

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

**Program: Information Technology**

Curriculum Scheme:2016

Examination: BE Semester- VII

Course Code: 42651 and Course Name: Enterprise Network Design

Time: 2 hour 30 minutes

Max. Marks: 80

<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Write the IP address 135.1.1.25 mask 255.255. 248.0 in CIDR notation
Option A:	135..1.1.25/22
Option B:	135..1.1.25/21
Option C:	255.255.0.0
Option D:	255.255.255.0
2.	___ routing denotes the use of manually configured routes for traffic forwarding purposes.
Option A:	Static
Option B:	Dynamic
Option C:	Interior
Option D:	Exterior
3.	In SONA architecture .....Layer enables efficient allocation of resources to applications and business processes delivered through the networked infrastructure.
Option A:	Networked Infrastructure layer
Option B:	Interactive Services layer
Option C:	Application layer
Option D:	Data link Layer
4.	Of the following which is the characteristic of Software Defined Network
Option A:	Centralized controller
Option B:	Dedicated devices like switches or routers
Option C:	Functionality of switching or routing implemented through application specific ICs
Option D:	More effort is required in configuring and reconfiguring of devices
5.	The first step in designing an IP addressing plan is
Option A:	To make a layout of the network
Option B:	To design a blueprint of the network
Option C:	Determining the size of the network to establish how many IP subnets and how many IP addresses are needed on each subnet
Option D:	To draw the network diagram
6.	Packet switched networks operate at which layer of OSI model
Option A:	Application Layer
Option B:	Network Layer
Option C:	Physical Layer
Option D:	Data Link Layer

7.	A ..... refers to a private network over a shared infrastructure such as the Internet, Frame Relay and ATM
Option A:	WAN
Option B:	TDM
Option C:	Virtual Private Network (VPN)
Option D:	LAN
8.	Which module within Cisco Enterprise Architecture enables the enterprise to use Internet and partner resources, and provide resources for its customers?
Option A:	Enterprise Data Center
Option B:	Enterprise Edge
Option C:	Enterprise Campus
Option D:	Enterprise Teleworkers
9.	The Internet standard MIB is represented by the object identifier -----
Option A:	1.3.6.2.2.1
Option B:	1.3.6.1.2.2
Option C:	1.3.6.1.2.3
Option D:	1.3.6.1.2.1
10.	Phase 3 of Intelligence in a network is
Option A:	Intelligent Movement of Data/Voice/Video Transport Across a System of Networks
Option B:	Virtualized Resources and Services
Option C:	Network-Enabled Applications
Option D:	Documentation of resource

<b>Q2</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	Describe various phases in the PPDIOO network life cycle.	
B	How many functional areas are there in Cisco Enterprise Architecture .Explain each one in detail.	
C	Discuss SNMP architecture. What is MIB structure?	

<b>Q3</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	What characteristics must you consider when designing a network?	
B	Discuss Enterprise Data center Infrastructure and design considerations	
C	What are some typical WAN design objectives? List and explain any 5 WAN transport technologies.	

<b>Q4.</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	Subnet the class C IP address <b>195.1.1.0</b> , so that you have 5 subnets, each with a maximum of 12 hosts on each subnet. List each subnet network address, host address range, first host IP address, broadcast address and subnet mask.	
B	What are the main benefits of IPV6 addresses? List and explain types of IPV6 addresses.	
C	Explain SDN architecture and its building blocks. How does SDN differ from traditional networking?	

