CBCS SCHEME

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15CS71

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Web Technology And Its Applications

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a. Briefly explain the history of markup languages.   (04 Marks)
     b. Write a note on XHTML and HTML5.   (04 Marks)
     c. Explain : i) <a>   ii) <img>   iii) <p>   iv) <div> elements with examples.   (08 Marks)

OR

2   a. With an example explain different levels of style sheets.   (08 Marks)
     b. List the different selectors available in CSS and explain in detail   (08 Marks)

Module-2

3   a. Explain different form widgets created with the <input> tag.   (08 Marks)
     b. Write HTML code for the following table :

Time Day		9.00 am to 1.15 pm	2.00 pm to 5.00 pm
Mon to Fri	Sub	Theory class	ML/WTA Lab
	FI	ABC/EFG/XYZ	AD block, 1st *floor
Sat	Sub	Extra curricular activity	
	FI		

(08 Marks)

OR

4   a. Discuss the difference between relative and absolute positioning.   (08 Marks)
     b. What does floating an element do in CSS? How do you float an element?   (08 Marks)

Module-3

5   a. Discuss the advantages and disadvantages of client – side scripting.   (08 Marks)
     b. Write a JavaScirpt code that displays text "VTU BELAGAVI" with increasing font size in
         the interval of 100 ms in blue color, when the font size reaches 50 pt it should stop.
                                                                                            (08 Marks)

OR

6   a. With a neat diagram, explain client and server script execution.   (08 Marks)
     b. Write a PHP program to greet the user based on time.   (08 Marks)

Module-4

7   a. Explain $_GET and $_POST superglobal arrays.   (08 Marks)
    b. How do you read or write a file on the server from PHP? Give example.   (08 Marks)

OR

8   a. Write a PHP program to create a class STUDENT with the following specification.
        Data members   : Name, Roll number, Average marks
        Member function   : Read(getters) and write (setters)
        Use the above specification to read and print the information of 2 students.   (08 Marks)
    b. How do you achieve data encapsulation in PHP? Give example.   (08 Marks)

Module-5

9   a. What are HTTP cookies? How do you handle them in PHP?   (08 Marks)
    b. Why is state is a problem for web applications? Explain.   (08 Marks)

OR

10 a. What does $( ) short and stand for in JQuery? Explain any 3 JQuery form selectors.
                                                                               (08 Marks)
    b. Write DTD for the following XML code.
        <?XML version ="1.0" encoding ="ISO- 8859 – 1"?>
        <art>
              <painting id ="290">
               <title> Balcony </title>
                <artist>
                 <name> Manet</name>
                 <nationality> France</nationality>
                </artist>
               <year> 1868 </year>
               <medium> oil on canvas </medium>
              </painting>
        </art>   (08 Marks)

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

15CS72

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Advanced Computer Architecture

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. List the performance factors and system attributes. Explain how performance factors are influenced by system attributes. **(08 Marks)**
   b. Explain the architecture of vector super computer with neat diagram. **(08 Marks)**

OR

2 a. What are the conditions of parallelism? Explain the types of data dependence. **(06 Marks)**
   b. What are the metrics affecting scalability of a computer system? **(06 Marks)**
   c. What are the important characteristics of parallel algorithms? **(04 Marks)**

Module-2

3 a. What are the characteristic of CISC and RISC architecture? **(04 Marks)**
   b. What are the virtual memory models for multiprocessor system? **(04 Marks)**
   c. Explain address translation mechanism using TLB and page table. **(08 Marks)**

OR

4 a. Explain typical superscalar RISC processor architecture. **(08 Marks)**
   b. Explain inclusion, coherence and locality properties. **(08 Marks)**

Module-3

5 a. What is arbitration? Explain different types of arbitration. **(08 Marks)**
   b. Explain sequential and weak consistency models. **(08 Marks)**

OR

6 a. What are the different techniques for branch prediction? Explain. **(08 Marks)**
   b. Explain multiply pipeline design to multiply two 8-bit integers. **(08 Marks)**

Module-4

7 a. Explain routing in omega network. **(08 Marks)**
   b. What are different vector – access memory schemes? Explain any two of them. **(08 Marks)**

OR

8 a. What are the implementation models of SIMD? Explain them. **(08 Marks)**
   b. Explain four context-switching policies. **(08 Marks)**

Module-5

9 a. What are the issues in using shared-variable model? **(08 Marks)**
   b. Explain different phases of parallelizing compiler with a diagram. **(08 Marks)**

OR

10 a. Explain testing algorithm for dependence testing. **(08 Marks)**
   b. What are the principles of synchronization mechanisms? Explain them. **(08 Marks)**

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15CS73

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Machine Learning

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Specify the learning task for 'A checkers learning problem'.   (03 Marks)
    b. Discuss the following with respect to the above,
        (i)   Choosing the training experience.
        (ii)   Choosing the target function and
        (iii) Choosing a function approximation algorithm.   (09 Marks)
    c. Comment on the issues in machine learning.   (04 Marks)

OR

2   a. Write candidate elimination algorithm. Apply the algorithm to obtain the final version space
        for the training example.   (10 Marks)

Sl. No.	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

    b. Discuss about an unbiased Learner.   (06 Marks)

Module-2

3   a. What is a decision tree & discuss the use of decision tree for classification purpose with an
        example.   (08 Marks)
    b. Write and explain decision tree for the following transactions: (08 Marks)

Tid	Refund	Martial status	Taxable Income	Cheat
1	Yes	Single	125 K	No
2	No	Married	100 K	No
3	No	Single	70 K	No
4	Yes	Married	120 K	No
5	No	Divorced	95 K	Yes
6	No	Married	60 K	No
7	Yes	Divorced	220 K	No
8	No	Single	85 K	Yes
9	No	Married	75 K	No
10	No	Single	90 K	Yes

OR

4   a. For the transactions shown in the table compute the following :
        (i)   Entropy of the collection of transaction records of the table with respect to
              classification.
        (ii) What are the information gain of a_1 and a_2 relative to the transactions of the table?
                                                                                             (08 Marks)

Instance	1	2	3	4	5	6	7	8	9
a_1	T	T	T	F	F	F	F	T	F
a_2	T	T	F	F	T	T	F	F	T
Target class	+	+	−	+	−	−	−	±	−

    b. Discuss the decision learning algorithm.   (04 Marks)
    c. List the issues of decision tree learning.   (04 Marks)

Module-3

5 a. Draw the perceptron network with the notation. Derive an equation of gradient descent rule to minimize the error. **(08 Marks)**

   b. Explain the importance of the terms : (i) Hidden layer (ii) Generalization (iii) Overfitting (iv) Stopping criterion **(08 Marks)**

OR

6 a. Discuss the application of Neural network which is used for learning to steer an autonomous vehicle. **(06 Marks)**

   b. Write an algorithm for back propagation algorithm which uses stochastic gradient descent method. Comment on the effect of adding momentum to the network. **(10 Marks)**

Module-4

7 a. What is Bayes theorem and maximum posterior hypothesis? **(04 Marks)**

   b. Derive an equation for MAP hypothesis using Bayes theorem. **(04 Marks)**

   c. Consider a football game between two rival teams: Team 0 and Team 1. Suppose Team 0 wins 95% of the time and Team 1 wins the remaining matches. Among the games won by team 0, only 30% of them come from playing on teams 1's football field. On the otherhand, 75% of the victories for team 1 are obtained while playing at home. If team 1 is to host the next match between the two teams, which team will most likely emerge as the winner? **(08 Marks)**

OR

8 a. Describe Brute-force MAP learning algorithm. **(04 Marks)**

   b. Discuss the Naïve Bayees classifier. **(04 Marks)**

   c. The following table gives data set about stolen vehicles. Using Naïve bayes classifier classify the new data (Red, SUV, Domestic) **(08 Marks)**

Table

Color	Type	Origin	Stolen
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

Module-5

9 a. Write short notes on the following:
   (i) Estimating Hypothesis accuracy.
   (ii) Binomial distribution. **(08 Marks)**

   b. Discuss the method of comparing two algorithms. Justify with paired to tests method. **(08 Marks)**

OR

10 a. Discuss the K-nearest neighbor language. **(04 Marks)**

   b. Discuss locally weighted Regression. **(04 Marks)**

   c. Discuss the learning tasks and Q learning in the context of reinforcement learning. **(08 Marks)**

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15CS742

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Cloud Computing and Its Applications

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Explain cloud computing reference model with neat diagram.   (10 Marks)
    b.   Write a note on the challenges in cloud computing.   (06 Marks)

OR

2   a.   Explain Microsoft Hyper V architecture.   (10 Marks)
    b.   Explain pros and cons of virtualization.   (06 Marks)

Module-2

3   a.   Explain community cloud and list out the benefits.   (10 Marks)
    b.   Discuss about the economics of the cloud.   (06 Marks)

OR

4   a.   Explain the aneka framework overview.   (10 Marks)
    b.   Discuss about the logical organization of an aneka cloud.   (06 Marks)

Module-3

5   a.   Explain the domain decomposition techniques for parallel computation.   (10 Marks)
    b.   What is multiprocessing? Describe the different techniques for implementing multiprocessing.   (06 Marks)

OR

6   a.   Explain the computing categories for task computing.   (06 Marks)
    b.   Explain reference model of a workflow system.   (10 Marks)

Module-4

7   a.   List out the open challenges in data intensive computing.   (06 Marks)
    b.   Explain the Google Bigtable architecture.   (10 Marks)

OR

8   a.   Explain the map reduce programming model.   (10 Marks)
    b.   Explain any three distributed file systems.   (06 Marks)

Module-5

9   a.   Write a note about the prominent cloud computing platforms.   (06 Marks)
    b.   Explain the windows azure platform architecture.   (10 Marks)

OR

10   a.   Describe how cloud computing technology can be applied to remote ECG monitoring.   (08 Marks)
    b.   Explain animoto media application that use cloud technologies.   (08 Marks)

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CBCS SCHEME

15CS754

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Storage Area Networks

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. What is a data center? Explain key characteristics of data center elements with diagram.
                                                                            (08 Marks)
    b. What is a file system? Explain the process of mapping user files to the disk storage.
                                                                            (08 Marks)

OR

2   a. What is RAID? Explain the RAID levels with reference to nested RAID, RAID3, RAID5 with neat diagram.   **(08 Marks)**
    b. With neat diagram, explain the structure of read and write operations with cache.   **(08 Marks)**

Module-2

3   a. Explain FC connectivity options with relevant diagram.   **(08 Marks)**
    b. Explain block-level storage virtualization with neat diagram. Explain VSAN in brief.
                                                                            (08 Marks)

OR

4   a. What is FCoE? Explain the components of FCoE with neat diagram.   **(08 Marks)**
    b. What is NAS? Explain the benefits of NAS.   **(08 Marks)**

Module-3

5   a. What is business continuity? Explain the BC Terminology in detail.   **(08 Marks)**
    b. Explain Backup and Restore operations with neat diagram.   **(08 Marks)**

OR

6   a. What is data deduplication? Explain the implementation of data deduplication.   **(08 Marks)**
    b. Explain Synchronous + Asynchronous and Synchronous + Disk Buffered methods of three-site replication with neat diagram.   **(08 Marks)**

Module-4

7   a. What is cloud computing? Explain the characteristics and benefits of cloud computing?
                                                                            (08 Marks)
    b. Explain the various cloud service models available.   **(08 Marks)**

OR

8   a. Explain the public cloud and private cloud deployment models in cloud computing.
                                                                            (08 Marks)
    b. Explain the cloud computing infrastructure in detail.   **(08 Marks)**

Module-5

9   a. Explain FC SAN security architecture with neat diagram.   **(08 Marks)**
    b. Explain the concept of Kerberos with neat diagram.   **(08 Marks)**

OR

10 a. Explain the storage management activities in detail.   **(08 Marks)**
    b. Explain Information Lifecycle Management (ILM) in detail with challenges. **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Advanced Computer Architectures

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing*
ONE full question from each module.

