DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

End Semester Examination – December - 2018

Branch: M. Tech. (Computer Engineering)   **Sem.:- I**

Subject with Subject Code:- Artificial Intelligence & Knowledge Reasoning (MTCE1105)

Marks: 60   **Date:- 03/01/2019**   **Time:- 3 Hr.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

                                                                     (Marks)

Q.1. Solve any two sub questions

A) Explain The Resolution Refutation Method.   06

B) What is knowledge representation technique? Explain the role of reasoning in AI.   06

C) Explain the Tableau Method   06

Q.2. Solve any two sub questions

A) Explain The Rete Algorithm.   06

B) Explain the Forward Chaining in AI   06

C) Explain the skolemization in AI   06

Q.3. Solve any two sub questions

A) How to solve Depth First Search and Efficiency Issues.   06

B) Explain The Resolution Refutation Method for FOL.   06

C) Explain FOL with Equality, Complexity.   06

Q.4. Solve all sub questions

A) Explain the Script Applier Mechanism(SAM).   06

B) Explain the Plan Applier Mechanism(PAM).   06

Q.5. Solve any two sub questions

A) Explain the ALC. 06

B) Explain the A-box Reasoning. 06

C) Explain the Skeptical Reasoning. 06

Q.6. Solve all sub questions

A) Explain the Auto epistemic Logic. 06

B) Explain The Muddy Children Puzzle. 06

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Winter Semester Examination – December 2018

Branch: M. Tech. (CSE/ CE / CS/ CS&I)
Subject with Subject Code: Cloud Computing [MTCE1104A]
Date: 01/01/2019

Semester: I
Marks: 60
Time: 3Hrs.

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

(Marks)

Q.1. Attempt the following questions   (2x6)

a) What is Parallel Computing? Explain in detail about Flynn's taxonomy.

b) Enlist and explain in brief about benefits of cloud computing.   (2x6)

Q.2. Attempt the following questions

a) What is Kusnetzky Group model of virtualization and elaborate hardware virtualization types?

b) What is a Hypervisor? Enlist its types and elaborate Type-I in detail.

Q.3. Attempt the following questions   (2x6)

a) Describe Cloud Computing with respect to its cloud service models and explain the provider-consumer interaction dynamics for Infrastructure-as-a-service.

b) Why is it necessary to secure a Hypervisor? Enlist the different types of threats to hypervisor and Virtual Machines? Explain any two threats in detail.

Q.4. Attempt the following questions   (2x6)

a) What are the different types of Cloud Security challenges? Explain the Infrastructure security at Network & Host Level.

b) What is the importance of cloud disaster recovery? Explain the terms RPO & RTO in detail.

Q.5. Attempt the following questions   (2x6)

a) What is Kernel-based Virtual machine? Identity & Justify its type.

b) How security is managed in cloud? Explain it in detail.

Q.6. Attempt the following questions   (2x6)

a) What is the Impact of AWS in Cloud Computing? Elaborate any of its two services in detail.

b) Give an example of Platform-as-a-service & Explain it in detail.

--- END OF PAPER ---

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Winter Semester Examination – December – 2018

Branch: M. Tech. (Computer Engineering)   Semester: I
Subject (Code) :- Advanced Computer Network (MTCE1103)

Date:- 29/12/18   Time: 3 Hrs.   Marks: 60

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any *FIVE* questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may assume appropriately and should mention it clearly before writing answer.

(Marks)

Q.1 Attempt the following questions   (2 x 6)

A) Choose the correct answer from multiple alternatives.

(i) Which of the following services used by the TCP protocol?
   a) DHCP b) SMTP c) HTTP d) TFTP
(ii) What is the maximum number of IP addresses that can be assigned to hosts? Assume subnet is 255.255.255.224.
   a) 14 b) 15 c) 16 d) 30
(iii) What is minimum size of Ethernet frame?
   a) 32 bytes b) 64 bytes d) 128 bytes d) 256 bytes
(iv) What is maximum payload of a IP packet?
   a) 65535 bytes b) 65515 bytes c) 65495 bytes d) 65128 bytes
(v) Which of the following describe function(s) of router?
   a) packet filtering b) switching c) path selection d) all above
(vi) Which protocol is used to find the hardware address of a local device?
   a) RARP   b) ARP   c) ICMP   d) IP

B) Consider a point-to-point link 50 Km in length. At what bandwidth would propagation delay (at a speed of 2×10^8 m/s) equal transmit delay for 100 bytes packet? What about 512 bytes packet?