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: BE Semester: VII

Course Code: ITC702

Course Name: Infrastructure Security

Time: 2 hour 30 minutes

Max. Marks: 80

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<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Authorization mechanism can be achieved by
Option A:	Access Control Protocols
Option B:	Authentication Protocols
Option C:	Auditing Protocols
Option D:	Accounting Protocols
2.	_____ is the process of memory protection of taking a program as if it began at address 0 and changing all addresses to reflect the actual address at which program is located in memory
Option A:	Relocation
Option B:	Paging
Option C:	Fence
Option D:	Segmentation
3.	Which of the following is the virus classification by concealment strategy
Option A:	Multipartite virus
Option B:	Metamorphic virus
Option C:	File infector
Option D:	Boot sector infector
4.	_____ is one of the features in GSM
Option A:	Operating entirely on TCP/IP
Option B:	Subscriber Authentication
Option C:	Phones tied to a single carrier
Option D:	Introduction of Packet Switched elements

5.	Which two ciphers are used in UEA1 and UEA2
Option A:	AES and RC4
Option B:	AES and SNOW 3G
Option C:	AES and KASUM
Option D:	KASUMI and SNOW 3G
6.	_____ enables the access of right resources by authorized people at right times and for right reasons in cloud environment
Option A:	Authentication
Option B:	Identity Management
Option C:	Data Breach
Option D:	Data Availability
7.	Which one of the following is not a authorization grant types defined by OAuth 2
Option A:	Implicit
Option B:	Authorization Code,
Option C:	Explicit
Option D:	Resource Owner Password Credentials and Client Credentials
8.	Session ID exploits attack carried out on web browser by attacker is
Option A:	Use the same session ID for the next session
Option B:	Borrowing the session key and connecting to the server
Option C:	Disable the cache, or set its size to zero
Option D:	Access to a variety of services on the server
9.	Attack that relies on changing the DNS entries of the organization's website in order to direct the traffic to the attacker's site is _____.
Option A:	Pharming
Option B:	Phishing

Option C:	Clickjacking
Option D:	Cross-Site Request Forgery
10.	.....is the maximum tolerable time up to which one can withstand loss of data.
Option A:	Recovery point objective
Option B:	Recovery time objective
Option C:	Recovery of data
Option D:	Recovery of system

<b>Q2. (20 Marks Each)</b>	
<b>A</b>	<b>Solve any Two</b> <span style="float: right;"><b>5 marks each</b></span>
i.	What is VPN? Describe its security.
ii.	Describe in brief different countermeasures for cloud security.
iii	Describe attacks possible on DNS
<b>B</b>	<b>Solve any One</b> <span style="float: right;"><b>10 marks each</b></span>
i	What is the role of AAA in a secured organization? Describe in detail with example
ii	Summarize different file protection mechanisms. State Linux and Windows Vulnerabilities.

<b>Q3. (20 Marks Each)</b>	
<b>A</b>	<b>Solve any Two</b> <span style="float: right;"><b>5 marks each</b></span>
i	Describe the buffer overflow problem. How could you prevent a buffer overflow from occurring in your program
ii	Describe the working of Oauth
iii	Summarize the business continuity life cycle in brief.
<b>B</b>	<b>Solve any One</b> <span style="float: right;"><b>10 marks each</b></span>
i	Examine different security threats to Mobile devices.
ii	Illustrate vulnerabilities in web services and state their countermeasures.

<b>Q4.</b>	
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<b>(20 Marks Each)</b>	
<b>A</b>	<b>Solve any Two</b> <span style="float: right;"><b>5 marks each</b></span>
i	<i>Describe WLAN Security Attacks.</i>
ii	<i>Discuss the Cloud Identity and Access Management and its importance.</i>
iii	<i>What is risk? Illustrate the terms risk probability and risk impact</i>
<b>B</b>	<b>Solve any One</b> <span style="float: right;"><b>10 marks each</b></span>
i	<i>Discuss Database security requirements. Illustrate Multilevel security database</i>
ii	<i>Evaluate various Email Attacks in web security.</i>

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: Information Technology

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ITC703 and Course Name: Artificial Intelligence