Module-1

1 a. Explain the evolution of computer architecture. (08 Marks)
   b. Explain with diagram the operational model of SIMD super computer. (08 Marks)

OR

2 a. Explain the Bernstein's conditions for parallelism. Detect the parallelism in the following code using Bernstein's conditions. (Assume no pipeline).
   $P_1 : C = D \times E$; $P_2 : M = G + C$; $P_3 : A = B + C$; $P_4 : C = L + M$; $P_5 : G \div E$. (08 Marks)
   b. With a diagram, explain the operation of tagged token data flow computer. (08 Marks)

Module-2

3 a. Distinguish between typical RISC and CISC process architectures. (08 Marks)
   b. With a diagrams, explain the models of a basic scalar computer system. (08 Marks)

OR

4 a. With a diagram, explain a typical superscalar RISC processor architecture consisting of an integer unit and a floating point unit. (10 Marks)
   b. With a diagram, explain the hierarchical memory technology. (06 Marks)

Module-3

5 a. Explain with diagram, the backplane bus specification. (08 Marks)
   b. With the diagrams, explain the central arbitration and distribution arbitration. (08 Marks)

OR

6 a. For the reservation table of a non–linear pipeline shown below :

	1	2	3	4	5	6
S_1	X					X
S_2		X			X	
S_3			X			
S_4				X		
S_5		X				X

   i)   What are the forbidden latencies? Write initial collision vector
   ii) Draw the state transition diagram
   iii) List all simple cycles and greedy cycles
   iv) Determine MAL. (10 Marks)
   b. Explain prefetch buffer and internal data forwarding mechanisms used in instruction pipelining. (06 Marks)

1 of 2

Module-4

7 a. Explain crossbar networks and cross-point switch design in multiprocessor system.

(08 Marks)

   b. With necessary sketches, explain the cache-coherence problems in data sharing and in process migration. (08 Marks)

OR

8 a. With a diagram, explain the architecture of the connection machine CM-2. (08 Marks)

   b. Explain the context–switching policies. (08 Marks)

Module-5

9 a. Explain the concurrent OOP and an actor model in object – oriented model. (08 Marks)

   b. Explain the fairness policies and sole-access –protocols in the principles of synchronization. (08 Marks)

OR

10 a. What are the major hurdles of pipelining? Illustrate the branch hazards in detail. (08 Marks)

   b. Explain the dynamic scheduling of a pipeline using Tomasulo's algorithm. (08 Marks)

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CBCS SCHEME

Seventh Semester B.E. Degree Examination, June/July 2019
Machine Learning

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Define machine learning. Describe the steps in designing learning system. **(08 Marks)**
    b. Write Find-S algorithm and explain with example. **(04 Marks)**
    c. Explain List-Then-Eliminate algorithm. **(04 Marks)**

OR

2   a. List out any 5 applications of machine learning. **(05 Marks)**
    b. What do you mean by hypothesis space, instance space and version space? **(03 Marks)**
    c. Find the maximally general hypothesis and maximally specific hypothesis for the training examples given in the table using candidate elimination algorithm. **(08 Marks)**

Day	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

Module-2

3   Construct decision tree for the following data using ID3 algorithm.

Day	A1	A2	A3	Classification
1	True	Hot	High	No
2	True	Hot	High	No
3	False	Hot	High	Yes
4	False	Cool	Normal	Yes
5	False	Cool	Normal	Yes
6	True	Cool	High	No
7	True	Hot	High	No
8	True	Hot	Normal	Yes
9	False	Cool	Normal	Yes
10	False	Cool	High	No

(16 Marks)

OR

4   a. Explain the concept of decision tree learning. Discuss the necessary measure required to select the attributes for building a decision tree using ID3 algorithm. **(08 Marks)**
    b. Discuss the issues of avoiding over fitting the data, handling continuous data and missing values in decision trees. **(08 Marks)**

Module-3

5   a. Explain artificial neural network based on perception concept with diagram. **(06 Marks)**
    b. What is gradient descent and delta rule? Why stochastic approximation to gradient descent is needed? **(04 Marks)**
    c. Describe the multilayer neural network. Explain why back propagation algorithm is required. **(06 Marks)**

1 of 2

OR

6 a. Derive the back propagation rule considering the output layer and training rule for output unit weights. (08 Marks)
   b. What is squashing function 3 why is it needed? (04 Marks)
   c. List out and explain in briefly representation power of feed forward networks. (04 Marks)

Module-4

7 a. Explain maximum a posteriori (MAP) hypothesis using Bayes theorem. (06 Marks)
   b. Estimate conditional probabilities of each attributes {colour, legs, height, smelly} for the species classes: {M, H} using the data given in the table. Using these probabilities estimate the probability values for the new instance – (Colour = Green, Legs = 2, Height = Tall and Smelly = No) (10 Marks)

No	Colour	Legs	Height	Smelly	Species
1	White	3	Short	Yes	M
2	Green	2	Tall	No	M
3	Green	3	Short	Yes	M
4	White	3	Short	Yes	M
5	Green	2	Short	No	H
6	White	2	Tall	No	H
7	White	2	Tall	No	H
8	White	2	Short	Yes	H

OR

8 a. Explain Naive Bayes classifier and Bayseian belief networks. (10 Marks)
   b. Prove that how maximum likelihood (Bayesian learning) can be used in any learning algorithms that are used to minimize the squared error between actual output hypothesis and predicted output hypothesis. (06 Marks)

Module-5

9 a. Explain locally weighted linear regression. (08 Marks)
   b. What do you mean by reinforcement learning? How reinforcement learning problem differs from other function approximation tasks. (05 Marks)
   c. Write down Q-learning algorithm. (03 Marks)

OR

10 a. What is instance based learning? Explain K-Nearest neighbour algorithm. (08 Marks)
   b. Explain sample error, true error, confidence intervals and Q-learning function. (08 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019
Cloud Computing and its Applications

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Describe cloud computing reference model. List any four characteristics and benefits of cloud computing. **(08 Marks)**
    b.   Describe the three major milestones which have led to cloud computing. **(06 Marks)**
    c.   Define service oriented computing and utility oriented computing. **(02 Marks)**

OR

2   a.   What is virtualization? What are the characteristics of virtualized environments? **(08 Marks)**
    b.   What is an Hypervisor? Explain how hardware virtualization can be achieved. **(08 Marks)**

Module-2

3   a.   Classify the service offered by cloud computing. Explain any one of the service in detail. **(08 Marks)**
    b.   With a neat diagram, describe the private cloud hardware and software stack. List the advantages of private cloud computing infrastructure. **(08 Marks)**

OR

4   a.   Describe Aneka container. Explain briefly the three service offered by the Aneka container. **(08 Marks)**
    b.   Describe the Aneka service model with a neat diagram of service life cycle. **(08 Marks)**

Module-3

5   a.   Describe the relationship between a process and a thread. **(08 Marks)**
    b.   Explain with an example, Domain Decomposition. Write Aneka code to create matrix product class. **(08 Marks)**

OR

6   a.   What is task computing? Describe parameter sweep application with an example. **(10 Marks)**
    b.   List and explain Aneka ready – to – use task libraries. **(06 Marks)**

Module-4

7   a.   Define Data Intensive computing. List any six open challenges in Data Intensive computing. **(08 Marks)**
    b.   Bring out the salient features of Map Reduce programming model with a neat diagram of Map Reduce compworkflow. **(08 Marks)**

OR

8   a.   Explain the Google Big Table Architecture. **(08 Marks)**
    b.   List and explain the parameters that can be controlled during execution of Aneka mapReduce Application. **(08 Marks)**

Module-5

9   a.   Describe any four popular cloud computing products. Indicate their service type. **(08 Marks)**
    b.   Describe in detail the "Simple Storage Service" offered by Amazon S3. **(08 Marks)**

OR

10 a.   Explain online health monitoring system hosted in cloud. **(08 Marks)**
    b.   What are dropbox and icloud? Which kind of problems do they solve by using cloud technologies? **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Object Oriented Modeling and Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. What is object oriented development? List and explain object oriented themes. **(10 Marks)**
   b. Define the following terms with examples:
      i)   Links and associations
      ii) Multiplicity
      iii) Association end names
      iv) Ordering
      v)   Bag and sequence   **(10 Marks)**

2 a. What is an aggregation? Explain aggregation versus associations and aggregation versus composition. **(10 Marks)**
   b. Explain the following terms with an examples:
      i) Meta data   ii) Derived data   iii) Reification   **(06 Marks)**
   c. Draw the state diagram for a telephone line.   **(04 Marks)**

3 a. What do you mean by concurrency? Explain aggregation concurrency with a neat diagram. **(08 Marks)**
   b. What is an interaction model? Explain with a neat diagram sequence diagram for a online stock broker. **(06 Marks)**
   c. Explain the following terms with examples:
      i) Include relationship   ii) Extend relationship   iii) Generalization   **(06 Marks)**

4 a. List and explain the stages involved in software development.   **(10 Marks)**
   b. List the steps to construct a domain class model and explain them briefly. **(10 Marks)**

PART – B

5 a. Explain the steps followed in constructing application interaction model. **(10 Marks)**
   b. With a neat diagram explain the architecture of ATM system.   **(07 Marks)**
   c. Name the three kinds of controls for the external event in a software system. **(03 Marks)**

6 a. What is refactoring? Explain the tasks involved in design optimization. **(10 Marks)**
   b. What are the steps involved in improving the organization of a class design? Explain them briefly. **(10 Marks)**

7 a. What is a pattern? Lists the properties of pattern.   **(10 Marks)**
   b. With a neat diagram, explain the publisher-subscriber design pattern with necessary implementation steps. **(10 Marks)**

8 a. Explain the structure and implementation steps of view handler pattern with a neat diagram. **(10 Marks)**
   b. With a neat diagram explain the counted pointer idiom.   **(10 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Embedded Computing Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Define embedded computing system. Explain the embedded system design process.
                                                                              (10 Marks)
   b. Explain the design process for GPS moving map.   (10 Marks)

2 a. Explain the format of ARM data processing instruction.   (06 Marks)
   b. Differentiate between Von Neumann and Harvard architectures.   (06 Marks)
   c. What is interrupt? With a neat diagram, explain the interrupt mechanism. (08 Marks)

3 a. Write the requirement chart of alarm clock.   (06 Marks)
   b. Explain Bus with DMA controller.   (06 Marks)
   c. Explain:
      i)   Cross compiler
      ii) Timer
      iii) Logic analyzer
      iv) Displays   (08 Marks)

4 a. Explain different types of performance measures on programs.   (06 Marks)
   b. Explain program generation from compilation through loading.   (06 Marks)
   c. Explain different program optimization techniques.   (08 Marks)

PART – B

5 a. Explain the structure of process.   (06 Marks)
   b. What are the factors to be considered for selection of scheduling algorithm? (06 Marks)
   c. What is RTOS? Explain the different services of RTOS.   (08 Marks)

6 a. Explain L shaped usage distribution.   (06 Marks)
   b. Explain:
      i) Message passing
      ii) Counting semaphore   (06 Marks)
   c. With a neat sketch, explain shared memory communication.   (08 Marks)

7 a. With a neat diagram, explain CAN frame format.   (06 Marks)
   b. Explain the distributed embedded architecture.   (06 Marks)
   c. With a neat diagram, explain various fields of IP packet.   (08 Marks)

8 a. What is monitor program based firmware debugging?   (06 Marks)
   b. Explain the different types of files generated in cross compilation.   (06 Marks)
   c. What is simulator? Explain the features, advantages and limitations of simulator based debugging. (08 Marks)

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10CS73

Seventh Semester B.E. Degree Examination, June/July 2019

Programming the Web

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1   a.   What is HTTP? Explain HTTP phases. Mention various methods and status codes of HTTP. **(10 Marks)**
    b.   Give the standard structure of XHTML document. How line breaks, heading and fonts are handled in XHTML? **(10 Marks)**

2   a.   Create XHTML document to describe a table with the following contents: The columns of the table must have the headings pine, maple, Oak and fir. The rows must have the labels average height, average width, typical life span and leaf type. Fill the data cells with some values. **(10 Marks)**
    b.   Write an XHTML document that has six short paragraphs of text. Define three different paragraph styles p_1, p_2 and p_3. The p_1 style must use left and right margins of 20 pixels, a background color of pink and a foreground color of blue. The p_2 style must use left and right margins of 30 pixels, a background color of black and a foreground color of yellow. The p_3 style must use a text indent of 1 centimeter, a background color of green and a foreground color of white. The first and fourth paragraph must use p_1, the second and fifth must use p_2 and the third and sixth must use p_3. **(10 Marks)**

3   a.   Explain the screen output and keyboard input method, with example. **(10 Marks)**
    b.   Write XHTML document and JAVA script code to implement, to count the number of names in the given array that end in either "ie" or "y". **(05 Marks)**
    c.   Write a note on character and character classes. **(05 Marks)**

4   a.   Explain the basic concepts of event handling. List the events and their tag attributes. **(12 Marks)**
    b.   With an example, explain absolute and relative positioning of elements in JAVA script. **(08 Marks)**

PART – B

5   a.   What is the Document Type Definition (DTD)? Describe the approach to declare elements, entities and attributes. **(08 Marks)**
    b.   Create an XML documents that lists advertisement for selling used cars. **(06 Marks)**
    c.   With a neat diagram, explain transformation process by an XSLT processor. **(06 Marks)**

6   a.   Write a perl program which creates a hash table containing country names keys and their capitals as values and perform the following:
         i)   Print all pair of values (country name and capital)
         ii) Accept country name and print the capital of it. **(10 Marks)**
    b.   With an example, explain how files are handled in PERL. **(10 Marks)**

7 a. Describe how files are created, read and write on the server system using PHP. (10 Marks)
   b. Explain any six string function in PHP. (06 Marks)
   c. Explain the different types of scalar types are available in PHP. (04 Marks)

8 a. Discuss the different pattern matching operations are available in ruby with example each.
   (08 Marks)
   b. Build a rail's application to accept book information viz accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search result with proper headings. (12 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019
Advanced Computer Architecture

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO full questions from each part.

