

**Code: 5G164**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Artificial Intelligence**

( Computer Science and Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Compare different categories of definitions for artificial intelligence as per (i) thought processes and reasoning (ii) behavior 7M  
b) Define rationality. Explain with a table the PEAS description of the task environment for an automated taxi. 7M

**OR**

2. a) Write the simple backtracking algorithm for CSP problems. 7M  
b) Illustrate the Uniform Cost search on Romania State-Space 7M

**UNIT-II**

3. a) Define the syntax of propositional logic. Show the BNF grammar of sentences in propositional logic with operator precedence 7M  
b) Write briefly about the syntax and semantics of first-order logic 7M

**OR**

4. a) Write the unification algorithm for computing most general unifiers 7M  
b) Explain the backward chaining algorithm for definite clauses 7M

**UNIT-III**

5. a) Write the PDDL description of an Air-cargo Transportation problem 7M  
b) Show the breadth-first implementation of hierarchical forward planning search 7M

**OR**

6. a) Describe with examples how objects are organized into categories 7M  
b) Illustrate the concept of ontology with an example 7M

**UNIT-IV**

7. a) Discuss about the Kolmogorov's Axioms of probability 7M  
b) Summarize your view on uncertainty 7M

**OR**

8. a) Illustrate with an example the concept of independence 7M  
b) Explain with an example, the probability distribution function 7M

**UNIT-V**

9. a) Write the decision-tree learning algorithm 7M  
b) Distinguish supervised, Reinforcement, Supervised and semi-supervised learning 7M

**OR**

10. a) Write the back propagation algorithm for learning in multilayer neural networks 7M  
b) Describe briefly about active reinforcement learning 7M

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**R-15**

**Code: 5G161**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

## **Cryptography and Network Security**

( Common to CSE & IT )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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### **UNIT-I**

1. a) What do you understand by information security? Explain three Security goals in information security? 7M
- b) Determine the security services required to counter various types of Active and Passive attacks. What are the common C-functions that give raise to buffer overflow? 7M

**OR**

2. a) Discuss the security mechanisms recommended by ITU-T (X.800) to provide the security services. 7M
- b) Write briefly about ARP attack and session hijacking. 7M

### **UNIT-II**

3. a) Compare and contrast a conventional signature and a digital signature. Discuss the possible types of forgery in digital signatures. 7M
- b) Describe the steps in finding the message digest using SHA-512 algorithm. What is the order of finding two messages having the same message digest? 7M

**OR**

4. a) When modern ciphers are used for encryption in real life applications, different modes of cipher operations are used. Justify the need of different modes of operation. Describe the encryption operation using any one of the modes of operation. 7M
- b) Explain the benefits/advantages of HMAC over other hash based schemes. 7M

### **UNIT-III**

5. a) Describe the architecture of an E-mail. How does a PGP can be used to create a secure e-mail message? 7M
- b) What are the content types provided by S/MIME? How does a receiver find out what cryptographic algorithms the sender has used when receives an S/MIME message? 7M

**OR**

6. a) Explain the authentication procedures defined by X.509 certificate. Illustrate the concept of 'certificate chain' for verification of digital signature on X.509 certificate. 7M
- b) Explain about the trust mechanism and certificates used by PGP and S/MIME. 7M

**UNIT-IV**

7. a) Discuss steps involved in the SSL Record Protocol transmission? 7M  
b) Describe the architecture of IPSec. Briefly explain Encapsulating IP Security Payload? 7M

**OR**

8. a) Suppose an attacker records the entire SSL session between a bank and its customer. Can the attacker replay the session to the bank and potentially cause the customer to pay the bill twice? If yes, explain why? If not, what prevents this form of replay in SSL? 7M  
b) Explain about Host based Intrusion Detection Systems in brief. 7M

**UNIT-V**

9. a) Most of the popular host operating systems come with the TCP/IP Suite and are amenable to SNMP management. The current networks management systems, however, suffer from several limitations. Describe them. 7M  
b) Write briefly about techniques used for Statistical anomaly detection. 7M