Time: 2 hour 30 minutes

Max. Marks: 80

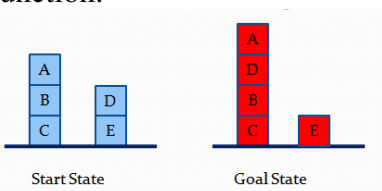
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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	IDA* algorithm suffers from -----
Option A:	Lack of sense of direction
Option B:	Divide and conquer
Option C:	Sparse memory
Option D:	Local optima
2.	----- is used for depends upon the sentences that proceeds it and also invokes the meaning of the sentences that follow i
Option A:	Semantic Analysis
Option B:	Grammatic Analysis
Option C:	Phonological Analysis
Option D:	Disclosure Integration
3.	Plan for making breakfast which includes poha, juice and coffee is
Option A:	Only Total order
Option B:	Only Partial order
Option C:	Combination of all types
Option D:	Only conditional
4.	The ---- approach will work fine if the surface defined by the evaluation function is smooth at the local level.
Option A:	Iterated Hill climbing
Option B:	Hill climbing
Option C:	Simulated annealing
Option D:	DFS
5.	$P(A B)=P(B A)P(A)/P(B)$ . In the given expression what is the posterior probability?
Option A:	$P(A B)$
Option B:	$P(B A)$
Option C:	$P(B)$
Option D:	$P(A)$
6.	For Air cargo transport problem, the precondition for Unload(x,y, Mumbai) is
Option A:	Load(x,y, Mumbai) and Fly(y, Mumbai, Mumbai)
Option B:	Load(x,y, Pune) and Fly(y, Pune, Mumbai)
Option C:	Load(y,x, Pune) and Fly(z, Pune, Mumbai)
Option D:	Load(y,x, Mumbai) and Fly(z, Mumbai, Mumbai)
7.	The probability of making a move ---- as $\Delta E$ -----.
Option A:	Increases, Increases
Option B:	Increases, Decreases
Option C:	Decreases, Increases
Option D:	Decreases, Decreases



8.	$P(A \wedge B)$ is called
Option A:	Joint Probability
Option B:	Conditional Probability
Option C:	Unconditional Probability
Option D:	Posterior Probability
9.	----- exists in the presence of two or more possible meanings of the sentence within a single word.
Option A:	Lexical Ambiguity
Option B:	Syntactical Ambiguity
Option C:	Semantic Ambiguity
Option D:	Text Ambiguity
10.	----- is concerned with finding consistent values for pairs of variable.
Option A:	Heuristic consistency
Option B:	Arc consistency
Option C:	Domain consistency
Option D:	Node consistency

<b>Q2</b>	
A	<b>Solve any Two 5 marks each</b>
i.	Represent the following as predicates and convert to CNF: 1. <u>Some children like all ice creams.</u> 2. <u>Everyone likes someone.</u>
ii.	Discuss the technique of Disambiguation for Resolving Structural Ambiguity
iii.	Create and justify a suitable heuristic for Tic-Tac-Toe
B	<b>Solve any One 10 marks each</b>
i.	How does Interaction between intuitive thinking and deep analysis help in Cognitive Computing?. Explain with diagram.
ii.	Apply minmax search to a three player game. Draw and Justify the tree for player A's win.

<b>Q3</b>																
A	<b>Solve any Two 5 marks each</b>															
i.	Show from first principles that $P(a   b \wedge a) = 1$															
ii.	What is AI? How it is related to human-based nature ?															
iii.	Create a module wise study plan for AI if total study time available is 5 hours per day for 4 days.															
B	<b>Solve any One 10 marks each</b>															
i.	Solve the block problem using Hill Climbing Algorithm. Assume suitable heuristic Function. 															
ii.	From the given table find the probability of having “Cavity when toothache is there” and “No Cavity when toothache is there”															
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th colspan="2">toothache</th> <th colspan="2"><math>\neg</math> toothache</th> </tr> <tr> <th></th> <th>catch</th> <th><math>\neg</math> catch</th> <th>catch</th> <th><math>\neg</math> catch</th> </tr> </thead> <tbody> <tr> <th>cavity</th> <td>0.11</td> <td>0.01</td> <td>0.07</td> <td>0.01</td> </tr> </tbody> </table>		toothache		$\neg$ toothache			catch	$\neg$ catch	catch	$\neg$ catch	cavity	0.11	0.01	0.07	0.01
	toothache		$\neg$ toothache													
	catch	$\neg$ catch	catch	$\neg$ catch												
cavity	0.11	0.01	0.07	0.01												

