Total No. of Printed Pages:2

SUBJECT CODE NO:- H-186
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-II)
Big Data Analytics
[Revised]

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B 1) Solve 3 questions from each section.
2) Question no.1 from section A and Question no.6 from section B, are compulsory.
3) From the remaining questions in section A and B, solve any two questions.

SECTION – A

Q.1	A)	Explain various reasons for why big data matters to business.	05
	B)	Explain the role of hypervisor in virtualization.	05
Q.2	A)	Explain how business data management problems are solved using big data?	07
	B)	Explain different sources of unstructured data with examples.	08
Q.3	A)	Explain following layers of the big data stack in detail: L0: Redundant physical infrastructure L1: Security infrastructure, interfaces and feeds to and from applications	07
	B)	Explain the benefits and challenges of virtualized environments in big data.	08
Q.4	A)	Explain following kinds of structured analysis for big data: 1) Basic Analytics 2) Advanced Analytics	07
	B)	Explain text analytics tools for big data.	08
Q.5	A)	Explain different approaches to analyze big data.	07
	B)	What is NOSQL? Explain different kinds of NoSQL database with examples.	08

SECTION – B

Q.6	A)	Explain the use of Hadoop Archives in HDFS.	05
	B)	Explain the use of distcp in HDFS clusters.	05
Q.7	A)	Why can't we use databases with lots of disks to do large-scale batch analysis? Why is MapReduce needed? Justify your answer.	07
	B)	Explain the working of MapReduce data flow with multiple reduce tasks. Give an example.	08
Q.8	A)	What is Hadoop? Explain the HDFS Architecture in detail.	07
	B)	Justify following statement: HDFS is a file system designed for storing very large files with streaming data access patterns, running on clusters of commodity hardware.	08
Q.9	A)	Explain Hive at Facebook in detail.	07

B) Write a program using Hive to count number of occurrences of words from a given text file. 08

Q.10 Write a short note: 15

A) Explain different steps required for a client to read data from HDFS.
B) Basics of HBase,
C) MapReduce.

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-247
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-II)
Elective-II: Image processing & Pattern Recognition
(Revised)

[Time: Three Hours] **[Max. Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
ii) From the remaining questions solve any two questions from each section.
iii) Assume suitable data if necessary.

Section A

Q.1 Answer the following (any two) 10
a) Relation between neighbour pixels.
b) Explains mean filter with example.
c) Explains laplacian filter.
d) Explain DCT.

Q.2 a) Explain Gray level &slicing with background & without background. Give transform function. 08
b) Explain smoothing filters is spatial domain. 07

Q.3 a) Explain smoothing filters in frequency domain. 08
b) Explain contrast stretching with transform function. 07

Q.4 a) Analyse the given Histogram. 08

Gray level	0	1	2	3
No. of pixel	70	20	7	3

b) Explains image sampling & Quantization. 07

Q.5 a) Derive mask for second order derivative the Laplacian. 08
b) Explain with neat block diagram step in digital Image processing. 07

Section B

Q.6 Solve ant two 10
a) Boundary descriptor
b) Explain chain code
c) Explain seeded region growing
d) Explain Dilation & Erosion

Q.7 a) Explain opening & closing with example. 08
b) Explain region descriptors. 07

Q.8 a) Explain split & merge with example. 08

b) Explain statistical pattern recognition 07

Q.9 a) Explain local & global thresholding. 08

b) Perform Erosion operation on A $\ominus$ B 07

$$A=\begin{matrix}0&0&0&1&0\\1&1&1&1&1\\0&0&0&1&0\\0&0&0&1&0\end{matrix} \quad B=\boxed{0}$$

1

Q.10 a) Explain Bayes decision theory. 08

b) Explain object recognition. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-341
FACULTY OF SCINECE AND TECHNOLOGY
B.E. (IT) (Sem-I)
Cloud Computing
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Solve three questions from each section.
2. Q.No.1 from section A and Q.No.6 from section B are compulsory.
3. From the remaining questions in section A and B, solve any two questions.