PART – A

1   a.   Define instruction set architecture. Illustrate seven dimensions of ISA.   (08 Marks)
    b.   Find the number of dies 350 mm wafer for a die that is 17.5mm on a side and find yield by assuming density of 0.5/cm^2 and manufacturing complexity is 4.   (04 Marks)
    c.   Explain the methods and observations to improve the performance of a system.   (08 Marks)

2   a.   With data path explain classic five stage pipeline for a RISC processor.   (06 Marks)
    b.   Explain the methods to reduce pipeline branch penalties.   (06 Marks)
    c.   List types of exceptions and explain requirements on exceptions.   (08 Marks)

3   a.   Define true data dependences and name data dependences. Explain all possible data hazards.   (07 Marks)
    b.   Explain 2-bit branch prediction scheme with state diagram.   (05 Marks)
    c.   With neat diagram, explain Tomasulo's approach for dynamic scheduling.   (08 Marks)

4   a.   List the falvours of multiple issue processor with basic VLIW approach.   (08 Marks)
    b.   Illustrate how branch target buffer helps in reducing the branch penalties.   (06 Marks)
    c.   Explain how speculation supports for register renaming.   (06 Marks)

PART – B

5   a.   Explain Flynn's classification of computers.   (06 Marks)
    b.   To achieve a speedup of 80 with 100 processor. What fractions of the original computation can be sequential?   (04 Marks)
    c.   Explain directory based cache-coherence protocol.   (06 Marks)
    d.   Write a note on memory consistency.   (04 Marks)

6   a.   Derive the CPU execution time equation by considering memory stall cycles.   (05 Marks)
    b.   Explain write strategy in first-level of the memory hierarchy.   (05 Marks)
    c.   Explain how multilevel cache helps in reducing miss penalty. For 1000 memory references there are 40 misses in the first-level cache and 20 misses in the second-level cache. What are the various miss rates? Assume the miss penalty from the L2 cache to memory is 200 clock cycles, the hit time of the L2 cache is 10 clock cycles, the hit time of L1 is 1 clock cycle and there are 1.5 memory references per instruction what is the average memory access time and average stall cycles per instruction?   (10 Marks)

7   a.   Write the typical multilevel memory hierarchical structure and define 3 C's of misses.   (06 Marks)
    b.   Explain compiler optimization with example.   (06 Marks)
    c.   Give the differences between SRAM and DRAM.   (03 Marks)
    d.   Explain protection via virtual machines.   (05 Marks)

1 of 2

8 a. Consider a loop for (i = 1; i < = 100; i++)

{

A [i] = A[i] + B[i]; /*S1*/

B [i + 1] = C [i] + D [i];} /*S2*/

What are the dependences between S1 and S2? Is the loop parallel? If not show how to make it parallel? **(06 Marks)**

b. List the drawbacks of dependences. **(04 Marks)**

c. Explain software pipelining with loop unrolling. **(10 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Java and J2EE

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Explain three kinds of variables in Java. (06 Marks)
  b. What are arrays? List out the three steps to create an array. (04 Marks)
  c. Describe the process of building and running Java program with an example. (04 Marks)
  d. Discuss different access specifiers in Java. (06 Marks)

2 a. Define an Applet. Explain the skeleton of an applet with example program. (08 Marks)
  b. Explain the types of exceptions in Java. (06 Marks)
  c. What is difference between a superclass and subclass? Write a program to demonstrate the same. (06 Marks)

3 a. What are threads? Explain how to make the class threadable. (07 Marks)
  b. What is synchronization? Explain producer consumer problem with a program. (09 Marks)
  c. Write short notes on sources of events. (04 Marks)

4 a. What are swing components? Explain atleast 4 swing components. (06 Marks)
  b. What are containers? Explain a simple container. (06 Marks)
  c. Write a short note on :
     i) JTabbedPane
     ii) JScrollPane
     iii) JList
     iv) JComboBox. (08 Marks)

PART – B

5 a. Explain JDBC process in detail. (12 Marks)
  b. Write a short notes on :
     i) J2EE
     ii) J2SE
     iii) ResultSet
     iv) ResultSetMetaData. (08 Marks)

6 a. Explain the difference between the applet and servlet. (04 Marks)
  b. With a diagram, explain servlet life cycle. (08 Marks)
  c. With a program, explain handling HTTP requests and responses. (08 Marks)

7 a. Why we use JSP? Explain JSP tags. (08 Marks)
  b. Explain Apache Tomcat with example program. (06 Marks)
  c. Write a short notes on :
     i) Session and cookies in JSP
     ii) RMI. (06 Marks)

8 a. What is EJB? Explain three types of EJB that are suited to different purposes. (07 Marks)
  b. Explain session beans with an example program. (05 Marks)
  c. What are JAR file? Explain the benefits of JAR file format. (08 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019
Storage Area Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. Which core elements are essential for the basic functionality of a data center? Briefly explain with an order processing system. (12 Marks)
   b. What is disk service time? Explain different service times on a disk driver. (08 Marks)

2 a. Compare the RAID0, RAID1, RAID 1+0 and RAID 0+1 based on storage efficiency. Read performance write performance and write penality. (12 Marks)
   b. Briefly explain Read hit and Read miss in cache. (08 Marks)

3 a. With neat diagram explain SCSI communication model. (10 Marks)
   b. What are different types of ports available in Fiber channel? Also mention its uses. (10 Marks)

4 a. What are the benefits of NAS. (10 Marks)
   b. Explain NAS File – sharing protocols. (10 Marks)

PART – B

5 a. Define Archives. Explain different types of Archives with an example. (10 Marks)
   b. Explain the concept of storage virtualization with figure. (10 Marks)

6 a. Explain BC planning life cycle. (12 Marks)
   b. With neat diagram explain LAN based back up topology. (08 Marks)

7 a. Explain different purposes of Local replica for source data. (10 Marks)
   b. Explain Host – based log shipping. (10 Marks)

8   Write a short note on :
   a. Assets
   b. Threats
   c. Vulnerability
   d. Data encryption
                                                                (20 Marks)

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15CS81

Eighth Semester B.E. Degree Examination, June/July 2019
Internet of Things Technology

Time: 3 hrs.

Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1 a. What is IOT? Explain in detail on Genesis of IOT. (08 Marks)
  b. What does IOT and digitaization mean? Elaborate on this concept. (04 Marks)
  c. Write a short note on "IOT impact in Real World". (04 Marks)

OR

2 a. Discuss IOT challenges. (08 Marks)
  b. With a neat diagram, explain architecture of IOT. (04 Marks)
  c. Explain Core IOT functional stack. (04 Marks)

Module-2

3 a. List and explain different types of sensors. (08 Marks)
  b. Elaborate on small physical objects and small virtual objects. (04 Marks)
  c. Explain "IOT Access Technologies". (04 Marks)

OR

4 a. Briefly explain protocol stack utilization IEEE 802.15.4. (08 Marks)
  b. What is SANET? Explain some advantages and disadvantages that a wireless based solution offers. (08 Marks)

Module-3

5 a. Explain working of IP as the IOT network layer. (08 Marks)
  b. Write note on Busines case for IP. (04 Marks)
  c. Discuss need for optimization. (04 Marks)

OR

6 a. Describe application protocols for IOT. (08 Marks)
  b. Discuss the various methods used in IOT application transport. (08 Marks)

Module-4

7 a. What do you mean by data and analytics for IOT? Explain. (04 Marks)
  b. Discuss Bigdata analyties tools and technology. (04 Marks)
  c. With a case study relate the concept of securing IOT. (08 Marks)

OR

8 a. Explain in detail how IT and OT security practices and systems vary in real time. (08 Marks)
  b. Discuss OCTAVE and FAIR formal risk analysis. (08 Marks)

Module-5

9 a. Give a brief note on Arduino UNO.   (04 Marks)
   b. With a neat diagram, explain Raspberry P_i board.   (04 Marks)
   c. With a neat diagram, explain wireless temperature monitoring system using Raspberry P_i.
                                                                           (08 Marks)

OR

10 a. Explain in detail smart city IOT architecture.   (08 Marks)
    b. With the case study explain smart and connected cities using Raspberry Pi.   (08 Marks)

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15CS82

Eighth Semester B.E. Degree Examination, June/July 2019
Big Data Analytics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. How does the Hadoop MapReduce Data flow work for a word count program? Give an example. **(08 Marks)**
  b. Briefly explain HDFS Name Node Federation, NFS Gateway, Snapshots, Checkpoint and Backups. **(08 Marks)**

OR

2 a. What do you understand by HDFS? Explain its components with a neat diagram. **(10 Marks)**
  b. Bring out the concepts of HDFS block replication, with an example. **(06 Marks)**

Module-2

3 a. Explain Apache Squoop Import and Export method with neat diagrams. **(10 Marks)**
  b. Explain with a neat diagram, the Apache Oozie work flow for Hadoop architecture. **(06 Marks)**

OR

4 a. How do you run Map Reduce and Message Passing Interface (MPI) on YARN architecture? Discuss. **(10 Marks)**
  b. What do you understand by YARN Distributed-Shell? **(06 Marks)**

Module-3

5 a. Write any four Business Intelligence Application for various sectors. **(08 Marks)**
  b. Explain the star schema design of Data Warehousing with an example. **(06 Marks)**
  c. What is Confusion Matrix? **(02 Marks)**

OR

6 a. Explain CRISP-DM cycle with a neat diagram. **(08 Marks)**
  b. What do you understand by the term Data Visualization? How is it important in Big data Analytics? **(05 Marks)**
  c. Differentiate between Data Mining and Data Warehousing. **(03 Marks)**

Module-4

7 a. What is a splitting variable? Describe three criteria for choosing a splitting variable. **(04 Marks)**
  b. List some of the advantages and disadvantages of Regression Model. **(04 Marks)**
  c. Create a decision tree for the following data set.

Age	Job	House	Credit	Loan Approved
Young	False	No	Fair	No
Young	False	No	Good	No
Young	True	No	Good	Yes
Young	True	Yes	Fair	Yes
Young	False	No	Fair	No

Age	Job	House	Credit	Loan Approved
Middle	False	No	Fair	No
Middle	False	No	Good	No
Middle	True	Yes	Good	Yes
Middle	False	Yes	Excellent	Yes
Middle	False	Yes	Excellent	Yes
Old	False	Yes	Excellent	Yes
Old	False	Yes	Good	Yes
Old	True	No	Good	Yes
Old	True	No	Excellent	Yes
Old	False	No	Fair	No

Then solve the following problem using the model:

Age	Job	House	Credit	Loan Approved
Young	False	False	Good	???

(08 Marks)

OR

8 a. Explain the design principles of an Artificial Neural Network. **(08 Marks)**

   b. How does the Apriori Algorithm work? Apply the same for the following example.