Q. 2   Attempt the following questions   (2 x 6)

A) What is congestion and receive window of TCP? A TCP connection is using a window size of 5, 000 bytes and the previous acknowledgement number was 2, 001. It receives a segment with acknowledgement number 5, 001 and window size advertisement of 6, 000. Draw a time-line diagram to show the situation of the window before and after transmission.

B) What is UDP? Give differences between TCP and UDP. Also give three names of typical applications in which UDP is used as transport protocol.

Q. 3   **Attempt the following questions**   (2 x 6)

A) What is TCP? Draw and explain TCP state transmission diagram.

B) What are the advantages of fiber optic technology in communication systems?

Q. 4 **Attempt the following questions**   (2 x 6)

A) Consider two regions, 1000 - 1200 nm and 1450 - 1650 nm in a fiber low-loss spectrum. Calculate the actual bandwidth provided by each region. (Assume velocity of light in fiber is 2.0×10^8 m / s.)

B) What is DNS? What is necessicity of DNS server in the network?

Q. 5 **Attempt the following questions**   (2 x 6)

A) What is WDM system? What are advantages of DWM system?

B) What do you mean by MPLS technology? What are the benefits of using MPLS?

Q. 6 **Attempt the following questions**   (2 x 6)

A) What are the differences between single-mode and multi-mode fiber?

B) What is SONET? Enlist the different SONET electrical transport signals and their bit rates.

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Winter Semester Examination – December - 2018

Course: M. Tech (CE / CS / CS & IT / CS&E)	**Sem.:- II**
Subject with Subject Code:- Data Science [MTCE1201]	**Marks: 60**
Date:- 26/12/2018	**Time:- 3 Hrs.**

Instruction to students:

1. *Attempt any five Questions to the following*

2. *If any data missing then assume suitable data if necessary indicate it clearly*

Q.1   a) Explain k-means & k- medoids give its pro & cons.   (08)
      b) What are different methods used in R to discover pattern in dataset?   (04)

Q.2   a) What is text mining? Write R language code for the following   (08)
          i.   Convert text to lowercase
          ii.   Remove punctuations from text
          iii.   Removing stop word.
      b) Explain simple regression with suitable example.   (04)

Q. 3   a) Write a short notes on following.   (08)
          i.   Co-relation & Co-variance
          ii.   Pearson Co-relation iii)Polychoric Co-relation
      b) write a short notes on   (04)
          i.   Multiple regression
          ii.   Multivariate regression

Q.4   a) Write the use of following packages in R programming?   (08)
      i)+ M & XML ii)MASS iii)Chemometrics iv)Corrgram & HMISC
      v)polycor vi)NbCluster vii)ggplot viii)kernlab.
      b) Explain heterogeneous co-relation Matrix.   (04)

Q. 5   a) What are different packages which provide visualization   (08)
      functionality? what are various parameter used by Map function in R.
      b) Explain nearest neighbor algorithm of classification.   (04)

Q. 6   a) What are the different models used in machine learning and explain
      anyone with suitable example.   (08)
      b) What is data partitioning? Which one standard method used by for
      data partitioned.   (04)

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2018

Course: M. Tech Computer Engineering

Subject Name: Machine Learning

Max Marks: 60   Date: 27/12/2018

Semester: I

Subject Code: MTCE1102

Duration: 3 Hr.

Instructions to the Students:
1. *Solve any Five questions of the following.*
2. *The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve the following.**		
A)	Differentiate between supervised and unsupervised learning.	Synthesis	**(4)**
B)	What is Machine learning? Define feature, feature vector and feature space.	Remember	**(4)**
C)	Describe the main steps of the supervised training algorithm.	Understand	**(4)**
Q. 2	**Solve the following.**		
A)	Explain Embedded Methods of feature selection.	Understand	**(5)**
B)	What is over-fitting and under-fitting in learning? Explain.	Remember	**(2)**
C)	Explain Filter feature selection method.	Understand	**(5)**
Q. 3	**Solve the following.**		
A)	Let the probability that a road is wet $P(w) = 0.3$. Let probability of rain, $P(R) = 0.3$. Given that 90% of the time when the roads are wet, it is because it has rained, and it has rained; calculate the posterior probability that the roads are wet. Also calculate probability that road is not wet.	Application	**(3)**
B)	What is Bayesian belief network? Explain.	Remember, Understand	**(4)**
C)	Lakshman travels by air if he is on an official visit. If he is on a personal visit, he travels by air if he has money. If he does not travel by plane, he travels by train but sometimes also takes a bus. The variables involved are : 1. Lakshman travels by air(A) 2. Goes on official visit(F) 3. Lakshman has money(M) 4. Lakshman travels by train(T) 5. Lakshman travels by bus(B) Convert this situation into a Bayesian belief network	Synthesis	**(5)**

