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B.Tech. (CSE) 6th Semester (Supplementary)
Examination, July-2021
(G Scheme)

MOBILE AND WIRELESS COMMUNICATION
Paper-ESC-CSE-308-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory

All questions carry equal marks.

1. Briefly explain the following terms :

(a) Modulation

(b) Wimax

(c) DHCP

(d) Wireless local loop

(e) File system

3×5=15

Unit-I

2. Explain Wireless Communication System with block diagram. 15

3. (a) Differentiate between FDMA and TDMA.

(b) Write a short note on Broadcasting techniques. 7½, 7½

Unit-II

4. Describe the protocol architecture of IEEE 802.11 in detail. 15

5. Explain the following :

(a) GSM

(b) Bluetooth 7½, 7½

Unit-III

6. What is Mobile IP ? Explain its goals. Also explain about IP packet delivery. 15

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7. (a) What do you understand by Snooping TCP ? Explain in detail.

(b) Explain operation of mobile ad hoc networks. 7½, 7½

Unit-IV

8. What do you mean by GEO, LEO and MEO ? Describe how these satellites can be used for mobile communication. 15

9. Explain the following :

(a) HTML

(b) Wireless Transaction Protocol 7½, 7½

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B.Tech. (CSE) 6th Semester (Supplementary)
Examination, July-2021
(G Scheme)

ARTIFICIAL INTELLIGENCE

Paper-PCC-CSE-304-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Question No. 1 is compulsory. Attempt five questions in total by selecting *one* question from each Unit.

1. (a) Differentiate between informed and uninformed search.
- (b) Write a short note on Semantic Network.
- (c) What do you mean by term Heuristics ?

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- (d) Explain the term Non-monotonic reasoning.

- (e) Write a short note on genetic algorithms. $3 \times 5 = 15$

Unit-I

2. (a) Define term Artificial Intelligence. What are applications of AI in the various fields? Explain its applications.

- (b) Explain Hill Climbing strategy with example. What are the problems faced while applying this strategy? 7,8

3. (a) What do you mean by Game playing in AI? 7,8

- (b) Explain Alpha-Beta pruning with example. What is the need of pruning a game tree? 7,8

Unit-II

4. (a) Differentiate between propositional logic and predicate logic.

- (b) What do you mean by Skolemization? Explain with the help of example. 8,7

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5. Explain the various ways of knowledge representation in AI. Also discuss underlying issues. 15

Unit-III

6. (a) Explain how uncertainty is managed in AI.

- (b) Explain Dempster shafer theory with the help of example. 5,10

7. (a) Differentiate partial-order plan with total-order plan.

- (b) How do we represent states, goals and actions in planning? Explain with example. 7,8

Unit-IV

8. What is an Expert System? Explain its architecture in detail. Also, write its applications in the various domains. 15

9. (a) Explain ANN with its architecture. How artificial Neural networks are similar to biological neural networks?

- (b) Explain ANN applications in the various fields. 8,7

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7. (a) Explain in detail about plain equation method. Explain which algorithm is better for hidden surface removal.

- (b) Explain the scan line method of visible surface detection in computer graphics. 8,7

Section-IV

8. (a) Explain the procedure to generate Bezier curve.

- (b) Differentiate between diffuse reflection and specular reflection. Why do we require shading model ? Explain it. 6,9

9. (a) Explain the components of a general-purpose digital image processing system with a neat diagram.

- (b) Compare and contrast between flat and smooth shading models with necessary examples. 8,7

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B.Tech. (CSE) 6th Semester (Supplementary)

Examination, July-2021

(G Scheme) (Elective-II)

COMPUTER GRAPHICS

Paper-PEC-CSE-314-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Attempt five questions in all, selecting one question from each Section. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is a View Port ?
(b) Write about the primary and secondary colours.

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- (c) Explain text clipping.
- (d) Define flat shading.
- (e) Explain about polygon tables. 3×5=15

Section-I

2. Write DDA line generation algorithm and Bresenham's line generation algorithm. Apply these algorithms to produce line segment from point (0, 0) to point (6, 6). Compare their respectively. 15

3. (a) Explain scan line polygon fill method, with suitable diagram to support your explanation. Compare the scan line polygon fill method with flood fill method.
- (b) Differentiate between any two of the following :
 - (i) Computer Graphics and Animation
 - (ii) Random Scan and Raster Scan display devices
 - (iii) Printer and Plotter 8,7

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Section-II

4. (a) Find a transformation of triangle A(1, 0), B(0, 1), C(1, 1) by :
 - (i) Rotating 450 about the origin and then translating one unit in x and y direction.
 - (ii) Translating one unit in x and y direction and then rotating 450 about the origin. 8

- (b) Define window and view port. Describe two-dimension windows to view port transformation with matrix representation for each step. 7

5. (a) Consider the line from (5, 5) to (13, 9). Use the Bresenham's algorithm to rasterize this line.
- (b) Where do you require ellipse clipping algorithm ? Explain in detail about ellipse clipping algorithm. 8,7

Section-III

6. (a) Explain parallel projection with its types.
- (b) Explain in detail about depth Buffer Method. Justify that is better than plane equation method. 7,8

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(b) What do you mean by file ? List out the basic file modes available. Write a statement to create a data.txt file with the following text.