	$\neg$ cavity	0.02	0.06	0.14	0.58	
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<b>Q4</b>	
<b>A</b>	<b>Solve any Two 5 marks each</b>
i.	Explain Utility agent?
ii.	<u>Convert the following sentences to predicates:</u> <ol style="list-style-type: none"> <li>1. <u>All monkeys have a tail.</u></li> <li>2. <u>Sita and Rita are good girls.</u></li> <li>3. <u>Ram either sleeps or runs.</u></li> <li>4. <u>Man proposes god disposes.</u></li> <li>5. <u>Birds are vertebrates</u></li> </ol>
iii.	Compare Condition Probability and Joint probability
<b>B</b>	<b>Solve any One 10 marks each</b>
i.	What is PEAS? Describe the PEAS properties of the task environment for the Intelligent Virtual Assistant Agent.
ii.	List and briefly explain all phases of NLP with example

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: B.E. Information Technology

Curriculum Scheme: R2016

Examination: BE Semester VII

Course Code: ITDLO7032 and Course Name: Mobile Application Development

Time: 2 hour 30 minutes Max. Marks: 80

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<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Which of the following is NOT an important folder included within an apk file?
Option A:	Bin/
Option B:	Res/
Option C:	Assets/
Option D:	Test/
2.	Java byte code are converted into dalvik byte code using _____ program.
Option A:	Dalvik compiler
Option B:	Just in time complier
Option C:	Linker
Option D:	Dex compiler
3.	Inflating is a process of _____.
Option A:	Calling activity of another application
Option B:	Running application in the background
Option C:	Loading an application using layout file
Option D:	Increase in memory consumption by installing multiple applications
4.	What command is used to obtain descriptions of all permissions defined on the device?
Option A:	adb shell list permissions
Option B:	adb shell pm list permissions -s
Option C:	adb shell pm show permissions -all
Option D:	adb shell pm list-all permissions
5.	Android app uses gradle for
Option A:	Packaging and compiling Android Apps
Option B:	Testing applications
Option C:	Drawing the activity layouts during running of applications
Option D:	Securing the applications during publishing
6.	Which is the standard prefix used for query string URI by content provider?
Option A:	content://
Option B:	http://
Option C:	sqlite://
Option D:	file://

7.	In Android, SQLite by default saves data in _____.
Option A:	External storage
Option B:	Memory
Option C:	Internal storage
Option D:	On the cloud
8.	Which tool is used to extract the AndroidManifest file from the APK file?
Option A:	androidExtractor
Option B:	manifestXmlTool
Option C:	Apktool
Option D:	readManifest tool
9.	During an Activity life-cycle, what is the callback method used to start an activity from the stop state?
Option A:	onCreate()
Option B:	onRestart()
Option C:	onResume()
Option D:	onPause()
10.	What does this code do? Intent intent = new Intent(); intent.setAction(Intent.ACTION_VIEW); intent.setData(android.net.Uri.parse("https://www.androiddeveloper.org")); startActivity(intent);
Option A:	Starts a sub-activity
Option B:	Starts an activity using an implicit intent
Option C:	Starts a service
Option D:	Sends results to another activity.

Q2	Solve any Two Questions out of Three	10 marks each
A	Define Views? Explain with a suitable example using Java Code, how list view is used if a user is required to select programming language from a list of languages.	
B	Describe with the help of suitable example, the “Service” and “Receiver” components of an android application.	

C	Discuss the various methods with suitable example and code representation for getting location data in android
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<b>Q3</b>	<b>Solve any Two Questions out of Three</b> <b>10 marks each</b>
A	Differentiate between: a. Java Virtual Machine and Dalvik Virtual Machine b. Activity and Fragment
B	Discuss the different best practices for implementing security in Android Apps.
C	Discuss the process to incorporate the SQLite database in an android application for developing a book table containing book_id, book_name and price of the book.

