

Total No. of Questions : 4]

SEAT No. :

P8986

[Total No. of Pages : 1

Oct-22/BE/Insem-113

B.E. (Information Technology)

WIRELESS COMMUNICATION

(2019 Pattern) (Semester-VII) (414445 D) (Elective-IV)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4,
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1)** a) Explain any three types of wireless communications system. [9]
b) Compare Cellular Network Generations-1G, 2G, 3G. [6]

OR

- Q2)** a) Explain advantages and disadvantages of wireless communication. [5]
b) Explain in detail 3G Cellular System. [5]
c) Explain in detail working of Satellite Communication. [5]

- Q3)** a) With neat diagram explain the concept of cell and hexagonal geometry for cell. [8]
b) What is Handoff? Explain Handoff strategies in detail. [7]

OR

- Q4)** a) Explain concept of cell sectoring and cell splitting. How it improves cellular system's performance? [5]
b) Explain concept of frequency reuse, its advantages and problems. [5]
c) Explain Fixed Network Transport Protocols. [5]



Total No. of Questions : 8]

SEAT No. :

PA-2638

[Total No. of Pages : 2

[5927]-401

B.E. (Information Technology)

WIRELESS COMMUNICATIONS

(2019 Pattern) (Semester - VII) (Elective - IV) (414445D)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume Suitable data if necessary.

Q1) a) Explain the Principal of TDMA. What are different features of TDMA? [9]

b) How Code Division Multiple Access Technique is implanted while accessing a channel for multiple users? Support your theory with example. [9]

OR

Q2) a) What is MIMO? Explain two formats of MIMO. [9]

b) What is OFDM technique? Also, explain OFDMA transmitter and receiver. [9]

Q3) a) What are the different challenges in WAP? Also, write down the advantages and disadvantages of WAP. [9]

b) What is LoRaWAN? Elaborate LoRaWAN network elements. [8]

OR

Q4) a) What is Wi-Fi Direct? What are the different types of Wi-Fi Direct? [9]

b) What is NFC? What are the different characteristics of NFC? [8]

P.T.O.

Q5) a) What is security? What are the different security issues in 1G, 2G, 3G, and 4G? [9]

b) Explain in details Visible Light Communication. Also, explain its applications. [9]

OR

Q6) a) Explain security issues and challenges in GSM. [9]

b) What is multimedia security? Explain multimedia security in 5G and 6G. [9]

Q7) a) Explain how 5G network works along-with its benefits. [9]

b) Enlist and explain application of Holographic MIMO surface. [8]

OR

Q8) a) What is quantum Technology? Explain quantum Technology for a 5G/6G wireless network? [9]

b) Explain Simultaneous Transmission and Reflection (STAR) for 360° coverage in details. [8]



Total No. of Questions : 4]

SEAT No. :

P8508

Oct-22/BE/Insem - 106

[Total No. of Pages : 1

B.E. (Information Technology)

MOBILE COMPUTING

(2019 Pattern) (Semester - VII) (Elective - III) (414444A)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer the Q.1 or Q.2, Q.3 or Q.4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume Suitable data if necessary.

- Q1)** a) What is mobile computing? Explain various functions of mobile computing. [5]
- b) Compare the merits and demerits of TDMA and FDMA multiple access schemes. [5]
- c) Write short note on : Telecommunication generations. [5]

OR

- Q2)** a) Explain with diagram far and near terminal problem. [5]
- b) Explain carrier sense Multiple access with collision avoidance (CSMA/CA). [5]
- What is the Reason for implementing CSMA with CA strategy in wireless networks?
- c) Explain in detail Packet Reservation Multiple Access (PRMA). [5]

- Q3)** a) Enlist the characteristics of SIM. [5]
- b) With the help of a neat sketch, describe GSM Network architecture. [5]
- c) Explain in detail the frequency allocation in GSM. [5]

OR

- Q4)** a) Write short notes on : UMTS. [5]
- b) What you meant by security in GSM? Explain about that in detail? [5]
- c) With the help of a neat sketch, describe GPRS architecture. [5]



Total No. of Questions : 8]

SEAT No. :

PA-948

[5927]- 394

[Total No. of Pages : 2

B.E. (Information Technology)

MOBILE COMPUTING

(2019 Pattern) (Elective- III)(Semester - VII) (414444 A)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Use of Electronic calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1)** a) Explain the LTE network architecture. **[9]**
b) Explain the Second Generation of wireless communication with its standards. **[9]**

OR

- Q2)** a) Write short note on: Fifth generation telecommunication standard or 5G. **[9]**
b) Write a note on Third Generation Wireless Networks (3G). **[9]**
- Q3)** a) Describe DSDV and DSR routing algorithms for adhoc networks. **[8]**
b) How the agent can be discovered using Mobile IP? Give the overlay of agent advertisement packet which includes mobility extension. **[9]**

OR

- Q4)** a) Write a short note on **[9]**
i) Hidden and exposed terminal problem
ii) Mobility of nodes
iii) Resource Constraint
- b) What is Tunnelling and Encapsulation and Reverse Tunnelling in Mobile IP? **[8]**

P.T.O.