Section -A

Q.1 Solve **any two**
- a) Explain identify - as –a service in detail 05
- b) Explain distributed computing. 05
- c) What is virtualization technology? 05

Q.2
- a) What is grid computing & explain in detail. 07
- b) Explain the cloud architecture with the help of block schematics. 08

Q.3
- a) Explain in detail storage as a service. What are the benefits, drawbacks & key characteristics? 07
- b) Explain the services provided by the Amazon infrastructure cloud from a user perspective. 08

Q.4
- a) What is Web – service? Explain in detail SOAP web – service. 07
- b) Explain in detail advantages and drawbacks of virtualization. 08

Q.5
- a) Describe in detail mainframe architecture with a neat diagram. 08
- b) Explain the concept of utility computing and elastic computing in cloud. 07

Section – B

Q.6 Solve **any two**
- a) Explain Hive project in Hadoop 05
- b) Explain data security & storage in cloud 05
- c) Explain google application portfolio the dark web. 05

Q.7
- a) Define Hadoop. Explain in detail Architecture of Hadoop. 08
- b) Define Big Data. Explain in detail characteristics of big data. 07

Q.8
- a) Enlist various security challenges in cloud computing. 08

	b)	Explain in detail infrastructure security at network level.	07
Q.9	a)	Explain in detail about google analytics.	08
	b)	Explain productivity application and services of google web services.	07
Q.10	a)	Explain in detail about Relational operation using Map Reduce.	08
	b)	Explain pig project in Hadoop.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-376
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-I)
Geographical Information Systems
[OLD]

[Time : Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 &Q.No.6 are compulsory.
2. Attempt any two questions from Q.No.2 to Q.No.5 and from Q.No.7 to Q.No.10 of each section.
3. Figures to the right indicate full marks.

Section A

Q.1 Attempt any five questions from the following: 10

a) What is GIS? List its components?
b) What is spatial data?
c) What are spatial data structures?
d) What do you mean by third and fourth dimensions in GIS?
e) What is GIS model?
f) List disadvantages of raster data structure.
g) What are methods of data input?

Q.2 a) With the help of suitable example explain GIS application. 08

b) Define scale. Explain the following terms with example 07
i. Ratio scale.
ii. Verbal scale.
iii. Graphical scale.

Q.3 a) Explain maps & their influence on the characteristics of spatial data. 07
b) What are reprojection and transformation? 08

Q.4 a) List the main features of object oriented approach to databases. 07
b) Explain data stream in brief. 08

Q.5 a) Explain the following concepts : 08
i. Client –server web GIS.
ii. Networked web GIS.

b) Explain the characteristics of relational database model? Why have relational databases dominated in GIS. 07

Section B

Q.6 a) What are the ways in which process models can be linked with GIS? 05

b) Define the following terminologies with reference to data analysis. 05
   i. Entity
   ii. Cell
   iii. Feature
   iv. Data layer
   v. Attribute

Q.7 a) How are surfaces analyzed in GIS? 08

b) Explain how the distance and area are measured in GIS. 07

Q.8 a) Explain Raster map overlay. 07

b) Explain modeling of human processes w. r. t 08
   i. Spatial interaction model.
   ii. Gravity model.

Q.9 a) Explain the following map design elements: 08
   i. Frame of reference.
   ii. Projection used.
   iii. The features to be mapped.

b) Describe how spatial model can be used to forecast the behaviour of physical system. 07

Q.10 a) Describe working of remote sensing. 08

b) How can surface date be analyzed in GIS? 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-414
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-I)
E-Business Management
[OLD]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: i) Q. No.1 and Q.No.6 are compulsory.
ii) Attempt any two Questions from the remaining questions in each section.
iii) Assume suitable data if necessary.

Section – A

Q.1	(a) Define e-Business, compare and contrast between e-Business and e-commerce.	05
	(b) What are the elements for an e-Business solution.	05
Q.2	(a) What are the objectives of e-Business models? Describe various e-Business models.	08
	(b) Explain e-Business architecture with suitable diagram.	07
Q.3	(a) Define customer relationship management. Explain its phases.	07
	(b) Explain in detail, order acquisition process.	08
Q.4	(a) What is e-Business strategy? Explain its types.	08
	(b) Explain strategic planning process in detail.	07
Q.5	Write short notes on the following (Any three): i) Characteristics of e-Business. ii) Cyber mediaries Business models. iii) CRM process competencies. iv) Transaction cost Economics.	15

SECTION B

Q.6	(a) What is enterprise resource planning? Explain its elements.	05
	(b) What are the capabilities of COTS ERP solutions? Explain.	05
Q.7	(a) What is the significance of supply chain management? Explain supply chain planning.	08
	(b) Explain (i) e-supply chain fusion. (ii) Problems in supply chain management.	07
Q.8	(a) What is e-procurement? Explain e-procurement infrastructure.	07
	(b) What is the objective of knowledge management? Explain its elements.	08
Q.9	(a) Define Business process. Discuss five levels of business process management.	07
	(b) Explain (i) Types of Business processes. (ii) Business management strategy (six sigma).	08

Q.10 Write short notes on the following (Any three): 15

(i) Classification of e-Market.

(ii) e-Business security

(iii) ERP implementations.