T_{ID}	List of Item-IDs
T_{100}	I_1, I_2, I_5
T_{200}	I_2, I_4
T_{300}	I_2, I_3
T_{400}	I_1, I_2, I_4
T_{500}	I_1, I_3
T_{600}	I_2, I_3
T_{700}	I_1, I_3
T_{800}	I_1, I_2, I_3, I_5
T_{900}	I_1, I_2, I_3

Assume the support count = 2. **(08 Marks)**

Module-5

9 a. What is Naïve Bayes Technique? Explain its model. **(05 Marks)**

   b. What is a Support Vector Machine? Explain its model. **(08 Marks)**

   c. Mention the 3-step process of Text Mining. **(03 Marks)**

OR

10 a. Explain briefly the three different types of web mining. **(06 Marks)**

   b. Compute the rank values for the Nodes for the following network shown in Fig.Q10(b), which is the Highest ranked node. Solve the same with eight iterations.
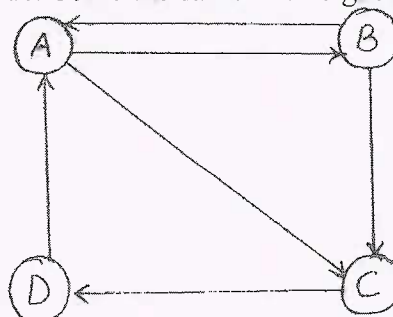

Fig.Q10(b) **(10 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2019
Modern Interface Design

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Explain the Importance and Benefits of good user Interface Design.   (04 Marks)
    b.   Write any four differences between GUI and Webpage Design.   (04 Marks)
    c.   Explain in detail, the characteristics of GUI.   (08 Marks)

OR

2   a.   Explain the concept of Direct Manipulation for Graphical Systems.   (04 Marks)
    b.   Discuss the characteristics of Intranet and Internet and bring out the differences between them.   (04 Marks)
    c.   Discuss the general principles of User Interface Design (any 8).   (08 Marks)

Module-2

3   a.   List and explain the five commandments in designing for people.   (06 Marks)
    b.   Describe in detail, the important human characteristics in user Interface Design (any five).   (10 Marks)

OR

4   a.   Explain the common usability problems in web based systems.   (06 Marks)
    b.   Explain the techniques for determining the user requirements using Indirect methods.   (10 Marks)

Module-3

5   a.   Explain the structure of Menus with illustrations.   (06 Marks)
    b.   Describe the components of a Web Navigation System with illustration.   (10 Marks)

OR

6   a.   Describe the functions of Menus.   (06 Marks)
    b.   List all kinds of Graphical Menus and explain any one in detail.   (10 Marks)

Module-4

7   a.   Explain the components of a window with example.   (08 Marks)
    b.   Discuss briefly about the types of windows with examples (any four).   (08 Marks)

OR

8   a.   Describe overlapping windows and tiled windows presentation styles with examples.   (08 Marks)
    b.   Explain the characteristics of touch Screen and keyboard.   (08 Marks)

Module-5

9   a.   Explain Radio Buttons and List Boxes selection controls.   (08 Marks)
    b.   Explain any two types of testing prototypes used in User Interface Design.   (08 Marks)

OR

10   a.   Explain Slider and Tree View operable controls.   (08 Marks)
    b.   Explain Cognitive Walkthroughs, Think aloud Evaluations and Usability tests conducted in user Interface Design.   (08 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
System Modeling and Simulation

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. What is simulation? Explain the steps involved in simulation study along with flowchart.
                                                                      (10 Marks)

   b. A grocery store has one checkout counter. Customers arrive at the checkout counter at random from 1 to 8 minutes apart and each inter-arrival time has the same probability of occurrence. The service times vary from 1 to 6 minutes, with probability given below.

Service (minutes)	1	2	3	4	5	6
Probability	0.10	0.20	0.30	0.25	0.10	0.05

Simulate the arrival of 6 customers and calculate
   - Average waiting time of customer
   - Probability that a customer has to wait
   - Probability of a server being Idle
   - Average service time.

Use the following sequence of random numbers.

Random digit for Arrival	913	727	015	948	309	922
Random digit for service time	84	10	74	53	17	79

Assume that the first customer arrives at time 0. Depict the simulation in a tabular form.
                                                                      (10 Marks)

2 a. Explain event scheduling algorithm by generating system snapshots at clock = t and clock = t_1.   **(05 Marks)**

   b. What is world view? Explain three phases of activity scanning approach.   **(05 Marks)**

   c. Six dump trucks are used to have coal from the entrance of a mine to a rail road. Each truck is loaded by one of the two loaders. After loading, truck immediately moves to the scale, to be weighted as soon as possible. Both the loaders and scale have first-come first-served waiting line for trucks. Travel time from a loader to scale is considered negligible. After being weighed, a truck begins travel time (during which time truck unloads) and then afterwards return to loader queue. The activities of loading, weighing and travel time are given in the following table.

Loading time	10	5	5	10	15	10	10
Weighing time	12	12	12	16	12	16	
Travel time	60	100	40	40	80		

Depict the simulation table and estimate the loader and scale utilization. Assume 5 trucks at loaders and one is at the scale, at time '0' stopping time T_E = 52 min.   **(10 Marks)**

3   a. Define the following terms:
        (i)   Discrete random variable
        (ii) Continuous random variable
        (iii) Cumulative Distribution function   (06 Marks)
    b. Explain Poisson Distribution   (04 Marks)
    c. Define continuous distribution and explain uniform distribution, exponential distribution and
        normal distribution.   (10 Marks)

4   a. List out the characteristics of queuing system and explain the following :
        (i)   Queue behaviour and queue discipline
        (ii) Service time and service mechanism   (10 Marks)
    b. Explain the Queuing Notations   (05 Marks)
    c. Write a note on Networks of queues   (05 Marks)

PART – B

5   a. Generate the Random numbers for these values with seed = 37, constant multiplier = 7,
        Increment 29 and modulus = 100.   (08 Marks)
    b. Differentiate between Chi-square and Kolmogrov-Smirnov test.   (04 Marks)
    c. Using X_0^2 test, test for hypothesis that the data given follows uniform distribution at
        $\alpha = 0.05$ the critical value is 16.9

O_i	8	8	10	9	12	8	10	14	10	11

                                                                                 (08 Marks)

6   a. Explain in detail the inverse transform technique for exponential distribution.   (10 Marks)
    b. List the steps involved in the development of a useful model of input data.   (04 Marks)
    c. Explain how the method of histogram can be used to identify the shape of distribution.
                                                                                 (06 Marks)

7   a. Briefly explain the measures of performance of a simulation system.   (10 Marks)
    b. Explain the distinction between terminating (or) transient simulation and steady state
        simulation. Give examples.   (10 Marks)

8   a. Explain with a neat diagram, model building verification and validation process.   (10 Marks)
    b. Describe the 3 steps approach to validation by Naylor and Finger.   (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019

Software Architecture

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. With the help of a neat block diagram of Architecture Business Cycle (ABC), explain in detail the different activities which are involved in creating a Software Architecture.
                                                                (10 Marks)
   b. What makes a "good" architecture?   (06 Marks)
   c. With the help of diagram, list common Software Architecture structures.   (04 Marks)

2 a. Define Architectural style. Mention any four commonly used styles.   (10 Marks)
   b. State the problem of KWIC (Keyword in Context Index System). propose implicit invocation and pipe and filter styles to implement a solution for the same.   (10 Marks)

3 a. Explain the Quality attribute scenarios for availability and modifiability.   (10 Marks)
   b. Explain modifiability and performance tactics of prevent ripple effects and resource management.   (10 Marks)

4 a. Explain the structure components and consequences of black board system.   (10 Marks)
   b. Explain the dynamic scenarios and implementation details of Layer Architecture design pattern.   (10 Marks)

PART – B

5 a. What do you mean by broker Architecture? Explain the dynamic scenarios of Broken System.   (10 Marks)
   b. Explain with a neat diagram implementation details of Model View Controller (MVC).   (10 Marks)

6 a. What is PAC (Presentation, Abstraction and Control) pattern? Explain three level structure of PAC.   (10 Marks)
   b. Explain the CRC and static structure of micro Kernel system.   (10 Marks)

7 a. Enumerate the implementation steps of reflection pattern.   (10 Marks)
   b. Explain Master-Slave design pattern.   (10 Marks)

8 a. What is Attribute-Driven Design (ADD)? Explain the steps involved in ADD.   (10 Marks)
   b. What is documenting view? Explain the steps involved in documenting interfaces.   (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Information and Network Security

Time: 3 hrs.

Max. Marks:100

Note: *Answer FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a.   Explain the elements and components of enterprise information security policy.   **(10 Marks)**
    b.   What is contingency planning? Explain in detail incident response planning.   **(10 Marks)**

2   a.   What is firewall? Explain the packet filtering firewall.   **(08 Marks)**
    b.   With a neat diagram, explain the screened subnet firewall with DMZ.   **(06 Marks)**
    c.   What is VPN? Explain the tunnel mode of implementing a VPN.   **(06 Marks)**

3   a.   What is IDS? Explain network based intrusion detection system. Also mention its advantages and disadvantages.   **(08 Marks)**
    b.   Explain the signature based IDP's method used to monitor and evaluate the network traffic.   **(06 Marks)**
    c.   Explain Honey pots.   **(06 Marks)**

4   a.   What is cryptography? Explain the vernam cipher method used to encrypt the plaintext. Apply the same method to encrypt the plaintext COMPUTER SECURITY using one time pad INFORMATION WORLD.   **(08 Marks)**
    b.   Differentiate between symmetric and asymmetric encryption.   **(04 Marks)**
    c.   Explain the different categories of attacks on the cryptosystem.   **(08 Marks)**

PART – B

5   a.   Define a attack? Explain the different types of active and passive attacks.   **(07 Marks)**
    b.   Explain the Kerberos version 4 message exchanges.   **(08 Marks)**
    c.   With a neat diagram, explain the various fields of X·509 certificate format.   **(05 Marks)**

6   a.   With a neat diagram, explain the authentication and confidentiality services provided by PGP.   **(10 Marks)**
    b.   Explain the different MIME content types.   **(10 Marks)**

7   a.   What is security association? Explain the different parameters associated with SA. **(08 Marks)**
    b.   Explain the anti-replay mechanism.   **(05 Marks)**
    c.   Explain the format of an ESP packet in IP security.   **(07 Marks)**

8   a.   With a neat diagram, explain the operation of SSL record protocol.   **(08 Marks)**
    b.   Explain the different participants in SET system.   **(06 Marks)**
    c.   Explain the construction of dual signature in SET protocol.   **(06 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2019
Software Testing

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1   a. Define the following interms of software testing:
      (i) Error   (ii) Fault   (iii) Failure   (iv) Incident   (v) Test case   **(05 Marks)**
   b. Explain functional and structural testing.   **(05 Marks)**
   c. Write a program for commission problem, problem statement is defined as follows: Rifle sales person in former Arizona territory sold rifle locks, Stocks and Barrels. Locks cost $45, Stock cost $30, and Barrels cost $25. Sales person had to sell at least one complete rifle per month and production limits where such that the sales person could sell in month was 70 locks, 80 stocks and 90 Barrels. At the end of the month sales person sent a very short telegram showing locks sold to indicate completion of sale. The commission is as follows : 10% upto $1000, 15% on the next $800 and 20% on any sales of excess of $1800. **(10 Marks)**

2   a. Explain weak normal, strong normal, weak robust and strong robust equivalence class techniques by considering Nextdata function as an example with test cases for each of the above.   **(10 Marks)**
   b. Explain Robustness, worst case testing in the context of boundary value analysis. **(10 Marks)**

3   a. Write structured triangle program, draw the program graph of triangle program. **(10 Marks)**
   b. Define DD-paths and find all the paths for given graph using McCabe's basis path method. [Refer Fig.Q3(b)]   **(10 Marks)**
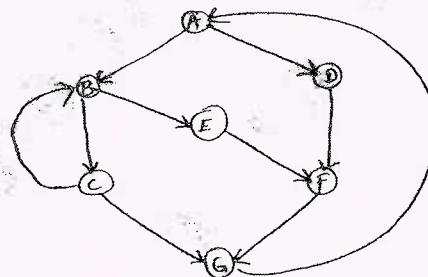

Fig.Q3(b)

4   a. With an example explain topdown integration and bottom up integration testing. **(10 Marks)**
   b. Briefly explain about SATM system. Also draw context and ER diagram.   **(10 Marks)**

PART – B

5   a. Explain about Client server testing.   **(10 Marks)**
   b. Briefly explain about functional strategies for thread testing.   **(10 Marks)**

6   a. With neat diagram, explain validation and verification activities.   **(08 Marks)**
   b. Explain the basic principles process frame work.   **(12 Marks)**

7   a. Define scaffolding, explain in detail distinguish between generic and specific scaffolding.