<b>Q4.</b>	
A	<b>Solve any Two</b> <b>5 marks each</b>
i.	What are broadcast receivers? Describe the different ways of registering broadcast receivers in an application.
ii.	Illustrate the various callback methods in the lifecycle of service component.
iii.	Explain the importance of manifest and gradle file in Android development process.
B	<b>Solve any One</b> <b>10 marks each</b>
i.	Define Intent Resolution. Explain how Android resolve Intent Filters.
ii.	Explain XML and JSON Parsing in Android.

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: Information Technology

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ITDLO7035 and Course Name: Soft Computing

Time: 2hour 30 minutes

Max. Marks: 80

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Q1.	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Consider two fuzzy sets $A=\{0.1/x_1+0.4/x_2+0.8/x_3+1/x_4\}$ and $B=\{0.3/x_1+0.2/x_2+0.6/x_3+.9/x_4\}$ , find fuzzy set C which is the union between A and B.
Option A:	$C=\{0.1/x_1+0.4/x_2+0.8/x_3+1/x_4\}$
Option B:	$C=\{0.1/x_1+0.2/x_2+0.6/x_3+1/x_4\}$
Option C:	$C=\{0.3/x_1+0.4/x_2+0.8/x_3+1/x_4\}$
Option D:	$C=\{0.1/x_1+0.4/x_2+0.6/x_3+1/x_4\}$
2.	Fuzzy set is a set having degree of membership in the range from
Option A:	-1 to 1
Option B:	0 to 1
Option C:	-1 to 0
Option D:	-2 to 2
3.	While training by perceptron learning rule which uses bipolar activation function, with C as constant and X as a input pattern, the change in new weights occur by the factor
Option A:	2CX
Option B:	-2CX
Option C:	2CX or -2CX
Option D:	CX
4.	During Artificial Neural network training we modify the
Option A:	Both weights and input pattern
Option B:	Input Pattern
Option C:	Activation function
Option D:	Weights
5.	The number of neurons in the output layer in Back propagation neural network is decided on the basis of
Option A:	Number of classes
Option B:	Number of features
Option C:	Number of neurons in the hidden layer
Option D:	Number of neurons in the output layer
6.	One of the following is the linguistic value
Option A:	Young
Option B:	Temperature
Option C:	Height
Option D:	Age

7.	In Adaptive resonance theory 1 network, which factor decides whether to consider winner neuron for weight updation or not
Option A:	Vigilance parameter
Option B:	Learning rate
Option C:	Bias
Option D:	Number of epochs
8.	Types of crossovers does not include
Option A:	Single point crossover
Option B:	Two point crossover
Option C:	Multipoint crossover
Option D:	Zigzag crossover
9.	If x is A then Y is B, hence Y is B is known as
Option A:	Modes ponens
Option B:	consequence
Option C:	Antecedent
Option D:	Fuzzy reasoning
10.	Fuzzification layer in Adaptive Neuro Fuzzy Inference system
Option A:	Converts crisp inputs to fuzzy sets
Option B:	Converts input from discrete domain to continuous domain
Option C:	Normalizes the inputs
Option D:	Converts fuzzy inputs to crisp output

<b>Q2</b>	<b>Solve any Two Questions out of Three (10 marks each)</b>
A	List the various unsupervised learning rules and explain Competitive learning rule with suitable diagram
B	Explain the concept of linear separability and Elaborate the XOR problem.
C	Name the different hybrid systems and explain any one.

<b>Q3.</b>	<b>Solve any Two Questions out of Three (10 marks each)</b>
A	Describe fuzzy set and its operations.
B	Explain the working of ART-1 in detail
C	Discuss Fuzzy Inference systems.