(iv) Three Layer BI solutions architecture.

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-467
FACULTY OF SCINECE AND TECHNOLOGY
B.E. (IT) (Sem-I)
Elective-I: Artificial Neural Network & Fuzzy Logic
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.no 1 and Q.6 are compulsory
2. Attempt any two questions from the remaining in each sections.

Section -A

Q.1	a.	Applications of soft computing	05
	b.	What is FFNN	05
	c.	What is bidirectional associative memory	05
Q.2	a)	Explain various type soft computing techniques.	07
	b)	Explain any two models of neuron	08
Q.3	a)	Explain in detail Hopfield network	08
	b)	Describe pattern classification.	07
Q.4	a.	Explain the structure and working of biological neural network	08
	b.	What is feedback NN and energy function.	07
Q.5	a)	Describe the Architecture of FBNN.	08
	b)	Describe the basic learning laws.	07

Section – B

Q.6	a.	What is SOM.	05
	b.	Applications of fuzzy control	05
	c.	What is fuzzy relational data model.	05
Q.7	a)	Applications of self-organizing map.	07
	b)	Describe fuzzification and defuzzification to crisp sets.	08
Q.8	a)	What are the different operations are used in fuzzy relational data model.	08
	b)	Describe Tsukomo to fuzzy model.	07
Q.9	a)	Explain the competitive learning with example.	08
	b)	What is input space partitioning and fuzzy modeling.	07
Q.10	a)	Describe design theory for fuzzy relational database	08
	b)	Explain mamdani fuzzy model.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-468
FACULTY OF SCIENCE AND TECHNOLOGY
B.E.(IT) (Sem-I)
Elective-I: Compiler Construction
[OLD]

[Time:Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 &Q.No.6 are compulsory.
2. Attempt any two questions from each section.
3. Assume suitable data if necessary.

Section A

Q.1 a) With suitable example, explain tokens, patterns and lexemes. 05
b) Explain in short compiler and translator. 05

Q.2 a) With suitable diagram, state and define all phases of complier. 08
b) How to recognize tokens? Draw the transition diagram for identifiers and operators. 07

Q.3 a) Write the algorithm to compute FIRST & FOLLOW position for a nonterminal. Explain suitable example. 07

b) Consider the grammar given below: 08
$E \rightarrow E + T/T$
$T \rightarrow T * F/F$
$F \rightarrow (E)/Td$
Construct LR passing table for above grammar. Give the moves of LR parsers on $id * id + id$

Q.4 a) Give SDT scheme for desk calculator. Illustrate the scheme for the input "$232 + 23 * 5$" along with its parse tree. 08

b) Define and discuss about Three-Address Code, Quadruples and Triples. 07

Q.5 Write short note on following: 15
a) Derivations and Parse Tree
b) Automatic Parser Generator YACC
c) SDT scheme for while-Do statement

Section B

Q.6	a)	Define symbol table. What type of information is stored in symbol table?	05
	b)	With suitable example, explain basic blocks and flow graphs.	05
Q.7	a)	Explain implementation of a simple stack allocation scheme.	08
	b)	What are the different data structures available for symbol table?	07
Q.8	a)	Explain principal sources of optimization.	08
	b)	Discuss about application of DAGs.	07
Q.9	a)	Describe the working of a simple code generator in brief.	08
	b)	Explain various problems in code generation.	07
Q.10	Write short notes on:		15
	a)	Types of errors	
	b)	Loop unrolling & loop jamming	
	c)	Register allocation and assignments	

Total No. of Printed Pages:01

SUBJECT CODE NO:- H-469
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-I)
Elective-I: Object Oriented Analysis & Modeling
[OLD]

[Time: Three Hours] **[Max. Marks: 80]**

Please check whether you have got the right question paper.

N.B
1. Question 1 from Section A and Question 6 from Section B are compulsory.
2. Assume suitable data if necessary.
3. Solve any two questions from each section from remaining question.

