Roll No. .....

TCS–601

B. TECH. (CSE/IT) (SIXTH SEMESTER) END SEMESTER EXAMINATION, 2018

COMPILER DESIGN

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
   (a) Overloaded Operators are disambiguated in the phase of semantic analysis.
   (b) Bottom up parsing uses Right Most Derivation.
   (c) If translations are specified using S-attributed definitions, then the semantic rules can be evaluated by the parser itself during parsing.
   (d) Optimization is a compulsory phase in compilation process.

(e) If SLR parser has N1 states and LALR phaser has N2 then the relationship between N1 and N2 is N1 = N2.

2. Attempt any *five* parts : (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)

(a) Consider the following SDT and write the output for the string xxxxyzz :

$S \rightarrow xxW$ {print(1);}

$S \rightarrow y$ {print(2);}

$W \rightarrow Sz$ {print(3);}

(b) Describe the tasks that are performed by semantic analysis phase of compiler.

(c) Find the FIRST and FOLLOW function for the following grammar :

$S \rightarrow 1 = R$

$S \rightarrow R$

$L \rightarrow *R$

$L \rightarrow id$

$R \rightarrow L$

(d) What do you mean by Looping unrolling ? Explain its importance.

(e) Describe the different types of intermediate codes that are used in compiler designing. Give the reason to gencrate the intermediate code in compiler.

(f) What do you mean by phases in compiler ? List the factors that decided the phases in compiler.

(g) Describe the applications of Parsing.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What do you mean by symbol table ? What are the different structures that are used to manage the symbol table ?

(b) What is Bootstrapping in compiler ? Give the Bootstrap arrangement for *three* machines (Assume there are three machines A, B and C).

(c) Show a finite state machine in either state graph or table form for each of the following languages (in each case the input alphabet is {a, b}) :

(i) Strings containing odd number of a's and even number of b's.

(ii) Strings containing three consecutive b's.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is Parser Generator ? What do you mean by synthesized attributes and inherited attributes ? Give the examples for both types of attributes.

(b) Write the syntax directed translation scheme for finding the 3-address code of switch or case statement. Write the 3-address code for the following program segment :

```
switch (a + b)
{
case 1 : x = y + z;
case 2 : u = v + w;
case 3 ; p = q*r/s;
default : a = b + c;
}
```

(c) Construct the LR(0) parsing table for the following grammar :

$E \rightarrow E + T|T$

$T \rightarrow T*F|F$

$F \rightarrow id$

Check the acceptance of the string id + id*id.

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain Constant Folding and Constant Propagation. What are the different themes that are applied in code optimization techniques ?

(b) Consider the following three-address code statements. Find the Leader Statements, Basic Blocks and Program Flow Graph.

Statement no.	3-address codes
1	c = 1
2	i = 2
3	if i <= y goto(8)
4	x = x*i
5	t = i + 1
6	i = t
7	goto(3)
8	goto calling program

(c) Write the algorithm for finding the canonical collection of LR(0) items. Define the closure (I) and goto (I, x) functions.

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What are the different phases of compiler ? Give the output after each phase of the compiler for the input statement t = m + p*r/100.

(b) Construct the Predictive parsing table for the following grammar :

$S \rightarrow iEtSS'|a$

$S' \rightarrow eS|\in$

$E \rightarrow b$

(c) Check whether the following grammar is ambiguous or not. If it is ambiguous, remove the ambiguity from the grammar :

$E \rightarrow E + T \mid T$

$T \rightarrow T*F|F$

$F \rightarrow (E)|id$

Roll No. .....

TCS–602

B. TECH. (CSE)
(SIXTH SEMESTER)
END SEMESTER EXAMINATION, 2018

SOFTWARE ENGINEERING

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
   (a) Which one of the following models is not suitable for accommodating any change ?
      (i) Build and Fix model
      (ii) RAD model
      (iii) Prototyping model
      (iv) Waterfall model
   (b) If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, SRS is said to be :
      (i) correct

(ii) consistent
(iii) unambiguous
(iv) verifiable

(c) The worst type of coupling is :
(i) Data coupling
(ii) Control coupling
(iii) Stamp coupling
(iv) Content coupling

(d) Changes made to an information system to add the desired but not necessarily the required features if called :
(i) Preventative maintenance
(ii) Corrective maintenance
(iii) Adaptive maintenance
(iv) Perfective maintenance

(e) All the modules of the system are integrated and tested as complete system in the case of :
(i) Bottom up testing
(ii) Sandwich testing
(iii) Top-down testing
(iv) Big-Bang testing

2. Attempt any *five* parts out of seven: (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)

(a) Distinguish between User requirements and System requirements.