- (i) Python file handling is very interesting and useful.
- (ii) This is a text file created through python.

Section-D Unit-III

- 6. (a) What is business understanding in data science ? Why business understanding is important in data science ? Discuss business understand phases and process in detail.
- (b) How to prepared data is used from Modeling to Evaluation ?
- 7. (a) What is the data requirements ? What are the five methods of collecting data ? How to prepare data from understanding to preparation ?
- (b) Discuss the following in detail :
 - (i) Analytic Approach
 - (ii) Deployment and feedback

Section-E Unit-IV

- 8. Discuss the following Application of data science in detail :
 - (a) Prediction
 - (b) Elections
- 9. Discuss the clustering and text analytics Application of data science in detail.

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B.Tech. (CSE) 6th Semester (Supplementary)

Examination, July-2021

(G Scheme)

(Elective-III)

DATA SCIENCE

Paper-PEC-CSE-320-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Question No. 1 is compulsory. Answer one question from each of the remaining four Sections. All questions carry equal marks.

Section-A

- 1. (i) What are the differences between supervised and unsupervised learning ?
- (ii) What is AI ? What is use of AI in data science ?
- (iii) Explain the Myth of data science.

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- (iv) Discuss Bar Charts.
- (v) Discuss the various data science applications. $5 \times 3 = 15$

Section-B Unit-I

2. (a) What is Data Science ? List the differences between supervised and unsupervised learning.
- (b) Define Big Data and explain and discuss the characteristics of Big Data and Applications of Big Data.
3. (a) What is Data Preprocessing ? Explain and discuss in detail the various steps involved in the Data Preprocessing.
- (b) What is Statistical Modeling and how is it used ? What are reasons to learn Statistical Modeling ? Discuss important Statistical Techniques in Data Analysis.

Section-C Unit-II

4. (a) What is Python Matplotlib ? What is Matplotlib used for ? What are the basic elements/components of the chart ? Discuss the various types of plots with suitable codes.
- (b) What is an array and how is it different from a list ? What is the name of the built-in array class in NumPy ? Create the following NumPy arrays :

- (i) A 1-D array called zeros having 10 elements and all the elements are set to zero.
- (ii) A 1-D array called vowels having the elements 'a', 'e', 'i', 'o' and 'u'.
- (iii) A 2-D array called ones having 2 rows and 5 columns and all the elements are set to 1 and dtype as int.

5. (a) Plot the following data on line chart :

Day	Income
Monday	510
Tuesday	350
Wednesday	475
Thursday	580
Friday	600

- (i) Write a title for the chart 'The Weekly Income Report'.
- (ii) Write the appropriate titles of both the axes.
- (iii) Write code to Display legends.
- (iv) Display red color for the line.
- (v) Use the line style-dashed
- (vi) Display diamond style markers on data points

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B.Tech. (CSE) 6th Semester (Supplementary)

Examination, July-2021

(G Scheme)

ADVANCED JAVA

Paper-PCC-CSE-306-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Attempt *five* questions in total. Question No. 1 is compulsory and selecting *one* question from each Unit.

1. Explain the following :

(a) Generic Servelets

(b) MVC in JSP

(c) Spring AOP

(d) Single thread model

(e) UI tags

(f) J2EE design pattern

2½×6=15

Unit-I

15 each

2. What is Servlet ? Explain the life cycle of Servlet.

3. What is JSP Technology ? How does it work ?
Also explain JSP9 objects ?

Unit-II

15 each

4. Explain the features of struts and struts 2 architecture in detail.

5. What is Java mail API ? Write the methods used for sending and receiving mail using JAVA Mail API.

Unit-III

15 each

6. Explain the architecture of Hibernate in detail.

7. What is Spring ? Explain dependency injection methods.

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Unit-IV

15 each

8. Explain building blocks and architecture of Android.

9. Explain structural and behavioural Java design patterns.

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B.Tech. (CSE) 6th Semester (Supplementary)
Examination, July-2021
 (G Scheme)

COMPILER DESIGN
 Paper-PCC-CSE-302-G

Time : **Three Hours**][**Maximum Marks : 75**

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Question No. 1 is compulsory. Attempt five questions in total by selecting one question from each Unit.

1. (a) Write a short note on ambiguous grammar.
- (b) Compiler-compiler
- (c) Differentiate between tokens, patterns and lexemes.

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- (d) Role of regular expression
- (e) What is phrase level error recovery ?
- (f) What is register allocation in code generation ? 2½×6=15

Unit-I 15 each

2. Explain different phases of compiler.
3. What is Finite Automata ? Convert NFA (a|b)*abb into equivalent QFA.

Unit-II

4. (a) What is CFG ?
- (b) Explain how regular expressions are used for token specification. 8,7
5. Perform shift-reduce parsing for string $id_1 + id_2 * id_3$ for the following grammar : 15

$$E \rightarrow E + E \mid E * E \mid (E) \mid id$$

Unit-III

6. (a) Explain syntax directed translation scheme.
- (b) Explain three-address codes, triples and quadruples. 6,9

7. Consider the following grammar :

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (E) \mid id$$

and build SLR parsing table for it. 15

Unit-IV

8. (a) List the various error recovery strategies.
- (b) Explain the importance of symbol tables in compiler design. 7,8
9. Explain the various strategies for code generation. 15