**OR**

10. a) What is the purpose of a firewall? Where is it located? What are the benefits of implementing a firewall? 7M  
b) What is an audit record? What is the use of audit record in intrusion detection? 7M

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**Code: 5G162**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Data Mining & Data Warehousing**  
( Computer Science and Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

- 1. a) What is Data Mining? Explain the importance of Data Mining in KDD Process. 7M
- b) Explain about functionalities of Data Mining. 7M

**OR**

- 2. a) What are the key sources for Data Mining? Explain. 7M
- b) Explain the following Terms with example 7M
  - i) Mean      ii) Median      iii) Range

**UNIT-II**

- 3. a) Briefly explain about Hunt's Algorithm to construct a Decision Tree. 7M
- b) Discuss about 7M
  - i) GINI Index      ii) Confusion Matrix

**OR**

- 4. a) Explain about features and Issues of Decision Tree Construction. 6M
- b) Write about any two methods to evaluate the classifier accuracy. 8M

**UNIT-III**

- 5. What is the significance of Rule in Classification? Discuss about different methods used for Rule Extraction. 14M

**OR**

- 6. a) Discuss about Artificial Neural Networks. 6M
- b) Briefly evaluate the working of Support Vector Machine. 8M

**UNIT-IV**

- 7. a) Explain about the method to determine the association rules without using the candidate generation approach. 8M
- b) Construct a FP Tree for the following transaction set

TID	Items
T1	ABC
T2	A
T3	BC
T4	A BCD
T5	BC
T6	BD
T7	ACD
T8	CD
T9	C
10	ABD

6M

**OR**

- 8. a) Explain the differences between FP Tree and Apriori Algorithm. 6M
- b) What is interestingness? Explain the objectives of the Interestingness in Association Rules. 8M

**UNIT-V**

- 9. a) Explain about K Mean Clustering and different issues with the K Mean Clustering. 8M
- b) Write a short note on Minimum Spanning Tree. 6M

**OR**

- 10. a) What is Cluster? Discuss about DBSCAN. 7M
- b) Explain about different Hierarchical Clustering Approaches. 7M

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**R-15**

**Code: 5G169**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Distributed Systems**

( Computer Science and Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Explain in detail about the challenges of Distributed Systems Design. 8M  
b) Discuss about the design requirements for distributed systems of architectural models. 6M

**OR**

2. a) Discuss about interaction model in detail. 7M  
b) Write short notes on group communication. 7M

**UNIT-II**

3. a) Explain about remote procedure call in detail. 7M  
b) Briefly explain about the distributed object model. 7M

**OR**

4. a) Explain about the operating system architecture. 7M  
b) Briefly explain about distributed file system requirements. 7M

**UNIT-III**

5. a) Discuss about the domain name system. 8M  
b) Write short notes on Names and services of distributed systems. 6M

**OR**

6. a) Explain about the routing overlay distributed algorithm. 6M  
b) What are the functional requirements and non-functional requirements of peer-to-peer middleware? Discuss. 8M

**UNIT-IV**

7. a) Explain about the Berkeley algorithm. 6M  
b) Write short notes on  
i) distributed garbage collection  
ii) Logical clocks. 8M

**OR**

8. a) Explain the Maekawa's voting algorithm of distributed mutual exclusion. 6M  
b) Briefly explain about  
i) overlapping groups  
ii) consensus in a synchronous system 8M

**UNIT-V**

9. a) Discuss about nested transactions 6M  
b) Briefly explain about  
i) two-version locking  
ii) hierarchic locking 8M

**OR**

10. a) Explain about the two-phase commit protocol. 7M  
b) Briefly explain about the fault-tolerant services of distributed systems. 7M

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**Code: 5G16C**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Internet of Things**  
( Common to CSE & IT )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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<b>UNIT-I</b>
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- 1. a) Discuss about the principle of RFID. 7M
- b) Explain about various components of RFID system. 7M

**OR**

- 2. a) What are current enabling technologies in IoT? Explain. 7M
- b) Explain about Internet in IoT in detail. 7M

<b>UNIT-II</b>
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- 3. a) What is meant by IoT stack? Discuss in detail. 7M
- b) Explain about device and communication layers in IoT stack. 7M