Section A

Q.1	Solve any two.		10
	a)	Explain aggregation and decomposition by giving suitable example.	
	b)	What are different measuring qualityof an abstraction?	
	c)	Explain interface and implementation of class.	
Q.2	a)	Explain the meaning of Abstraction and typing.	07
	b)	What is complexity? Why the S/w is inherently complex? Explain in detail.	08
Q.3	a)	Describe the relationships among the classes in UML representation with example.	08
	b)	Explain staffing &reuse concept in project development.	07
Q.4	a)	Explain state transition diagram with all notations &example.	07
	b)	Describe different methods of object oriented analysis.	08
Q.5	a)	Draw and explain object and interaction diagram for library management system.	08
	b)	Construct and explain use case diagram for ATM system.	07

Section B

Q.6	Solve any two.		10
	a)	How to organize the catalog of design pattern	
	b)	Compare structure and behavioral design pattern	
	c)	Explain applicability of strategy.	
Q.7	a)	Explain structure and participants of abstract factory.	08
	b)	What is creational pattern? Compare prototype and singleton pattern.	07
Q.8	a)	Describe collaboration &consequences of proxy pattern in detail.	07
	b)	Explain in detail design problems of document editor.	08
Q.9	a)	What is behavioral pattern? Compare command &observer pattern.	07
	b)	What are the consequences of strategy design pattern & explain what is wrong with copy & paste.	08
Q.10	Explain Adapter as a structural design pattern with Intent, applicability, structure, collaborations, consequences & implementation.		15

Total No. of Printed Pages:01

SUBJECT CODE NO:- H-626
FACULTY OF SCIENCE AND TECHNOLOGY
BE. (IT) (Sem-I)
Geographical Information System
[CGPA]

[Time: Three Hours] **[Max. Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Q 1 and Q 6 are compulsory Questions.
ii) Attempt any two questions from Q 2 to Q 5 and from Q 7 to Q 10.
iii) Assume suitable data wherever necessary.

SECTION - A

Q.1 Explain 10
(i) Components of GIS.
(ii) Sources of spatial data.

Q.2 A) Explain spatial data models. 08
B) What is spatial data? Explain spatial data structures. 07

Q.3 A) Explain modeling the third and forth dimensions in GIS. With suitable example. 07
B) What is data editing in GIS? Explain its process. 08

Q.4 A) Explain features of web GIS also mention its development steps. 08
B) Explain integrated Data base in GIS. 07

Q.5 Write short notes on the following (Any Three): 15
1. Thematic characters 4 maps.
2. Computer worlds.
3. GIS database applications.
4. Maps.

SECTION – B

Q.6 Explain measurement concepts in GIS. 10

Q.7 A) Explain the concept of Buffering and Neighborhood functions with suitable example. 08
B) Explain map overlay concept in GIS. 07

Q.8 A) Explain spatial interpolation. With suitable example. 07
B) What is analytical modeling? Explain modeling human process. 08

Q.9 A) With a suitable application example, explain modeling decision – making process in GIS. 08
B) What is remote sensing? Explain principles of remote sensing. 07

Q.10 Write short notes on the following (Any Three): 15
1. Imaging system / sensors.
2. Landsat program.
3. Spatial multimedia.
4. Non-cartographic output.

Total No. of Printed Pages: 02

SUBJECT CODE NO:- H-658
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (IT) (Sem-I)
Elective-I Compiler Design
[CGPA]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q. No. 1 and Q. 6 are compulsory
2. Attempt any other two questions from each section.
3. Assume suitable data if necessary.
4. Figure to the right indicate full marks.

Section A

Q.1	a)	Explain the working of shift- reduce parser with neat diagram.	05
	b)	List and explain any five compiler construction tools.	05
Q.2	a)	Draw the transition diagram to recognize following tokens- relational operators, unsigned number and 08 white spaces.	08
	b)	Explain NFA to DFA conversion algorithm.	07
Q.3	a)	What is top-down parsing? What are the problems with top-down parsing?	08
	b)	What are translators? Explain compilation and execution process.	07
Q.4	a)	Write short note on FIRST & FOLLOW functions.	08
	b)	What is automatic parser generator yacc? Write an example yacc program.	07
Q.5	Write short note on: (any three)		15

1) Bootstrapping
2) Boolean Expressions with control flow method.
3) CASE statement
4) Ambiguity in grammar.

Section B

Q.6	a)	List and explain various data structures of symbol table.	10
	b)	Write a short note on error detection and recovery.	
Q.7	a)	What is Peephole optimization? Discuss some example of program transformation that are characteristic of peephole optimization.	05
	b)	Elaborate on principle sources of optimization.	05

Q.8 a) Write the semantic rules for the given productions: 08

$L \rightarrow E_n$
$E \rightarrow E_1 + T$
$E \rightarrow T$
$T \rightarrow T_1 * F$
$T \rightarrow F$
$F \rightarrow (E)$
$F \rightarrow digit$

b) Write short notes on- 'Global data flow analyses'. 07

Q.9 a) What are object programs? Explain the environment of code generator. 07

b) Write a short note on three address code with example. 08

Q.10 Write short notes on (any three) 15

a) Register allocation and assignment
b) Implementation of simple stack allocation scheme.
c) Flow graphs
d) Input buffering