(b) What is software crisis ? List the reasons for the "software crisis". Was Y2K a software crisis ?

(c) Write a short note on data dictionary and decision table.

(d) Explain, what do you mean by the terms cohesion and coupling and give the types.

(e) What are CASE tools ? Explain briefly.

(f) Discuss various Levels and Types of testing.

(g) Discuss any *two* requirement elicitation techniques.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Compare what is prototype model ? Give its types. Under what circumstances it is beneficial to construct a prototype model. Does the construction of a prototype model always increase the overall cost of software development ?

(b) Explain why the rapid delivery and deployment of new systems is often more important to business than the detailed

functionality of these systems. Explain how the Manifesto principles underlying agile methods lead to the accelerated development and deployment of software.

(c) Explain the process of Requirement Engineering in detail. Why requirement engineering is considered to be the most critical phase of software development ?

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Draw diagrams showing layout architectural pattern for the following system :

(i) Layered architecture for LIBSYS (library system)

(ii) Client-Server architecture for a film library.

(b) Discuss size oriented metric and function point analysis for estimation. Which technique is better and why ?

(c) Explain structure chart and also illustrate various strategies used to convert DFD model into a structure chart with example.

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Discuss Equivalence Class Partitioning (ECP) and Boundary Value Analysis (BVA) for designing test cases.

(b) Explain Linear Independent Path and Control Flow Graph. Draw a control flow graph for the following sets of code and find McCabe's Cylomatic complexity V(G) :

(i)
```
if(a>b)
    c=3;
    else c=5;
    c=c*c
```

(ii)
```
while(x!=y) {
    if(x>y) then
    x=y-y;
    else y=y-x;
    }
    return x;
```

(c) Differentiate between any *two* of the following :

(i) Functional testing and structural testing

(ii) Internal and external documentation

(iii) Code walk through and code inspection

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is SEI CMM ? Explain the CMM framework and justify different Key Processing Areas (KPA's) in detail ? What is ISO 9000 certification ? What are shortcomings of ISO 9000 certification ?

(b) Write short notes on any *two* of the following :

(i) Risk Management

(ii) Software configuration management

(iii) Software Re-engineering

(c) Consider a project to develop a full screen editor. The major components identified are :

(i) Screen edit

(ii) Command Language Interpreter

(iii) File input and amp; output

(iv) Cursor movement

(v) Screen movement

The sizes of these are estimated to be 5 k, 6 k, 1 k, 4 k and amp; 3 k delivered source code lines. Use COCOMO to determine : Calculate the effort, development time, average staff size and productivity of the project, (assume values for different cost drivers to be unity, 1.0 and project to be of organic type).

Roll No. .....

TCS–604

B. TECH. (CS/IT) (SIXTH SEMESTER) END SEMESTER EXAMINATION, 2018

COMPUTER NETWORKS—I

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Write True/False : (1×5=5 Marks)

   (a) Suppose Host A is sending Host B a large file over a TCP connection. The number of unacknowledged bytes that A sends cannot exceed the size of the received buffer. (True/False)

   (b) Suppose Host A sends one segment with sequence number 38 and 4 bytes of data over a TCP connection to Host B, in this same segment the acknowledgement is necessarily 42. (True/False)

(c) In our rdt protocol, why did we need to introduce timers ? (Need one line answer).

(d) What is the use of offset in fragmentation ? (Need one line answer)

(e) Once a connection is correctly established, a switch in a circuit-switched network can forward data correctly without requiring data frames to include a destination address. (True/False)

2. Attempt any *five* parts : (3×5=15 Marks)

(a) What is NAT ? How can NAT help in address depletion ?

(b) Host A send a TCP segment (seq = 2000, ack = 1157) to which host B replies with a TCP segment (seq = 1157, ack = 2999). What is the payload size of the first TCP segment and why ?

