mountain*?
3. Theme of protest in *Evam Indrajit.*
4. What is the theme of the poem "Postcard from Kashmir"?
5. The source of the play "The Envoy".
6. The use of a frame story in "Dharma".
7. The Bhakti movement.
8. How does R. K. Narayan visualize Bharat English?

(5 × 2 = 10 Marks)

II. Answer any **five** of the following questions in about **100** words.

9. Imagery and symbolism in *The Gambler's Lament.*
10. "Madras Central" by Vijay Nambisan is a powerful portrait of a city in flux. Discuss.
11. How does Mirabai prove that love can be both a source of great joy and great pain in "I saw the dark clouds burst"?

P.T.O.

12. *Rajmohan's Wife* as a national allegory.

13. The main focus of P. P. Ravindran's "Genealogies of Indian Literature" is to challenge the traditional view of Indian literature as a monolithic entity. Discuss.

14. Natya and Kavya are two important concepts in Indian literature.

15. Sitanshu Yashaschandra's poem "Language" is a meditation on the power and limitations of language. Discuss.

16. Discuss Kabir's poem as a call for social justice.

(5 × 5 = 25 Marks)

III. Answer any **two** of the following questions in about **300** words choosing **one** from each group:-

Group A

17. The blending of mythology and technology in D'Souza's *Dweepa*.

18. Comment on the narrative techniques employed by Thongchi in "The Journey".

19. Consider Evam Indrajit as an absurd play.

Group B

20. Ambai's story explores a number of themes related to the lives of women in traditional Indian households. Discuss.

21. Hope and nostalgia can coexist with loss and decay. Discuss this statement in "Madras Central" by Vijay Nambisan.

22. *Year of the Weeds* is a reminder that the environment is not just a resource to be exploited, but also a home to be cherished. Discuss.

(2 × 15 = 30 Marks)

IV. Critically analyse and answer any **one** of the following questions in about **150** words.

23. Translations play a vital role in the making and unmaking of literary traditions. But translations can also be used to colonize or exploit other cultures. Comment.

24. Present the main arguments in the given passage in not more than two sentences and attempt a one-page critical note on the passage.

What really mattered was not my economic outlook, but, my stars. My father-in-law, himself an adept at the study of horoscopes, had consultations with one or two other experts and came to the conclusion that my horoscope and the girl's were incompatible. My horoscope had the Seventh House occupied by Mars, the Seventh House being the one that indicated matrimonial aspects. 'The astrological texts plainly stated that Mars in the Seventh House indicated nothing but disaster unless the partner's horoscope also contained the same flaw, a case in which two wrongs make one right.

25. Discuss the technique of foreshadowing in Indian fiction and its suspense with the following passage.

They danced high above the trees on the west end of the park. over the windmills, floating side by side like a pair of eyes looking down on San Francisco. the city I now call home. And suddenly Hassan's voice whispered in my head *For you. a thousand times over.* Hassan the harelipped kite runner.

(1 × 10 = 10 Marks)