Q. 4 Solve the following.

A) Give the architecture and algorithm for single layer perception.   Understand   (6)

B) Explain backpropogation algorithm.   Understand   (6)

Q. 5 Solve the following.

A) What is Logistic Regression? Explain.   Remember   (6)

B) Explain SVM with a neat diagram.   Understand   (6)

Q. 6 Solve the following.

A) Assume the following dataset is given: (2,2), (4,4), (5,5), (6,6),(9,9) (0,4), (4,0)   Application   (6)
. K-Means is run with k=3 to cluster the dataset. Moreover, Manhattan distance
is used as the distance function to compute distances between centroids and
objects in the dataset. Moreover, K-Mean's initial clusters C1, C2, and C3 are
as follows:
C1: {(2,2), (4,4), (6,6)}
C2: {(0,4), (4,0)}
C3: {(5,5), (9,9)}
Now K-means is run for a single iteration; what are the new clusters and what
are their centroids?

B) Use single link agglomerative clustering to group the data described by the   Application   (6)
following distance matrix. Show the dendrogram

	A	B	C	D
A	0	1	4	5
B		0	2	6
C			0	3
D				0

*** End ***

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2018

Course: M. Tech (CE / CS / CS & IT / CS&E)
Subject with Subject Code:- Data Science [MTCE1201]
Date:- 26/12/2018

Sem.:- II
Marks: 60
Time:- 3. Hrs.

Instruction to students:
1. Attempt any five Questions to the following
2. If any data missing then assume suitable data if necessary indicate it clearly

Q.1	a) Explain k-means & k- medoids give its pro & cons.	(08)
	b) What are different methods used in R to discover pattern in dataset?	(04)
Q.2	a) What is text mining? Write R language code for the following	(08)
	i. Convert text to lowercase	
	ii. Remove punctuations from text	
	iii. Removing stop word.	
	b) Explain simple regression with suitable example.	(04)
Q. 3	a) Write a short notes on following.	(08)
	i. Co-relation & Co-variance	
	ii. Pearson Co-relation iii)Polychoric Co-relation	
	b) write a short notes on	(04)
	i. Multiple regression	
	ii. Multivariate regression	
Q.4	a) Write the use of following packages in R programming? i)+ M & XML ii)MASS iii)Chemometrics iv)Corrgram & HMISC v)polycor vi)NbCluster vii)ggplot viii)kernlab.	(08)
	b) Explain heterogeneous co-relation Matrix.	(04)
Q. 5	a) What are different packages which provide visualization functionality? what are various parameter used by Map function in R.	(08)
	b) Explain nearest neighbor algorithm of classification.	(04)
Q. 6	a) What are the different models used in machine learning and explain anyone with suitable example.	(08)
	b) What is data partitioning? Which one standard method used by for data partitioned.	(04)

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Winter Semester Examination – Dec – 2018

Course: M. Tech. (Computer Engineering)   **Semester: I**

Subject with Subject Code: MTCE1101-Computer Algorithms
Marks: 60   **Date: 24/12/2018**   **Time: 3Hrs.**

Instructions to the Students
1. *Each question carries 12 marks.*
2. *Attempt any five questions of the following.*
3. *Illustrate your answers with neat sketches, diagram etc., wherever necessary.*
4. *If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.*

		(Marks)
Q.1.	a) How elements are inserted and deleted from Red- black Tree?	(4)
	b) Explain in detail about Binomial Heap operations.	(8)
Q.2.	a) With neat diagram, Describe about minimum cost spanning tree using Kruskal's algorithm in detail.	(8)
	b) How can you search elements using depth first search?	(4)
Q.3.	a) Describe about convex hull operations.	(6)
	b) Explain divide and conquer algorithm in detail.	(6)
Q.4.	a) Write Rabin Karp algorithm with example.	(8)
	b) Shortly discuss with Knuth-Morris-Pratt algorithm.	(4)
Q.5.	a) Explain in detail about Strassen's multiplication algorithm.	(6)
	b) Write short notes on LU decomposition	(6)
Q.6.	a) Explain about Polynomial multiplication algorithms in detail.	(6)
	b) Write two examples for Primality testing.	(6)

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