Q5) a) Explain in detail WML and explain its features. [9]

b) Explain Indirect-TCP and Snooping TCP with diagram. [9]

OR

Q6) a) Explain briefly WAP model architecture. [9]

b) Explain Slow start, Fast retransmit/fast recovery in regard with TCP.[9]

Q7) a) Explain Mobile Device Operating Systems with Special Constraints & Requirements. [9]

b) Write a note on Software Development Kit-iOS SDK and Android SDK. [8]

OR

Q8) a) Explain Mobile Payment System with security issues involved in it. [9]

b) Write a short note on : [8]

i) Palm OS

ii) Symbian OS

iii) iOS

iv) Android.



Total No. of Questions : 4]

SEAT No. :

P8507

[Total No. of Pages : 1

Oct-22/BE/Insem - 105
B.E. (Information Technology)
DEEPLARNING
(2019 Pattern) (Semester - VII) (414443)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) Draw and explain the architecture of Multilayered Feedforward Neural network. [5]
b) What is the need of Regularization? Explain Dropout Regularization. [5]
c) Explain the concept of gradient based Learning. [5]

OR

- Q2)** a) What is the problem of vanishing Gradient? Describe various solutions to this problem. [7]
b) Explain the working of an Artificial neuron. Also explain the activation functions ReLU and LReLU. [8]

- Q3)** a) Illustrate Convolution operation in CNN with an example. [5]
b) Explain the use of padding and strides in pooling layers. [5]
c) What is the advantage of weight sharing in CNN. [5]

OR

- Q4)** a) What are pooling layers in CNN? Illustrate Max pooling with an example. [5]
b) Discuss applications of CNN. [5]
c) Write short note on AlexNet. [5]

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Total No. of Questions : 8]

SEAT No. :

PA-947

[Total No. of Pages : 2

[5927]-393

B.E. (Information Technology)

DEEP LEARNING

(2019 Pattern) (Semester - VII) (414443)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1)** a) Differentiate between feed-forward neural networks and recurrent neural networks. Explain the types of Recurrent Neural Network (RNN). [9]
b) Explain how sequence to sequence model works. [9]

OR

- Q2)** a) Describe the general layout of a Long Short-Term Memory Network (LSTM) with suitable diagram. [9]
b) What is Recurrent Neural Network (RNN)? State and explain types of RNN in brief. [9]
- Q3)** a) Autoencoders use unsupervised learning approach. Justify the statement. [9]
b) Explain the concept of contractive autoencoder and its need. [8]

OR

- Q4)** a) State the applications of Autoencoders. Explain how the dimensionality reduction feature of autoencoder is useful in information retrieval task? [9]
b) Explain denoising autoencoders with suitable figure. [8]
- Q5)** a) Why is the network called Greedy Layer Wise Pretraining Network? [9]
b) State and Justify Role of Representation Learning. [9]

OR

P.T.O.

- Q6)** a) Explain distributed representation with example. [9]
b) Justify when to use domain adaptation and when to use transfer learning. [9]

- Q7)** a) Explain graph convolution approach for social network analysis? Describe RNN based framework for NLP. Write any four applications of NLP. [9]
b) What are the application areas of image classification? Explain CNN for image Classification [8]

OR

- Q8)** a) Explain content based, collaborative and hybrid recommender system with pros and cons. [9]
b) Explain basic architecture of Automatic Speech Recognition system. Why RNN is suitable for speech recognition? How bidirectional RNNs are used in automatic speech recognition? [8]

Total No. of Questions : 4]

SEAT No. :

P8506

[Total No. of Pages : 1

Oct-22/BE/Insem-104

B.E. (Information Technology) (Semester - VII)

SOFTWARE PROJECT MANAGEMENT

(2019 Pattern) (414442)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q. 1 or Q. 2, Q. 3 or Q. 4.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

- Q1)** a) What is project? Why is software project management important. [5]
b) How plans, methods and methodologies differ from each other? [5]
c) Describe contract management in detail. [5]

OR

- Q2)** a) Identify the management responsibilities of the manager in view of software project management. [5]
b) Explain traditional project management and modern project management. [5]
c) Define business case and explain the concept of business case. [5]

- Q3)** a) Draw the activity diagram in reference to online shopping system. [5]
b) Explain GQM paradigm. [5]
c) Enlist the techniques of process analysis and explain in brief. [5]

OR

- Q4)** a) Draw the use case diagram in reference to online shopping system. [5]
b) What is project evaluation? Explain its importance. [5]
c) Describe "Return on Investment" cost-benefits evaluation technique with example. [5]



Total No. of Questions : 8]

SEAT No. :

PA-946

[Total No. of Pages : 2

[5927]-392

B.E. (Information Technology)
SOFTWARE PROJECT MANAGEMENT
(2019 Pattern) (Semester - VII) (414442)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1)** a) Explain objectives of activity planning in detail with suitable example. [9]
b) List different project scheduling Techniques? Explain the Difference between CPM and PERT. [9]

OR

- Q2)** a) What is network Model? Explain with neat sketch. [9]
b) Explain with suitable example forward pass and Backward Pass. [9]

- Q3)** a) What are the different tools and methods used for monitoring and regulating project operations? [8]
b) What are the different methods used in visualizing progress. Explain in detail? [9]

OR

- Q4)** a) What is project control? Explain the different types of control mechanism in details. [8]
b) Explain plan monitor control cycle used in the project in detail with example. [9]

- Q5)** a) How to select a right person for the job? Explain the recruitment process in detail. [9]
b) What is Leadership? Explain Different approaches of leadership. [9]

OR

P.T.O.