(10 Marks)

   b. Write short note on:
       (i) Test oracles
       (ii) Capture and Replay

(10 Marks)

8   Write short notes on:
   a. Monitoring the process
   b. Organizing the documents
   c. Risk planning
   d. Test and analysis reports

(20 Marks)

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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Web Technology And Its Applications

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. Briefly explain the history of markup languages.   (04 Marks)
   b. Write a note on XHTML and HTML5.   (04 Marks)
   c. Explain : i) <a>   ii) <img>   iii) <p>   iv) <div> elements with examples. (08 Marks)

OR

2 a. With an example explain different levels of style sheets.   (08 Marks)
   b. List the different selectors available in CSS and explain in detail   (08 Marks)

Module-2

3 a. Explain different form widgets created with the <input> tag.   (08 Marks)
   b. Write HTML code for the following table :

Time Day		9.00 am to 1.15 pm	2.00 pm to 5.00 pm
Mon to Fri	Sub	Theory class	ML/WTA Lab
	Fl	ABC/EFG/XYZ	AD block, 1st *floor
Sat	Sub	Extra curricular activity	
	Fl		

(08 Marks)

OR

4 a. Discuss the difference between relative and absolute positioning.   (08 Marks)
   b. What does floating an element do in CSS? How do you float an element?   (08 Marks)

Module-3

5 a. Discuss the advantages and disadvantages of client – side scripting.   (08 Marks)
   b. Write a JavaScirpt code that displays text "VTU BELAGAVI" with increasing font size in the interval of 100 ms in blue color, when the font size reaches 50 pt it should stop.   (08 Marks)

OR

6 a. With a neat diagram, explain client and server script execution.   (08 Marks)
   b. Write a PHP program to greet the user based on time.   (08 Marks)

Module-4

7   a.   Explain $_GET and $_POST superglobal arrays.   (08 Marks)
    b.   How do you read or write a file on the server from PHP? Give example.   (08 Marks)

OR

8   a.   Write a PHP program to create a class STUDENT with the following specification.
         Data members   : Name, Roll number, Average marks
         Member function   : Read(getters) and write (setters)
         Use the above specification to read and print the information of 2 students.   (08 Marks)
    b.   How do you achieve data encapsulation in PHP? Give example.   (08 Marks)

Module-5

9   a.   What are HTTP cookies? How do you handle them in PHP?   (08 Marks)
    b.   Why is state is a problem for web applications? Explain.   (08 Marks)

OR

10 a.   What does $( ) short and stand for in JQuery? Explain any 3 JQuery form selectors.
                                                                                       (08 Marks)
    b.   Write DTD for the following XML code.
         <?XML version ="1.0" encoding ="ISO- 8859 - 1"?>
         <art>
              <painting id ="290">
              <title> Balcony </title>
               <artist>
                <name> Manet</name>
                <nationality> France</nationality>
               </artist>
              <year> 1868 </year>
              <medium> oil on canvas </medium>
              </painting>
         </art>   (08 Marks)

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15CS72

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Advanced Computer Architecture

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. List the performance factors and system attributes. Explain how performance factors are influenced by system attributes. **(08 Marks)**
   b. Explain the architecture of vector super computer with neat diagram. **(08 Marks)**

OR

2 a. What are the conditions of parallelism? Explain the types of data dependence. **(06 Marks)**
   b. What are the metrics affecting scalability of a computer system? **(06 Marks)**
   c. What are the important characteristics of parallel algorithms? **(04 Marks)**

Module-2

3 a. What are the characteristic of CISC and RISC architecture? **(04 Marks)**
   b. What are the virtual memory models for multiprocessor system? **(04 Marks)**
   c. Explain address translation mechanism using TLB and page table. **(08 Marks)**

OR

4 a. Explain typical superscalar RISC processor architecture. **(08 Marks)**
   b. Explain inclusion, coherence and locality properties. **(08 Marks)**

Module-3

5 a. What is arbitration? Explain different types of arbitration. **(08 Marks)**
   b. Explain sequential and weak consistency models. **(08 Marks)**

OR

6 a. What are the different techniques for branch prediction? Explain. **(08 Marks)**
   b. Explain multiply pipeline design to multiply two 8-bit integers. **(08 Marks)**

Module-4

7 a. Explain routing in omega network. **(08 Marks)**
   b. What are different vector – access memory schemes? Explain any two of them. **(08 Marks)**

OR

8 a. What are the implementation models of SIMD? Explain them. **(08 Marks)**
   b. Explain four context-switching policies. **(08 Marks)**

Module-5

9 a. What are the issues in using shared-variable model? **(08 Marks)**
   b. Explain different phases of parallelizing compiler with a diagram. **(08 Marks)**

OR

10 a. Explain testing algorithm for dependence testing. **(08 Marks)**
    b. What are the principles of synchronization mechanisms? Explain them. **(08 Marks)**

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USN | | | | | | | | | | | **15CS73**

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Machine Learning

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Specify the learning task for 'A checkers learning problem'.   **(03 Marks)**
   b. Discuss the following with respect to the above,
      (i)   Choosing the training experience.
      (ii) Choosing the target function and
      (iii) Choosing a function approximation algorithm.   **(09 Marks)**
   c. Comment on the issues in machine learning.   **(04 Marks)**

OR

2 a. Write candidate elimination algorithm. Apply the algorithm to obtain the final version space for the training example.   **(10 Marks)**

Sl. No.	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

   b. Discuss about an unbiased Learner.   **(06 Marks)**

Module-2

3 a. What is a decision tree & discuss the use of decision tree for classification purpose with an example.   **(08 Marks)**
   b. Write and explain decision tree for the following transactions: **(08 Marks)**

Tid	Refund	Martial status	Taxable Income	Cheat
1	Yes	Single	125 K	No
2	No	Married	100 K	No
3	No	Single	70 K	No
4	Yes	Married	120 K	No
5	No	Divorced	95 K	Yes
6	No	Married	60 K	No
7	Yes	Divorced	220 K	No
8	No	Single	85 K	Yes
9	No	Married	75 K	No
10	No	Single	90 K	Yes

OR

4 a. For the transactions shown in the table compute the following :
      (i) Entropy of the collection of transaction records of the table with respect to classification.
      (ii) What are the information gain of a_1 and a_2 relative to the transactions of the table?
                                                                                    (08 Marks)

Instance	1	2	3	4	5	6	7	8	9
a_1	T	T	T	F	F	F	F	T	F
a_2	T	T	F	F	T	T	F	F	T
Target class	+	+	−	+	−	−	−	+	−

   b. Discuss the decision learning algorithm.   **(04 Marks)**
   c. List the issues of decision tree learning.   **(04 Marks)**

Module-3

5 a. Draw the perceptron network with the notation. Derive an equation of gradient descent rule to minimize the error. **(08 Marks)**

   b. Explain the importance of the terms : (i) Hidden layer (ii) Generalization (iii) Overfitting (iv) Stopping criterion **(08 Marks)**

OR

6 a. Discuss the application of Neural network which is used for learning to steer an autonomous vehicle. **(06 Marks)**

   b. Write an algorithm for back propagation algorithm which uses stochastic gradient descent method. Comment on the effect of adding momentum to the network. **(10 Marks)**

Module-4

7 a. What is Bayes theorem and maximum posterior hypothesis? **(04 Marks)**

   b. Derive an equation for MAP hypothesis using Bayes theorem. **(04 Marks)**

   c. Consider a football game between two rival teams: Team 0 and Team 1. Suppose Team 0 wins 95% of the time and Team 1 wins the remaining matches. Among the games won by team 0, only 30% of them come from playing on teams 1's football field. On the otherhand, 75% of the victories for team 1 are obtained while playing at home. If team 1 is to host the next match between the two teams, which team will most likely emerge as the winner? **(08 Marks)**

OR

8 a. Describe Brute-force MAP learning algorithm. **(04 Marks)**

   b. Discuss the Naïve Bayees classifier. **(04 Marks)**

   c. The following table gives data set about stolen vehicles. Using Naïve bayes classifier classify the new data (Red, SUV, Domestic) **(08 Marks)**

Table

Color	Type	Origin	Stolen
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

Module-5

9 a. Write short notes on the following:
   (i) Estimating Hypothesis accuracy.
   (ii) Binomial distribution. **(08 Marks)**

   b. Discuss the method of comparing two algorithms. Justify with paired to tests method. **(08 Marks)**

OR

10 a. Discuss the K-nearest neighbor language. **(04 Marks)**

    b. Discuss locally weighted Regression. **(04 Marks)**

    c. Discuss the learning tasks and Q learning in the context of reinforcement learning. **(08 Marks)**

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USN | | | | | | | | | | 15CS742

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Cloud Computing and Its Applications

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Explain cloud computing reference model with neat diagram.   (10 Marks)
    b.   Write a note on the challenges in cloud computing.   (06 Marks)

OR

2   a.   Explain Microsoft Hyper V architecture.   (10 Marks)
    b.   Explain pros and cons of virtualization.   (06 Marks)

Module-2

3   a.   Explain community cloud and list out the benefits.   (10 Marks)
    b.   Discuss about the economics of the cloud.   (06 Marks)

OR

4   a.   Explain the aneka framework overview.   (10 Marks)
    b.   Discuss about the logical organization of an aneka cloud.   (06 Marks)

Module-3

5   a.   Explain the domain decomposition techniques for parallel computation.   (10 Marks)
    b.   What is multiprocessing? Describe the different techniques for implementing
         multiprocessing.   (06 Marks)

OR

6   a.   Explain the computing categories for task computing.   (06 Marks)
    b.   Explain reference model of a workflow system.   (10 Marks)

Module-4

7   a.   List out the open challenges in data intensive computing.   (06 Marks)
    b.   Explain the Google Bigtable architecture.   (10 Marks)

OR

8   a.   Explain the map reduce programming model.   (10 Marks)
    b.   Explain any three distributed file systems.   (06 Marks)

Module-5

9   a.   Write a note about the prominent cloud computing platforms.   (06 Marks)
    b.   Explain the windows azure platform architecture.   (10 Marks)

OR

10 a.   Describe how cloud computing technology can be applied to remote ECG monitoring.
                                                                             (08 Marks)
    b.   Explain animoto media application that use cloud technologies.   (08 Marks)

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15CS754

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Storage Area Networks

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is a data center? Explain key characteristics of data center elements with diagram. **(08 Marks)**
   b. What is a file system? Explain the process of mapping user files to the disk storage. **(08 Marks)**

OR

2 a. What is RAID? Explain the RAID levels with reference to nested RAID, RAID3, RAID5 with neat diagram. **(08 Marks)**
   b. With neat diagram, explain the structure of read and write operations with cache. **(08 Marks)**

Module-2

3 a. Explain FC connectivity options with relevant diagram. **(08 Marks)**
   b. Explain block-level storage virtualization with neat diagram. Explain VSAN in brief. **(08 Marks)**

OR

4 a. What is FCoE? Explain the components of FCoE with neat diagram. **(08 Marks)**
   b. What is NAS? Explain the benefits of NAS. **(08 Marks)**

Module-3

5 a. What is business continuity? Explain the BC Terminology in detail. **(08 Marks)**
   b. Explain Backup and Restore operations with neat diagram. **(08 Marks)**

OR

6 a. What is data deduplication? Explain the implementation of data deduplication. **(08 Marks)**
   b. Explain Synchronous + Asynchronous and Synchronous + Disk Buffered methods of three-site replication with neat diagram. **(08 Marks)**

Module-4

7 a. What is cloud computing? Explain the characteristics and benefits of cloud computing? **(08 Marks)**
   b. Explain the various cloud service models available. **(08 Marks)**

OR

8 a. Explain the public cloud and private cloud deployment models in cloud computing. **(08 Marks)**
   b. Explain the cloud computing infrastructure in detail. **(08 Marks)**

Module-5

9 a. Explain FC SAN security architecture with neat diagram. **(08 Marks)**
   b. Explain the concept of Kerberos with neat diagram. **(08 Marks)**

OR

10 a. Explain the storage management activities in detail. **(08 Marks)**
    b. Explain Information Lifecycle Management (ILM) in detail with challenges. **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Advanced Computer Architectures

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing*
ONE full question from each module.

Module-1

1   a. Explain the evolution of computer architecture.   (08 Marks)
    b. Explain with diagram the operational model of SIMD super computer.   (08 Marks)

OR

2   a. Explain the Bernstein's conditions for parallelism. Detect the parallelism in the following code using Bernstein's conditions. (Assume no pipeline).
        $P_1 : C = D \times E$; $P_2 : M = G + C$; $P_3 : A = B + C$; $P_4 : C = L + M$; $P_5 : G \div E$.   (08 Marks)
    b. With a diagram, explain the operation of tagged token data flow computer.   (08 Marks)

Module-2

3   a. Distinguish between typical RISC and CISC process architectures.   (08 Marks)
    b. With a diagrams, explain the models of a basic scalar computer system.   (08 Marks)

OR

4   a. With a diagram, explain a typical superscalar RISC processor architecture consisting of an integer unit and a floating point unit.   (10 Marks)
    b. With a diagram, explain the hierarchical memory technology.   (06 Marks)

Module-3

5   a. Explain with diagram, the backplane bus specification.   (08 Marks)
    b. With the diagrams, explain the central arbitration and distribution arbitration.   (08 Marks)

OR

6   a. For the reservation table of a non–linear pipeline shown below :

	1	2	3	4	5	6
S_1	X					X
S_2		X			X	
S_3			X			
S_4				X		
S_5		X				X

    i)   What are the forbidden latencies? Write initial collision vector
    ii)   Draw the state transition diagram
    iii) List all simple cycles and greedy cycles
    iv)   Determine MAL.   (10 Marks)
    b. Explain prefetch buffer and internal data forwarding mechanisms used in instruction pipelining.   (06 Marks)

Module-4

7 a. Explain crossbar networks and cross-point switch design in multiprocessor system.