(c) Briefly discuss all the commands used between SMTP client and SMTP server to send a mail.

(d) In an IPv4 datagram, the MF bit is 0, the value of HLEN is 5, the value of total length is 200 and the offset value is 200. What is the number of the first byte and the number of last byte in this datagram ? Is this the last fragment, the first or the middle ?

(e) How DHCP is used to provide IP Addresses dynamically ?

(f) Explain conditional GET method used in HTTP.

(g) Explain following the terms :

(i) Private and Public IP addresses

(ii) Subnet mask and CIDR value

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Draw a datagram with a size of 8000 bytes fragmented in to four fragments in TCP header format. (Assume the size of fragments by your own)

(b) Draw the FSM for the sender side of protocol rdt 3.0 and explain it.

(c) List *three* transition strategies used to move from IPv4 to IPv6 and when is each strategy used.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Consider the GBN protocol with a sender window size of 3 and a sequence number range of 1024, suppose that at time t, the next in-order packet that the receiver is expecting has a sequence number of k.

Assume that the medium does not reorder messages :

(i) What are the possible sets of sequence number inside the sender's window at time *t* ? Justify your answer.

(ii) What are the possible values of the ACK field in all possible messages currently propagating back to the sender at time *t* ? Justify your answer.

(b) A large number of consecutive IP addresses are available starting from 198.16.0.0. Suppose that four organizations A, B, C and D request 4000, 2000, 4000 and 8000 addresses, respectively and in that order. For each of these, find the first and last IP address assigned, subnet masks with CIDR value, network address and broadcast address for all.

(c) Differentiate between recursive DNS query and iterative DNS query and explain "whois" database.

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is DNS Resource Records and discuss all the tuples used in it.

(b) Consider a datagram network using 8-bit host addresses : Suppose a router uses longest prefix matching and has the following forwarding table :

Prefix Match	Interface
00	0
01	1
10	2
11	3

For each of the four interfaces, give the associated range of destination host addresses and the number of addresses in the range.

(c) Explain the complete process used in peer to peer communication using Bit Torrent.

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Consider sending a large file from a host to another over a TCP connection that has no loss :

(i) Suppose TCP uses AIMD for its congestion control without slow start. Assuming cwnd increases by 1 MSS every time a batch of ACKs is received and assuming approximately

constant round trip times, how long does it take for cwnd to increase from 5 MSS to 11 MSS (assuming no loss events) ?

(ii) What is the average throughput (in terms of MSS and RTT) for this connection up through time = 6 RTT ?

(b) Draw all the mandatory fields present in TCP header which makes TCP protocol a reliable one.

(c) Consider an HTTP client that wants to retrieve a web document at a given URL. The IP address of the HTTP server is initially unknown. What transport and application-layer protocols besides HTTP are needed in this scenario ? What messages client will send and to whom to get IP address of the server ? What messages are exchanged between client and server to finally get the Web document ? Explain briefly with suitable example.

Roll No. .....

TCS–693

B. TECH. (CS/IT) (SIXTH SEMESTER)
END SEMESTER EXAMINATION, 2018

FULL STACK WEB DEVELOPMENT

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
   (a) What does PHP stand for_____.
   (b) PHP server scripts are surrounded by delimiters, _____.
   (c) The external JavaScript file must contain the <script> tag. (True/False)
   (d) Which HTML tag is used to define an internal style sheet ?
   (e) $_GLOBALS is a Super global variable. (True/False)

2. Attempt any *five* parts : (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)

(a) require_once(), require(), include().What is the difference between them ?

(b) What is the difference between $message and $$message ?

(d) What is the use of explode() and split() functions in PHP ?

(e) What is the use of header() function in PHP ?

(f) What is mean by an associative array in PHP ?

(g) What are magic constants in PHP ?

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain the PHP array sort functions with examples.

(b) How to create a session ? How to set a value in session ? How to remove data from a session ?

(c) Explain setcookie() function in PHP and how can you retrieve a cookie value ?

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Write syntax to file handling like open file, read file, write file in PHP.

(b) Briefly discuss the event handling from body elements and button elements in JavaScript.