- Q6)** a) Explain Oldham-Hackman job characteristic model. [9]
b) Explain five fundamental stages of development [9]

- Q7)** a) What is visibility in Devops? What are the different ways to enable the visibility in Azure Devops? [6]
b) Define Application Lifecycle Management (ALM) tools? What feature should be considered while choosing an ALM Tools? List some examples of ALM tools? [6]
c) What is Azure Board? Explain with suitable example? [5]

OR

- Q8)** a) Explain application life cycle with its phases? [6]
b) Explain any four metrics used for developer practices? [6]
c) List any four examples of reports for metrics in agile projects? [5]



Total No. of Questions : 4]

SEAT No. :

P8505

[Total No. of Pages : 1

Oct-22/BE/Insem-103

B.E. (Information Technology)

INFORMATION & STORAGE RETRIEVAL

(2019 Pattern) (Semester - VII) (414441)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q. 1 or Q. 2 and Q.3 or Q.4.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figurs to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

- Q1)** a) Explain information retrieval process with the help of block diagram.[4]
b) Explain conflation algorithm in detail with its advantages & disadvantages. [8]
c) Why is index term weighting used? [3]

OR

- Q2)** a) Explain single link clustering algorithm with suitable example. [8]
b) Discuss difference between data retrieval & information retrieval. [4]
c) Explain Rocchio's algorithm in brief. [3]

- Q3)** a) Explain the concept of suffix trees in information retrieval. [5]
b) Explain the different kinds of searching techniques in IR. [6]
c) Write a short note on probabilistic model. [4]

OR

- Q4)** a) Explain concept of inverted index file. How can it be used in information retrieval. [6]
b) Explain various IR model in detail with their advantages & disadvantages. [9]



Total No. of Questions : 8]

SEAT No. :

PA-945

[Total No. of Pages : 2

[5927]:391

B. E. (Information Technology)
INFORMATION AND STORAGE RETRIEVAL
(2019 Pattern) (Semester - VII) (414441)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) In information retrieval, if q is the information request and a set of relevant documents for query q is $R_q = (d3, d5, d9, d25, d39, d44, d50, d70, d80, d120)$. Consider new retrieval algorithm has been designed and has been evaluated for information request q returns, ranking of the documents in the answer set is as follows. **[6]**

- | | |
|----------------|----------------|
| 1) <u>d120</u> | 9) d143 |
| 2) d84 | 10) <u>d25</u> |
| 3) <u>d50</u> | 11) d38 |
| 4) d6 | 12) d48 |
| 5) d8 | 13) d230 |
| 6) <u>d9</u> | 14) d113 |
| 7) d58 | 15) <u>d3</u> |
| 8) d129 | |

The documents that are relevant to the query q are underlined. Calculate precision and recall for the documents that are relevant to the query q .

- b) What are measures used to evaluate system performance? **[6]**
- c) What are various techniques used to specify query in information visualization? **[6]**

OR

P.T.O.

- Q2)** a) What are User oriented measures used in performance evaluation of IR systems. [6]
b) Define Precision and Recall. Give example of each and justify its use in evaluating IR system. [6]
c) What is relevance Judgement? Explain the term group relevance judgements, pseudo relevance feedback. [6]

- Q3)** a) What is distributed IR? Explain the architecture of distributed IR in detail. [9]
b) What is Collection Partitioning with respect to distributed IR Explain in detail. [8]

OR

- Q4)** a) Explain in details the working of MULTOS data model. [9]
b) What is Query Languages with respect to multimedia IR Explain it in detail. [8]

- Q5)** a) Write a short note on Searching the Web. [6]
b) Explain Crawler-Indexer Architecture with neat diagram. [6]
c) What is role of crawler in web searching? Explain the strategies used by the web crawler. [6]

OR

- Q6)** a) What is hyperlink? Explain structure of hyperlink and also explain searching using hyperlinks. [6]
b) Write a note on characterizing the web. [6]
c) Explain Web Scrapping with suitable example. [6]

- Q7)** a) Define Recommender system? Explain in brief Collaborative Filtering. [9]
b) Explain semantic web in details. [8]

OR

- Q8)** a) Explain difference between Text-centric and Data-centric XML retrieval. [9]
b) Explain in detail Content Based Recommendation of Documents. [8]