(08 Marks)

   b. With necessary sketches, explain the cache-coherence problems in data sharing and in process migration. (08 Marks)

OR

8 a. With a diagram, explain the architecture of the connection machine CM-2. (08 Marks)

   b. Explain the context–switching policies. (08 Marks)

Module-5

9 a. Explain the concurrent OOP and an actor model in object – oriented model. (08 Marks)

   b. Explain the fairness policies and sole-access –protocols in the principles of synchronization. (08 Marks)

OR

10 a. What are the major hurdles of pipelining? Illustrate the branch hazards in detail. (08 Marks)

   b. Explain the dynamic scheduling of a pipeline using Tomasulo's algorithm. (08 Marks)

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15CS73

Seventh Semester B.E. Degree Examination, June/July 2019
Machine Learning

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define machine learning. Describe the steps in designing learning system. **(08 Marks)**
   b. Write Find-S algorithm and explain with example. **(04 Marks)**
   c. Explain List-Then-Eliminate algorithm. **(04 Marks)**

OR

2 a. List out any 5 applications of machine learning. **(05 Marks)**
   b. What do you mean by hypothesis space, instance space and version space? **(03 Marks)**
   c. Find the maximally general hypothesis and maximally specific hypothesis for the training examples given in the table using candidate elimination algorithm. **(08 Marks)**

Day	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy Sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

Module-2

3 Construct decision tree for the following data using ID3 algorithm.

Day	A1	A2	A3	Classification
1	True	Hot	High	No
2	True	Hot	High	No
3	False	Hot	High	Yes
4	False	Cool	Normal	Yes
5	False	Cool	Normal	Yes
6	True	Cool	High	No
7	True	Hot	High	No
8	True	Hot	Normal	Yes
9	False	Cool	Normal	Yes
10	False	Cool	High	No

(16 Marks)

OR

4 a. Explain the concept of decision tree learning. Discuss the necessary measure required to select the attributes for building a decision tree using ID3 algorithm. **(08 Marks)**
   b. Discuss the issues of avoiding over fitting the data, handling continuous data and missing values in decision trees. **(08 Marks)**

Module-3

5 a. Explain artificial neural network based on perception concept with diagram. **(06 Marks)**
   b. What is gradient descent and delta rule? Why stochastic approximation to gradient descent is needed? **(04 Marks)**
   c. Describe the multilayer neural network. Explain why back propagation algorithm is required. **(06 Marks)**

OR

6   a.   Derive the back propagation rule considering the output layer and training rule for output unit weights. **(08 Marks)**

   b.   What is squashing function 3 why is it needed? **(04 Marks)**

   c.   List out and explain in briefly representation power of feed forward networks. **(04 Marks)**

Module-4

7   a.   Explain maximum a posteriori (MAP) hypothesis using Bayes theorem. **(06 Marks)**

   b.   Estimate conditional probabilities of each attributes {colour, legs, height, smelly} for the species classes: {M, H} using the data given in the table. Using these probabilities estimate the probability values for the new instance – (Colour = Green, Legs = 2, Height = Tall and Smelly = No) **(10 Marks)**

No	Colour	Legs	Height	Smelly	Species
1	White	3	Short	Yes	M
2	Green	2	Tall	No	M
3	Green	3	Short	Yes	M
4	White	3	Short	Yes	M
5	Green	2	Short	No	H
6	White	2	Tall	No	H
7	White	2	Tall	No	H
8	White	2	Short	Yes	H

OR

8   a.   Explain Naive Bayes classifier and Bayseian belief networks. **(10 Marks)**

   b.   Prove that how maximum likelihood (Bayesian learning) can be used in any learning algorithms that are used to minimize the squared error between actual output hypothesis and predicted output hypothesis. **(06 Marks)**

Module-5

9   a.   Explain locally weighted linear regression. **(08 Marks)**

   b.   What do you mean by reinforcement learning? How reinforcement learning problem differs from other function approximation tasks. **(05 Marks)**

   c.   Write down Q-learning algorithm. **(03 Marks)**

OR

10   a.   What is instance based learning? Explain K-Nearest neighbour algorithm. **(08 Marks)**

   b.   Explain sample error, true error, confidence intervals and Q-learning function. **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Cloud Computing and its Applications

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Describe cloud computing reference model. List any four characteristics and benefits of cloud computing. **(08 Marks)**
   b. Describe the three major milestones which have led to cloud computing. **(06 Marks)**
   c. Define service oriented computing and utility oriented computing. **(02 Marks)**

OR

2 a. What is virtualization? What are the characteristics of virtualized environments? **(08 Marks)**
   b. What is an Hypervisor? Explain how hardware virtualization can be achieved. **(08 Marks)**

Module-2

3 a. Classify the service offered by cloud computing. Explain any one of the service in detail. **(08 Marks)**
   b. With a neat diagram, describe the private cloud hardware and software stack. List the advantages of private cloud computing infrastructure. **(08 Marks)**

OR

4 a. Describe Aneka container. Explain briefly the three service offered by the Aneka container. **(08 Marks)**
   b. Describe the Aneka service model with a neat diagram of service life cycle. **(08 Marks)**

Module-3

5 a. Describe the relationship between a process and a thread. **(08 Marks)**
   b. Explain with an example, Domain Decomposition. Write Aneka code to create matrix product class. **(08 Marks)**

OR

6 a. What is task computing? Describe parameter sweep application with an example. **(10 Marks)**
   b. List and explain Aneka ready – to – use task libraries. **(06 Marks)**

Module-4

7 a. Define Data Intensive computing. List any six open challenges in Data Intensive computing. **(08 Marks)**
   b. Bring out the salient features of Map Reduce programming model with a neat diagram of Map Reduce compworkflow. **(08 Marks)**

OR

8 a. Explain the Google Big Table Architecture. **(08 Marks)**
   b. List and explain the parameters that can be controlled during execution of Aneka mapReduce Application. **(08 Marks)**

Module-5

9 a. Describe any four popular cloud computing products. Indicate their service type. **(08 Marks)**
   b. Describe in detail the "Simple Storage Service" offered by Amazon S3. **(08 Marks)**

OR

10 a. Explain online health monitoring system hosted in cloud. **(08 Marks)**
   b. What are dropbox and icloud? Which kind of problems do they solve by using cloud technologies? **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Object Oriented Modeling and Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. What is object oriented development? List and explain object oriented themes. **(10 Marks)**
   b. Define the following terms with examples:
      i) Links and associations
      ii) Multiplicity
      iii) Association end names
      iv) Ordering
      v) Bag and sequence **(10 Marks)**

2 a. What is an aggregation? Explain aggregation versus associations and aggregation versus composition. **(10 Marks)**
   b. Explain the following terms with an examples:
      i) Meta data   ii) Derived data   iii) Reification **(06 Marks)**
   c. Draw the state diagram for a telephone line. **(04 Marks)**

3 a. What do you mean by concurrency? Explain aggregation concurrency with a neat diagram. **(08 Marks)**
   b. What is an interaction model? Explain with a neat diagram sequence diagram for a online stock broker. **(06 Marks)**
   c. Explain the following terms with examples:
      i) Include relationship   ii) Extend relationship   iii) Generalization **(06 Marks)**

4 a. List and explain the stages involved in software development. **(10 Marks)**
   b. List the steps to construct a domain class model and explain them briefly. **(10 Marks)**

PART – B

5 a. Explain the steps followed in constructing application interaction model. **(10 Marks)**
   b. With a neat diagram explain the architecture of ATM system. **(07 Marks)**
   c. Name the three kinds of controls for the external event in a software system. **(03 Marks)**

6 a. What is refactoring? Explain the tasks involved in design optimization. **(10 Marks)**
   b. What are the steps involved in improving the organization of a class design? Explain them briefly. **(10 Marks)**

7 a. What is a pattern? Lists the properties of pattern. **(10 Marks)**
   b. With a neat diagram, explain the publisher-subscriber design pattern with necessary implementation steps. **(10 Marks)**

8 a. Explain the structure and implementation steps of view handler pattern with a neat diagram. **(10 Marks)**
   b. With a neat diagram explain the counted pointer idiom. **(10 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Embedded Computing Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Define embedded computing system. Explain the embedded system design process.
                                                                        (10 Marks)
   b. Explain the design process for GPS moving map.   (10 Marks)

2 a. Explain the format of ARM data processing instruction.   (06 Marks)
   b. Differentiate between Von Neumann and Harvard architectures.   (06 Marks)
   c. What is interrupt? With a neat diagram, explain the interrupt mechanism. (08 Marks)

3 a. Write the requirement chart of alarm clock.   (06 Marks)
   b. Explain Bus with DMA controller.   (06 Marks)
   c. Explain:
       i)   Cross compiler
       ii) Timer
       iii) Logic analyzer
       iv) Displays   (08 Marks)

4 a. Explain different types of performance measures on programs.   (06 Marks)
   b. Explain program generation from compilation through loading.   (06 Marks)
   c. Explain different program optimization techniques.   (08 Marks)

PART – B

5 a. Explain the structure of process.   (06 Marks)
   b. What are the factors to be considered for selection of scheduling algorithm? (06 Marks)
   c. What is RTOS? Explain the different services of RTOS.   (08 Marks)

6 a. Explain L shaped usage distribution.   (06 Marks)
   b. Explain:
       i)   Message passing
       ii) Counting semaphore   (06 Marks)
   c. With a neat sketch, explain shared memory communication.   (08 Marks)

7 a. With a neat diagram, explain CAN frame format.   (06 Marks)
   b. Explain the distributed embedded architecture.   (06 Marks)
   c. With a neat diagram, explain various fields of IP packet.   (08 Marks)

8 a. What is monitor program based firmware debugging?   (06 Marks)
   b. Explain the different types of files generated in cross compilation. (06 Marks)
   c. What is simulator? Explain the features, advantages and limitations of simulator based
       debugging.   (08 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019

Programming the Web

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. What is HTTP? Explain HTTP phases. Mention various methods and status codes of HTTP.
   (10 Marks)

   b. Give the standard structure of XHTML document. How line breaks, heading and fonts are handled in XHTML? **(10 Marks)**

2 a. Create XHTML document to describe a table with the following contents: The columns of the table must have the headings pine, maple, Oak and fir. The rows must have the labels average height, average width, typical life span and leaf type. Fill the data cells with some values. **(10 Marks)**

   b. Write an XHTML document that has six short paragraphs of text. Define three different paragraph styles p_1, p_2 and p_3. The p_1 style must use left and right margins of 20 pixels. a background color of pink and a foreground color of blue. The p_2 style must use left and right margins of 30 pixels, a background color of black and a foreground color of yellow. The p_3 style must use a text indent of 1 centimeter, a background color of green and a foreground color of white. The first and fourth paragraph must use p_1, the second and fifth must use p_2 and the third and sixth must use p_3. **(10 Marks)**

3 a. Explain the screen output and keyboard input method, with example. **(10 Marks)**

   b. Write XHTML document and JAVA script code to implement, to count the number of names in the given array that end in either "ie" or "y". **(05 Marks)**

   c. Write a note on character and character classes. **(05 Marks)**

4 a. Explain the basic concepts of event handling. List the events and their tag attributes. **(12 Marks)**

   b. With an example, explain absolute and relative positioning of elements in JAVA script. **(08 Marks)**

PART – B

5 a. What is the Document Type Definition (DTD)? Describe the approach to declare elements. entities and attributes. **(08 Marks)**

   b. Create an XML documents that lists advertisement for selling used cars. **(06 Marks)**

   c. With a neat diagram, explain transformation process by an XSLT processor. **(06 Marks)**

6 a. Write a perl program which creates a hash table containing country names keys and their capitals as values and perform the following:
      i) Print all pair of values (country name and capital)
      ii) Accept country name and print the capital of it. **(10 Marks)**

   b. With an example, explain how files are handled in PERL. **(10 Marks)**

10CS73

7 a. Describe how files are created, read and write on the server system using PHP. **(10 Marks)**
   b. Explain any six string function in PHP. **(06 Marks)**
   c. Explain the different types of scalar types are available in PHP. **(04 Marks)**

8 a. Discuss the different pattern matching operations are available in ruby with example each. **(08 Marks)**
   b. Build a rail's application to accept book information viz accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search result with proper headings. **(12 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2019
Advanced Computer Architecture

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO full questions from each part.