(c) How to create a MYSQL connection and Data Base in PHP ?

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is CMS and what are the popular CMS in PHP ?

(b) What does DOM stand for ? Explain the top most objects in the DOM. Explain the Navigator Object in detail.

(c) How we can retrieve the data in the result set of MySQL using PHP ?

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is the importance of "method", "Action" and "enctype" attributes in a html form ?

(b) What is selector in CSS ? Can I attach more than one declaration to a selector ? What is cascading order ?

(c) Write down the client side and server side code for save an uploaded file in PHP.

F. No. : a-57

Roll No. .....

TCS–671

B. TECH. (CS) (SIXTH SEMESTER)
END SEMESTER EXAMINATION, 2018

BIGDATA STORAGE AND PROCESSING

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
   (a) Hadoop provides unlimited scalability of data storage
   (b) MapReduce processing is similar to UNIX sequence (also called pipe) structure.
   (c) A mapper commonly performs input format parsing, projection, and filtering of data.
   (d) Relational databases are better than NoSQL databases in managing large and unpredictable streams of data.
   (e) HBase is built on a master slave concept.

2. Attempt any *five* parts : (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)

(a) What are the design goals for HDFS ?

(b) What is NoSQL databases ?

(c) What do you mean by a block in file system and specify its size ?

(d) Define the various file formats supported by HIVE.

(e) Specify the role of job tracker and task tracker in HDFS.

(f) What is Zookeeper ?

(g) What are the different modes in which Hadoop can be installed ?

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) How does HDFS ensure security and integrity of data ?

(b) How is mining of Big data different from traditional data mining.

(c) Describe in brief about the PIG Architecture.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What is the key-value pair format ? How is it different from other data structures ? What are its benefits and limitations ?

(b) What is a Job tracker program ? How does it differ from the task tracker program ?

(c) What are the similarities and differences between Hive and Pig ?

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Compare and contrast the features of NoSQL and RDBMS.

(b) Differentiate "Scale up and Scale out". Explain with an example. How Hadoop uses Scale out feature to improve the Performance

(c) Write the functions HBase Data definition language commands create, list, disable, enable, and describe.

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain about the implementation of map reduce concept with a small example.

(b) Specify the difference between a primitive type and a wrapper class. Explain about the conversion from primitive type to wrapper class and vice-versa with an example.

(c) Define the various Input formats supported by Hadoop.

Roll No. .....

TCS–691

B. TECH. (CSE) (SIXTH SEMESTER) END SEMESTER EXAMINATION, 2018

IMAGE PROCESSING AND COMPUTER VISION

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

(iii) Write to the point answer, writing more will not fetch more marks.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)

   (a) In MATLAB matrix index starts from 1. (True/False)

   (b) Salt and pepper error can be removed/reduced by max or min filter. (True/False)

   (c) Erosion and dilation operations are dual with each other. (True/False)

(d) Maximum number colours that our computer can show is ..... .

(e) Hit or miss transform is used for shape detection. (True/False)

2. Attempt any *five* parts out of seven : (3×5=15 Marks)

(Define/Short Numerical/Short Programming/ Draw)

(a) What is meant by image segmentation ? Write its use in image processing.

(b) What is meant by noise in image ?

(c) Define the following terms :

(i) Image

(ii) Resolution

(iii) Pixel

(iv) Digital Image

(d) Explain Otsu's method of thresholding.

(e) Explain with example moving average.

(f) Prove that $\frac{df}{dx} = f'(x) = f(x+1) - f(x)$ using Fundamental theorem of calculus.

(g) Write MATLAB code to find number of connected components of an image.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain the following morphological algorithms :

(i) Hole filling

(ii) Connected components

(b) Derive Mathematically the Laplacian operator and show how is it used for sharpening.

(c) Draw the model of Image degradation/Restoration process.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) With necessary figures, explain opening and closing operations.

(b) Write MATLAB code to find edges using Laplacian filter.

(c) With an example explain Huffman Encoding.

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain region based segmentation.

(b) Write the MATLAB code for detecting isolated points in an image.

(c) Explain Watershed algorithm. Write its applications.

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) Explain with necessary Mathematical formulas how multivariable thresholding works.

(b) Explain the concept of thresholding in image segmentation.