**OR**

- 4. a) Write short notes on IoT security and management. 7M
- b) Explain about core platform layer for IoT stack. 7M

<b>UNIT-III</b>
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- 5. a) With an example explain the general connectivity pattern which allows devices to communicate to the core platform? 7M
- b) Explain about the role of IoT in connected car solutions? 7M

**OR**

- 6. a) What is meant by Predictive Based Maintenance? Explain. 7M
- b) Briefly explain about Asset Management. 7M

<b>UNIT-IV</b>
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- 7. a) Distinguish between IP and 6LoWPAN protocol stacks. 7M
- b) Write the basic 6LoWPAN format in detail. 7M

**OR**

- 8. a) Discuss about 6LoWPAN architecture in detail. 7M
- b) Explain about Wireless RFID infrastructure. 7M

<b>UNIT-V</b>
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- 9. a) What are the different types of platforms for choosing Internet of Things? Explain. 7M
- b) Discuss in detail about System-on-Chips. 7M

**OR**

- 10. a) Explain in detail about Arduino board. 7M
- b) What are microcontrollers? Explain briefly. 7M

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**Code: 5G16B**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Software Project Management**  
( Computer Science and Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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<b>UNIT-I</b>
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- 1. a) Describe five improvements to the basic waterfall process that would eliminate most of the development risks. 7M
- b) Explain about software economics in detail. 7M

**OR**

- 2. a) Discuss about transitioning to an iterative process. 7M
- b) What are the three levels of process and their attributes? Explain. 7M

<b>UNIT-II</b>
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- 3. a) Discuss in detail about the principles of conventional software engineering. 7M
- b) Explain the lifecycle phases of a modern software project. 7M

**OR**

- 4. a) Describe engineering artifacts. 7M
- b) Discuss in detail about the artifact sets. 7M

<b>UNIT-III</b>
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- 5. List out the three sequences of project points are used to synchronize stakeholder expectations throughout the lifecycle and brief any one of them. 14M

**OR**

- 6. a) What is the purpose of periodic status assessment? Explain how it should be done? 7M
- b) Discuss the different views of an architecture from technical perspective. 7M

<b>UNIT-IV</b>
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- 7. a) What do you understand the term WBS? Explain about evolutionary WBS. 7M
- b) Conventional WBS frequently suffer from three fundamental flaws, what are they? And brief them. 7M

**OR**

- 8. a) Explain in detail about the cost and schedule estimating process. 7M
- b) Discuss the role and responsibility of a project organization. 7M

<b>UNIT-V</b>
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- 9. a) What are the differences in work flow priorities between small and large projects? Brief them. 7M
- b) Discuss in detail about automation of metrics. 7M

**OR**

- 10. a) What are the advantages of measurement? 7M
- b) Discuss about the process discriminants. 7M

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<b>R-15</b>
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**Code: 5G163**

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019

**Smart Phone Programming**  
( Computer Science and Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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<b>UNIT-I</b>
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1. a) Draw the android software stack and explain each layer  
b) Explain the features of android operating system

**OR**

2. What is Dalvik Virtual Machine (DVM) and how it works?

<b>UNIT-II</b>
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3. Draw the activity life cycle architecture and describe any 7 methods.

**OR**

4. Explain the two types of intent with relevant examples

<b>UNIT-III</b>
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5. Create UI programmatically? With Absolutelayout, two textView, two checkbox and one button.

**OR**

6. a) Create custom toast message by using TextView programmatically.  
b) Create a program with DatePicker, TimePicker, TextView and a button in such a way that when we hit the button, the picked date and time should be displayed in the textview"

<b>UNIT-IV</b>
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7. a) What is sharedpreferences? Explain it with a program for storing and loading the data?  
b) What is SQLite? Explain it with necessary program for querying the data.

**OR**

8. Write an android program to store and load a file from an internal memory

<b>UNIT-V</b>
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9. What is GPS? Create a GPS program to find distance between current location to a target location.

**OR**

10. a) Draw Android service lifecycle and describe any 3 methods  
b) What is geocoding in Android operating system? Explain in detail.

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