PART – A

1   a. Define instruction set architecture. Illustrate seven dimensions of ISA.   (08 Marks)
     b. Find the number of dies 350 mm wafer for a die that is 17.5mm on a side and find yield by assuming density of $0.5/cm^2$ and manufacturing complexity is 4.   (04 Marks)
     c. Explain the methods and observations to improve the performance of a system.   (08 Marks)

2   a. With data path explain classic five stage pipeline for a RISC processor.   (06 Marks)
     b. Explain the methods to reduce pipeline branch penalties.   (06 Marks)
     c. List types of exceptions and explain requirements on exceptions.   (08 Marks)

3   a. Define true data dependences and name data dependences. Explain all possible data hazards.   (07 Marks)
     b. Explain 2-bit branch prediction scheme with state diagram.   (05 Marks)
     c. With neat diagram, explain Tomasulo's approach for dynamic scheduling.   (08 Marks)

4   a. List the falvours of multiple issue processor with basic VLIW approach.   (08 Marks)
     b. Illustrate how branch target buffer helps in reducing the branch penalties.   (06 Marks)
     c. Explain how speculation supports for register renaming.   (06 Marks)

PART – B

5   a. Explain Flynn's classification of computers.   (06 Marks)
     b. To achieve a speedup of 80 with 100 processor. What fractions of the original computation can be sequential?   (04 Marks)
     c. Explain directory based cache-coherence protocol.   (06 Marks)
     d. Write a note on memory consistency.   (04 Marks)

6   a. Derive the CPU execution time equation by considering memory stall cycles.   (05 Marks)
     b. Explain write strategy in first-level of the memory hierarchy.   (05 Marks)
     c. Explain how multilevel cache helps in reducing miss penalty. For 1000 memory references there are 40 misses in the first-level cache and 20 misses in the second-level cache. What are the various miss rates? Assume the miss penalty from the L2 cache to memory is 200 clock cycles, the hit time of the L2 cache is 10 clock cycles, the hit time of L1 is 1 clock cycle and there are 1.5 memory references per instruction what is the average memory access time and average stall cycles per instruction?   (10 Marks)

7   a. Write the typical multilevel memory hierarchical structure and define 3 C's of misses.   (06 Marks)
     b. Explain compiler optimization with example.   (06 Marks)
     c. Give the differences between SRAM and DRAM.   (03 Marks)
     d. Explain protection via virtual machines.   (05 Marks)

8   a.   Consider a loop for (i = 1; i < = 100; i++)
{
A [i] = A[i] + B[i]; /*S1*/
B [i + 1] = C [i] + D [i];} /*S2*/

What are the dependences between S1 and S2? Is the loop parallel? If not show how to make it parallel?   (06 Marks)

b.   List the drawbacks of dependences.   (04 Marks)

c.   Explain software pipelining with loop unrolling.   (10 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019
Java and J2EE

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Explain three kinds of variables in Java.   (06 Marks)
   b. What are arrays? List out the three steps to create an array.   (04 Marks)
   c. Describe the process of building and running Java program with an example. (04 Marks)
   d. Discuss different access specifiers in Java.   (06 Marks)

2 a. Define an Applet. Explain the skeleton of an applet with example program. (08 Marks)
   b. Explain the types of exceptions in Java.   (06 Marks)
   c. What is difference between a superclass and subclass? Write a program to demonstrate the same. (06 Marks)

3 a. What are threads? Explain how to make the class threadable.   (07 Marks)
   b. What is synchronization? Explain producer consumer problem with a program. (09 Marks)
   c. Write short notes on sources of events.   (04 Marks)

4 a. What are swing components? Explain atleast 4 swing components.   (06 Marks)
   b. What are containers? Explain a simple container.   (06 Marks)
   c. Write a short note on :
       i)   JTabbedPane
       ii) JScrollPane
       iii) JList
       iv) JComboBox.   (08 Marks)

PART – B

5 a. Explain JDBC process in detail.   (12 Marks)
   b. Write a short notes on :
       i)   J2EE
       ii) J2SE
       iii) ResultSet
       iv) ResultSetMetaData.   (08 Marks)

6 a. Explain the difference between the applet and servlet.   (04 Marks)
   b. With a diagram, explain servlet life cycle.   (08 Marks)
   c. With a program, explain handling HTTP requests and responses.   (08 Marks)

7 a. Why we use JSP? Explain JSP tags.   (08 Marks)
   b. Explain Apache Tomcat with example program.   (06 Marks)
   c. Write a short notes on :
       i)   Session and cookies in JSP
       ii) RMI.   (06 Marks)

8 a. What is EJB? Explain three types of EJB that are suited to different purposes. (07 Marks)
   b. Explain session beans with an example program.   (05 Marks)
   c. What are JAR file? Explain the benefits of JAR file format.   (08 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2019
Storage Area Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1   a.   Which core elements are essential for the basic functionality of a data center? Briefly explain with an order processing system.   (12 Marks)
     b.   What is disk service time? Explain different service times on a disk driver.   (08 Marks)

2   a.   Compare the RAID0, RAID1, RAID 1+0 and RAID 0+1 based on storage efficiency. Read performance write performance and write penality.   (12 Marks)
     b.   Briefly explain Read hit and Read miss in cache.   (08 Marks)

3   a.   With neat diagram explain SCSI communication model.   (10 Marks)
     b.   What are different types of ports available in Fiber channel? Also mention its uses.
                                                                          (10 Marks)

4   a.   What are the benefits of NAS.   (10 Marks)
     b.   Explain NAS File – sharing protocols.   (10 Marks)

PART – B

5   a.   Define Archives. Explain different types of Archives with an example.   (10 Marks)
     b.   Explain the concept of storage virtualization with figure.   (10 Marks)

6   a.   Explain BC planning life cycle.   (12 Marks)
     b.   With neat diagram explain LAN based back up topology.   (08 Marks)

7   a.   Explain different purposes of Local replica for source data.   (10 Marks)
     b.   Explain Host – based log shipping.   (10 Marks)

8   Write a short note on :
     a.   Assets
     b.   Threats
     c.   Vulnerability
     d.   Data encryption   (20 Marks)

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15CS81

Eighth Semester B.E. Degree Examination, June/July 2019
Internet of Things Technology

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1 a. What is IOT? Explain in detail on Genesis of IOT.   (08 Marks)
   b. What does IOT and digitaization mean? Elaborate on this concept.   (04 Marks)
   c. Write a short note on "IOT impact in Real World".   (04 Marks)

OR

2 a. Discuss IOT challenges.   (08 Marks)
   b. With a neat diagram, explain architecture of IOT.   (04 Marks)
   c. Explain Core IOT functional stack.   (04 Marks)

Module-2

3 a. List and explain different types of sensors.   (08 Marks)
   b. Elaborate on small physical objects and small virtual objects.   (04 Marks)
   c. Explain "IOT Access Technologies".   (04 Marks)

OR

4 a. Briefly explain protocol stack utilization IEEE 802.15.4.   (08 Marks)
   b. What is SANET? Explain some advantages and disadvantages that a wireless based solution
      offers.   (08 Marks)

Module-3

5 a. Explain working of IP as the IOT network layer.   (08 Marks)
   b. Write note on Busines case for IP.   (04 Marks)
   c. Discuss need for optimization.   (04 Marks)

OR

6 a. Describe application protocols for IOT.   (08 Marks)
   b. Discuss the various methods used in IOT application transport.   (08 Marks)

Module-4

7 a. What do you mean by data and analytics for IOT? Explain.   (04 Marks)
   b. Discuss Bigdata analytics tools and technology.   (04 Marks)
   c. With a case study relate the concept of securing IOT.   (08 Marks)

OR

8 a. Explain in detail how IT and OT security practices and systems vary in real time. (08 Marks)
   b. Discuss OCTAVE and FAIR formal risk analysis.   (08 Marks)

Module-5

9 a. Give a brief note on Arduino UNO. (04 Marks)
   b. With a neat diagram, explain Raspberry P_i board. (04 Marks)
   c. With a neat diagram, explain wireless temperature monitoring system using Raspberry P_i.
   (08 Marks)

OR

10 a. Explain in detail smart city IOT architecture. (08 Marks)
   b. With the case study explain smart and connected cities using Raspberry Pi. (08 Marks)

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15CS82

Eighth Semester B.E. Degree Examination, June/July 2019
Big Data Analytics

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. How does the Hadoop MapReduce Data flow work for a word count program? Give an example. **(08 Marks)**
    b. Briefly explain HDFS Name Node Federation, NFS Gateway, Snapshots, Checkpoint and Backups. **(08 Marks)**

OR

2   a. What do you understand by HDFS? Explain its components with a neat diagram. **(10 Marks)**
    b. Bring out the concepts of HDFS block replication, with an example. **(06 Marks)**

Module-2

3   a. Explain Apache Squoop Import and Export method with neat diagrams. **(10 Marks)**
    b. Explain with a neat diagram, the Apache Oozie work flow for Hadoop architecture. **(06 Marks)**

OR

4   a. How do you run Map Reduce and Message Passing Interface (MPI) on YARN architecture? Discuss. **(10 Marks)**
    b. What do you understand by YARN Distributed-Shell? **(06 Marks)**

Module-3

5   a. Write any four Business Intelligence Application for various sectors. **(08 Marks)**
    b. Explain the star schema design of Data Warehousing with an example. **(06 Marks)**
    c. What is Confusion Matrix? **(02 Marks)**

OR

6   a. Explain CRISP-DM cycle with a neat diagram. **(08 Marks)**
    b. What do you understand by the term Data Visualization? How is it important in Big data Analytics? **(05 Marks)**
    c. Differentiate between Data Mining and Data Warehousing. **(03 Marks)**

Module-4

7   a. What is a splitting variable? Describe three criteria for choosing a splitting variable. **(04 Marks)**
    b. List some of the advantages and disadvantages of Regression Model. **(04 Marks)**
    c. Create a decision tree for the following data set.

Age	Job	House	Credit	Loan Approved
Young	False	No	Fair	No
Young	False	No	Good	No
Young	True	No	Good	Yes
Young	True	Yes	Fair	Yes
Young	False	No	Fair	No

Age	Job	House	Credit	Loan Approved
Middle	False	No	Fair	No
Middle	False	No	Good	No
Middle	True	Yes	Good	Yes
Middle	False	Yes	Excellent	Yes
Middle	False	Yes	Excellent	Yes
Old	False	Yes	Excellent	Yes
Old	False	Yes	Good	Yes
Old	True	No	Good	Yes
Old	True	No	Excellent	Yes
Old	False	No	Fair	No

Then solve the following problem using the model:

Age	Job	House	Credit	Loan Approved
Young	False	False	Good	???

(08 Marks)

OR

8 a. Explain the design principles of an Artificial Neural Network. **(08 Marks)**

b. How does the Apriori Algorithm work? Apply the same for the following example.

T_{ID}	List of Item-IDs
T_{100}	I_1, I_2, I_5
T_{200}	I_2, I_4
T_{300}	I_2, I_3
T_{400}	I_1, I_2, I_4
T_{500}	I_1, I_3
T_{600}	I_2, I_3
T_{700}	I_1, I_3
T_{800}	I_1, I_2, I_3, I_5
T_{900}	I_1, I_2, I_3

Assume the support count = 2. **(08 Marks)**

Module-5

9 a. What is Naïve Bayes Technique? Explain its model. **(05 Marks)**

b. What is a Support Vector Machine? Explain its model. **(08 Marks)**

c. Mention the 3-step process of Text Mining. **(03 Marks)**

OR

10 a. Explain briefly the three different types of web mining. **(06 Marks)**

b. Compute the rank values for the Nodes for the following network shown in Fig.Q10(b), which is the Highest ranked node. Solve the same with eight iterations.
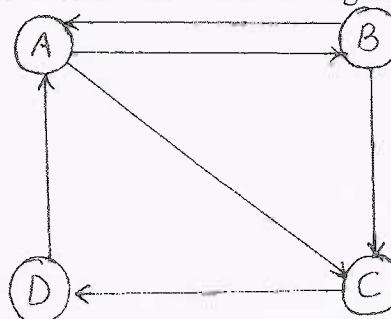

Fig.Q10(b) **(10 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2019
Modern Interface Design

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the Importance and Benefits of good user Interface Design.   (04 Marks)
   b. Write any four differences between GUI and Webpage Design.   (04 Marks)
   c. Explain in detail, the characteristics of GUI.   (08 Marks)

OR

2 a. Explain the concept of Direct Manipulation for Graphical Systems.   (04 Marks)
   b. Discuss the characteristics of Intranet and Internet and bring out the differences between them.   (04 Marks)
   c. Discuss the general principles of User Interface Design (any 8).   (08 Marks)

Module-2

3 a. List and explain the five commandments in designing for people.   (06 Marks)
   b. Describe in detail, the important human characteristics in user Interface Design (any five).   (10 Marks)

OR

4 a. Explain the common usability problems in web based systems.   (06 Marks)
   b. Explain the techniques for determining the user requirements using Indirect methods.   (10 Marks)

Module-3

5 a. Explain the structure of Menus with illustrations.   (06 Marks)
   b. Describe the components of a Web Navigation System with illustration.   (10 Marks)

OR

6 a. Describe the functions of Menus.   (06 Marks)
   b. List all kinds of Graphical Menus and explain any one in detail.   (10 Marks)

Module-4

7 a. Explain the components of a window with example.   (08 Marks)
   b. Discuss briefly about the types of windows with examples (any four).   (08 Marks)

OR

8 a. Describe overlapping windows and tiled windows presentation styles with examples.   (08 Marks)
   b. Explain the characteristics of touch Screen and keyboard.   (08 Marks)

Module-5

9 a. Explain Radio Buttons and List Boxes selection controls.   (08 Marks)
   b. Explain any two types of testing prototypes used in User Interface Design. (08 Marks)

OR

10 a. Explain Slider and Tree View operable controls.   (08 Marks)
   b. Explain Cognitive Walkthroughs, Think aloud Evaluations and Usability tests conducted in user Interface Design.   (08 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
System Modeling and Simulation

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1   a. What is simulation? Explain the steps involved in simulation study along with flowchart.
                                                                              (10 Marks)

   b. A grocery store has one checkout counter. Customers arrive at the checkout counter at random from 1 to 8 minutes apart and each inter-arrival time has the same probability of occurrence. The service times vary from 1 to 6 minutes, with probability given below.