(c) Define background subtraction and methods for background subtraction.

Roll No. .....

TCS–672

B. TECH. (CSE) (SIXTH SEMESTER)
END SEMESTER EXAMINATION, 2018

MACHINE LEARNING—II

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)

   (a) To prevent overfitting in deep neural networks we use ..... .
   (dropin/dropout/dropmax)

   (b) ICA differs from other methods in that it looks for components that are both statistically ..... . (dependent/ independent), and ..... (Gaussian/non-Gaussian).

(c) When only single training example is used to calculate the gradient and update parameters it is known as ..... .
(Batch Gradient Descent/Stochastic Gradient Descent)

(d) "Increase in size of a convolutional kernel would necessarily increase the performance of a convolutional neural network." Is this statement true or false ?

(e) Smaller C values in SVM will result in ..... (more/less) training errors.

2. Attempt any *five* parts out of seven: (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)

(a) How do we approach dropout in training phase and testing phase ?

(b) What is the Sequential model in Keras ?

(c) A consumer has a headache, takes two Brufen tablets, and finds that his headache eases considerably. Is this an example of Positive Reinforcement or Negative Reinforcement ? Give brief explanation.

(d) What are the advantages of Support Vector Machines ?

(e) Game theory is the mathematics of conflict. Explain.

(f) Give a pseudocode of Q-learning.

(g) Define the ReLU activation function. Mention one advantage of ReLU.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What do you understand by cross entropy ? Suppose for a specific training instance, the label is B (out of the possible labels A, B and C). Your machine learning algorithm predicts the following probability distribution : Pr (Class A) = 0.228, Pr (Class B) = 0.619, Pr (Class C) = 0.153. Find the cross entropy.

(b) What are the major components of an Reinforcement Learning agent ? Use the reinforcement learning approach to show the steps in writing an elevator control program.

(c) Scenario 1 : You are given data of the map of Dehradun with aerial photographs of the city and its outskirts. The task is to segment the areas into industrial land, farmland and natural landmarks like river, mountains, etc.
Scenario 2 : You are given data of the map of Dehradun, with detailed roads and distances between landmarks. This is

represented as a graph structure. The task is to find out the nearest distance between two landmarks.

For which scenario(s) you can use deep learning ? Give some explanation.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) ABC Power Ltd. currently has three schemes for quarterly payment of electricity bills, namely:

(i) Cheque/cash payment,

(ii) Credit card debit,

(iii) Bank account direct debit

Their research department has estimated the following matrix of probabilities for switching between schemes :

Currently pays by scheme	Will switch next quarter to scheme 1	2	3
1	0.85	0.10	0.05
2	0.04	0.90	0.06
3	0.02	0.23	0.75

If 70% currently pay by scheme

(a) 20% by scheme

(b) and 10% by scheme

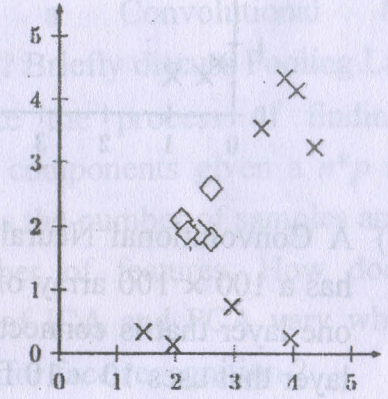
(c) What will be the corresponding percentages after :

(i) Two quarters; and

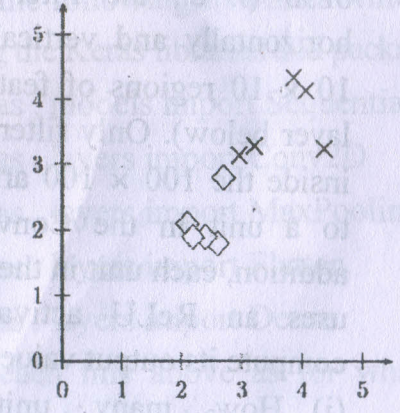
(ii) In the long-run ?

(b) For each of the following datasets show a decision boundary using a suitable kernel. Write down the name of the kernel used (Marks will be awarded only if, along with decision boundary drawing the kernel types is mentioned) :

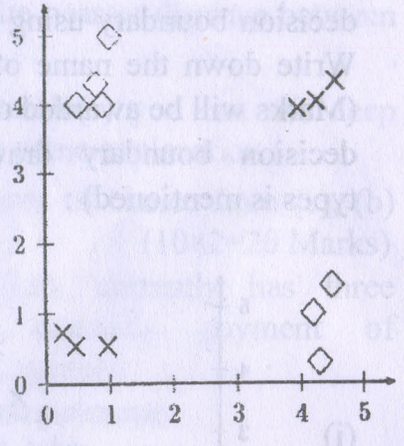
(i)



(ii)



(iii)



(c) A Convolutional Neural Network (CNN) has a 100 × 100 array of feature values at one layer that is connected to convolution layer that uses 10 × 10 filters with a stride of 5 (i. e., the filter is shifted by 5 horizontally and vertically over different 10 × 10 regions of feature values in the layer below). Only filters that are entirely inside the 100 × 100 array are connected to a unit in the Convolution layer. In addition, each unit in the convolution layer uses an ReLU activation function to compute its output value.

(i) How many units are in the convolution layer ?

(ii) How many weights must be learned for this layer, not including any bias weights needed ?

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What are the major steps involved in building a Convolutional Neural Network ? Briefly discuss Pooling Layers.

(b) Enumerate the process of finding the principal components given a $n*p$ matrix where n is the number of samples and m is the number of features. How does the working of ICA and PCA vary when we use them for face recognition ?

(c) Refer to the following five lines which are importing the Keras libraries and packages :

```
from keras . models import Sequential
from keras . layers import Conv2D
from keras . layers import MaxPooling2D
from keras . layers import Flatten
from keras . layers import Dense
```

Explain each line above as for what the packages are imported for.

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

(a) What do you understand by learning rate ? Is there a better way to determine the learning rate ?

(b) What do you understand by Zero-Sum game in Game theory ? Give an example of zero sum game.

(c) (i) Suppose you have a robot trying to reach a goal and avoid cliffs in a small grid world. It can only move North, South, East, or West, but occasionally fails to move in the intended direction. If you were to model this using an MDP and were trying to solve it optimally, should you use value iteration or policy iteration ? Justify your answer.

(ii) Now suppose that the robot can teleport to any grid cell but the teleportation causes it to land in neighboring grid cells near the target with some probability. If you were to model this using an MDP and were trying to solve it optimally should you use value iteration or policy iteration ? Justify your answer.

DATE: 25/05/2018

TIME: 9:30Am to 12:30Pm

Roll No. .....

TCS–651

B. TECH. (CS) (SIXTH SEMESTER)

END SEMESTER EXAMINATION, 2018

DEVOPS ON CLOUD

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. State True-False : (1×5=5 Marks)

(a) Jenkin is used for testing. (True/False)

(b) Puppet is used for continuous deployment. (True/False)

(c) In DevOps Timeliness and Quality have equal priority. (True/False)

(d) In Agile, feedback is mostly given by customers. (True/False)

(e) Jenkins integration server is written in python. (True/False)

2. Attempt any *five* parts : (3×5=15 Marks)
(Define/Short Numerical/Short Programming/ Draw)
   (a) Write a short note on Nagios.
   (b) Differentiate between scalability and elasticity.
   (c) What is utility computing ?
   (d) What is dark launching technique ?
   (e) Write a short note on Docker.
   (f) Explain Amazon Web Services.
   (g) Differentiate between Ansible and JIRA.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)
   (a) What is version control ? Name a popular version control service.
   (b) Explain Git version control with a suitable diagram. What is the advantage of using Git version control.
   (c) Explain the life cycle of DevOps.

4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)
   (a) Differentiate among waterfall model, agile framework and DevOps.
   (b) Explain LEAN project management framework.

   (c) Which are the top DevOps tools ? How do all these tools work together ?

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)
   (a) What is meant by Continuous Integration ?
   (b) What are the benefits of Automation Testing ?
   (c) Whet is the difference between Asset Management and Configuration Management ?

6. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)
   (a) What is puppet ?
   (b) Explain the role of Hypervisor in Cloud Computing and its type.
   (c) Explain in detail about the concept of virtualization.