Service (minutes)	1	2	3	4	5	6
Probability	0.10	0.20	0.30	0.25	0.10	0.05

Simulate the arrival of 6 customers and calculate
   - Average waiting time of customer
   - Probability that a customer has to wait
   - Probability of a server being Idle
   - Average service time.

Use the following sequence of random numbers.

Random digit for Arrival	913	727	015	948	309	922
Random digit for service time	84	10	74	53	17	79

Assume that the first customer arrives at time 0. Depict the simulation in a tabular form.
                                                                              (10 Marks)

2   a. Explain event scheduling algorithm by generating system snapshots at clock = t and clock = t_1.   **(05 Marks)**

   b. What is world view? Explain three phases of activity scanning approach.   **(05 Marks)**

   c. Six dump trucks are used to have coal from the entrance of a mine to a rail road. Each truck is loaded by one of the two loaders. After loading, truck immediately moves to the scale, to be weighted as soon as possible. Both the loaders and scale have first-come first-served waiting line for trucks. Travel time from a loader to scale is considered negligible. After being weighed, a truck begins travel time (during which time truck unloads) and then afterwards return to loader queue. The activities of loading, weighing and travel time are given in the following table.

Loading time	10	5	5	10	15	10	10
Weighing time	12	12	12	16	12	16	
Travel time	60	100	40	40	80		

Depict the simulation table and estimate the loader and scale utilization. Assume 5 trucks at loaders and one is at the scale, at time '0' stopping time $T_E = 52$ min.   **(10 Marks)**

3 a. Define the following terms:
   (i) Discrete random variable
   (ii) Continuous random variable
   (iii) Cumulative Distribution function   (06 Marks)
  b. Explain Poisson Distribution   (04 Marks)
  c. Define continuous distribution and explain uniform distribution, exponential distribution and normal distribution.   (10 Marks)

4 a. List out the characteristics of queuing system and explain the following :
   (i) Queue behaviour and queue discipline
   (ii) Service time and service mechanism   (10 Marks)
  b. Explain the Queuing Notations   (05 Marks)
  c. Write a note on Networks of queues   (05 Marks)

PART – B

5 a. Generate the Random numbers for these values with seed = 37, constant multiplier = 7, Increment 29 and modulus = 100.   (08 Marks)
  b. Differentiate between Chi-square and Kolmogrov-Smirnov test.   (04 Marks)
  c. Using X_0^2 test, test for hypothesis that the data given follows uniform distribution at $\alpha = 0.05$ the critical value is 16.9

O_i	8	8	10	9	12	8	10	14	10	11

                                                                            (08 Marks)

6 a. Explain in detail the inverse transform technique for exponential distribution. (10 Marks)
  b. List the steps involved in the development of a useful model of input data.   (04 Marks)
  c. Explain how the method of histogram can be used to identify the shape of distribution.
                                                                            (06 Marks)

7 a. Briefly explain the measures of performance of a simulation system.   (10 Marks)
  b. Explain the distinction between terminating (or) transient simulation and steady state simulation. Give examples.   (10 Marks)

8 a. Explain with a neat diagram, model building verification and validation process. (10 Marks)
  b. Describe the 3 steps approach to validation by Naylor and Finger.   (10 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019

Software Architecture

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1   a.   With the help of a neat block diagram of Architecture Business Cycle (ABC), explain in detail the different activities which are involved in creating a Software Architecture.
                                                                              (10 Marks)
    b.   What makes a "good" architecture?   **(06 Marks)**
    c.   With the help of diagram, list common Software Architecture structures.   **(04 Marks)**

2   a.   Define Architectural style. Mention any four commonly used styles.   **(10 Marks)**
    b.   State the problem of KWIC (Keyword in Context Index System), propose implicit invocation and pipe and filter styles to implement a solution for the same.   **(10 Marks)**

3   a.   Explain the Quality attribute scenarios for availability and modifiability.   **(10 Marks)**
    b.   Explain modifiability and performance tactics of prevent ripple effects and resource management.   **(10 Marks)**

4   a.   Explain the structure components and consequences of black board system.   **(10 Marks)**
    b.   Explain the dynamic scenarios and implementation details of Layer Architecture design pattern.   **(10 Marks)**

PART – B

5   a.   What do you mean by broker Architecture? Explain the dynamic scenarios of Broken System.   **(10 Marks)**
    b.   Explain with a neat diagram implementation details of Model View Controller (MVC).   **(10 Marks)**

6   a.   What is PAC (Presentation, Abstraction and Control) pattern? Explain three level structure of PAC.   **(10 Marks)**
    b.   Explain the CRC and static structure of micro Kernel system.   **(10 Marks)**

7   a.   Enumerate the implementation steps of reflection pattern.   **(10 Marks)**
    b.   Explain Master-Slave design pattern.   **(10 Marks)**

8   a.   What is Attribute-Driven Design (ADD)? Explain the steps involved in ADD.   **(10 Marks)**
    b.   What is documenting view? Explain the steps involved in documenting interfaces. **(10 Marks)**

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Eighth Semester B.E. Degree Examination, June/July 2019
Information and Network Security

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. Explain the elements and components of enterprise information security policy. (10 Marks)
   b. What is contingency planning? Explain in detail incident response planning. (10 Marks)

2 a. What is firewall? Explain the packet filtering firewall. (08 Marks)
   b. With a neat diagram, explain the screened subnet firewall with DMZ. (06 Marks)
   c. What is VPN? Explain the tunnel mode of implementing a VPN. (06 Marks)

3 a. What is IDS? Explain network based intrusion detection system. Also mention its advantages and disadvantages. (08 Marks)
   b. Explain the signature based IDP's method used to monitor and evaluate the network traffic. (06 Marks)
   c. Explain Honey pots. (06 Marks)

4 a. What is cryptography? Explain the vernam cipher method used to encrypt the plaintext. Apply the same method to encrypt the plaintext COMPUTER SECURITY using one time pad INFORMATION WORLD. (08 Marks)
   b. Differentiate between symmetric and asymmetric encryption. (04 Marks)
   c. Explain the different categories of attacks on the cryptosystem. (08 Marks)

PART – B

5 a. Define a attack? Explain the different types of active and passive attacks. (07 Marks)
   b. Explain the Kerberos version 4 message exchanges. (08 Marks)
   c. With a neat diagram, explain the various fields of X·509 certificate format. (05 Marks)

6 a. With a neat diagram, explain the authentication and confidentiality services provided by PGP. (10 Marks)
   b. Explain the different MIME content types. (10 Marks)

7 a. What is security association? Explain the different parameters associated with SA. (08 Marks)
   b. Explain the anti-replay mechanism. (05 Marks)
   c. Explain the format of an ESP packet in IP security. (07 Marks)

8 a. With a neat diagram, explain the operation of SSL record protocol. (08 Marks)
   b. Explain the different participants in SET system. (06 Marks)
   c. Explain the construction of dual signature in SET protocol. (06 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Software Testing

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. Define the following interms of software testing:
   (i) Error (ii) Fault (iii) Failure (iv) Incident (v) Test case **(05 Marks)**
  b. Explain functional and structural testing. **(05 Marks)**
  c. Write a program for commission problem, problem statement is defined as follows: Rifle sales person in former Arizona territory sold rifle locks, Stocks and Barrels. Locks cost $45, Stock cost $30, and Barrels cost $25. Sales person had to sell at least one complete rifle per month and production limits where such that the sales person could sell in month was 70 locks, 80 stocks and 90 Barrels. At the end of the month sales person sent a very short telegram showing locks sold to indicate completion of sale. The commission is as follows : 10% upto $1000, 15% on the next $800 and 20% on any sales of excess of $1800. **(10 Marks)**

2 a. Explain weak normal, strong normal, weak robust and strong robust equivalence class techniques by considering Nextdata function as an example with test cases for each of the above. **(10 Marks)**
  b. Explain Robustness, worst case testing in the context of boundary value analysis. **(10 Marks)**

3 a. Write structured triangle program, draw the program graph of triangle program. **(10 Marks)**
  b. Define DD-paths and find all the paths for given graph using McCabe's basis path method. [Refer Fig.Q3(b)] **(10 Marks)**
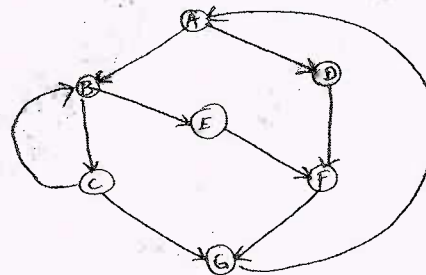

Fig.Q3(b)

4 a. With an example explain topdown integration and bottom up integration testing. **(10 Marks)**
  b. Briefly explain about SATM system. Also draw context and ER diagram. **(10 Marks)**

PART – B

5 a. Explain about Client server testing. **(10 Marks)**
  b. Briefly explain about functional strategies for thread testing. **(10 Marks)**

6 a. With neat diagram, explain validation and verification activities. **(08 Marks)**
  b. Explain the basic principles process frame work. **(12 Marks)**

7 a. Define scaffolding, explain in detail distinguish between generic and specific scaffolding.

(10 Marks)

   b. Write short note on:
     (i) Test oracles
     (ii) Capture and Replay

(10 Marks)

8   Write short notes on:
   a. Monitoring the process
   b. Organizing the documents
   c. Risk planning
   d. Test and analysis reports

(20 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2019
Software Testing

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. Define the following interms of software testing:
(i) Error   (ii) Fault   (iii) Failure   (iv) Incident   (v) Test case   **(05 Marks)**

b. Explain functional and structural testing.   **(05 Marks)**

c. Write a program for commission problem, problem statement is defined as follows: Rifle sales person in former Arizona territory sold rifle locks, Stocks and Barrels. Locks cost $45, Stock cost $30, and Barrels cost $25. Sales person had to sell at least one complete rifle per month and production limits where such that the sales person could sell in month was 70 locks, 80 stocks and 90 Barrels. At the end of the month sales person sent a very short telegram showing locks sold to indicate completion of sale. The commission is as follows : 10% upto $1000, 15% on the next $800 and 20% on any sales of excess of $1800. **(10 Marks)**

2 a. Explain weak normal, strong normal, weak robust and strong robust equivalence class techniques by considering Nextdata function as an example with test cases for each of the above.   **(10 Marks)**

b. Explain Robustness, worst case testing in the context of boundary value analysis.   **(10 Marks)**

3 a. Write structured triangle program, draw the program graph of triangle program.   **(10 Marks)**

b. Define DD-paths and find all the paths for given graph using McCabe's basis path method.
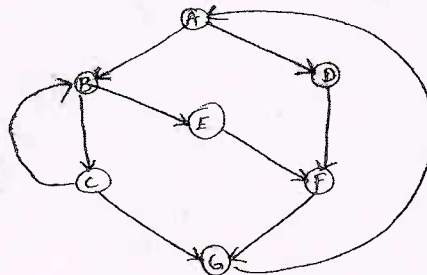[Refer Fig.Q3(b)]   **(10 Marks)**

Fig.Q3(b)

4 a. With an example explain topdown integration and bottom up integration testing.   **(10 Marks)**

b. Briefly explain about SATM system. Also draw context and ER diagram.   **(10 Marks)**

PART – B

5 a. Explain about Client server testing.   **(10 Marks)**

b. Briefly explain about functional strategies for thread testing.   **(10 Marks)**

6 a. With neat diagram, explain validation and verification activities.   **(08 Marks)**

b. Explain the basic principles process frame work.   **(12 Marks)**

7   a. Define scaffolding, explain in detail distinguish between generic and specific scaffolding.

(10 Marks)

   b. Write short note on:
       (i) Test oracles
       (ii) Capture and Replay

(10 Marks)

8   Write short notes on:
   a. Monitoring the process
   b. Organizing the documents
   c. Risk planning
   d. Test and analysis reports

(20 Marks)

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