<b>Q4.</b>	<b>Solve any Two Questions out of Three (10 marks each)</b>
A	Draw and explain the flow chart of genetic algorithm
B	Summarize defuzzification methods in Fuzzy Logic.
C	Elaborate on Adaptive Neuro Fuzzy Inference system

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: 1T01427 // BE (Mechanical Engineering) (SEM VII)(Choice Base Credit Grading System )(R2016)

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: **ILO 7016** and Course Name: **Cyber Security and Laws**

Time: 2 hour 30 minutes

Max. Marks: 80

<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Which of the following phase is not part of the planning Cybercrime ?
Option A:	Social-engineering attack
Option B:	Launching an attack
Option C:	Scanning and scrutinizing
Option D:	Reconnaissance
2.	Every Promise and set of promises forming the consideration for each other called as _____
Option A:	Consideration
Option B:	Promise
Option C:	Agreement
Option D:	Acceptance
3.	Which of the following is NOT a Intellectual Property
Option A:	Industrial Design
Option B:	Patents
Option C:	Testimony
Option D:	Trademarks
4.	What does a trademark protects?
Option A:	an invention
Option B:	the look, shape and feel of a product
Option C:	a secret formula
Option D:	logos, names and brands
5.	_____ known as the Financial Services Modernization Act ?
Option A:	GLBA
Option B:	HIPPA
Option C:	ISO
Option D:	SOX
6.	_____ aim to start the interaction with the victim directly with the help of the internet.
Option A:	Offline Stalkers
Option B:	Online Stalkers
Option C:	Passive attack
Option D:	Virus



7.	If you use your mobile phone for purchasing goods/services and for banking, you could be more vulnerable to a _____
Option A:	Smishing
Option B:	Spamming
Option C:	Mishing
Option D:	Vishing
8.	Sending a fake e-mail to the user and asking him to reenter a password in a web page to confirm it is type of the _____.
Option A:	Cyberstalking
Option B:	Path Scanning
Option C:	Human based social-engineering
Option D:	Computer based social-engineering
9.	Which of the Following is NOT a Type of a E-commerce
Option A:	Citizen to Government
Option B:	Consumer to Consumer
Option C:	Business to Consumer
Option D:	Business to Business
10.	Which of the following is NOT a objective of Information Technology Act, 2000 ?
Option A:	Grant legal recognition to E-Transactions
Option B:	Provide legal recognition to Digital Signatures for authentication
Option C:	Allow Electronic storage of data
Option D:	Reject E-Filing of data and information due to attack

<b>Q2.</b>	<b>Solve any Four out of Six</b>	<b>5 marks each</b>
A	Explain different types of intellectual property.	
B	Explain various security challenges posed by mobile devices.	
C	What do you understand by DOS and DDOS attack?	
D	Explain types of credit card fraud and protection against it ?	
E	Explain in detail active and passive attacks with examples.	
F	Explain about IT Act. 2008 and its Amendments ?	

<b>Q3.</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	What are digital Signatures?.Explain the legal architecture required for the validity of digital signature.	
B	Explain in detail Attacks on Wireless Networks ?	
C	Explain How criminal plan the attacks with examples ?	

<b>Q4.</b>	
<b>A</b>	<b>Solve any Two</b> <span style="float: right;"><b>5 marks each</b></span>
i.	Identify and explain Security Implications for Organizations ?
ii.	Explain about the Cybercrime and Indian ITA 2000 ?
iii.	Differentiate between Trojan Horse and Backdoors.
<b>B</b>	<b>Solve any One</b> <span style="float: right;"><b>10 marks each</b></span>
i.	Explain Information Security compliance HIPAA and ISO ?
ii.	What is E-commerce? Explain different types of e-commerce with suitable examples.

**Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022**

Program: Mechanical Engineering

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO7013 and Course Name: Management Information System

Time: 2 hour 30 minutes

Max. Marks: 80

<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	The web development technique that enables portions of web pages to reload with fresh data rather than requiring the entire Web page to reload is known as:
Option A:	AJAX
Option B:	RSS
Option C:	Tagging
Option D:	Web 2.0
2.	Social computing forces companies to deal with customers _____
Option A:	Reactively
Option B:	Proactively
Option C:	Neutrally
Option D:	Economically
3.	Which function provides information about the quality of in-process semifinished and finished products in an organization.
Option A:	Quality Control.
Option B:	Planning Production and Operations
Option C:	Investment Management.
Option D:	Inventory Management.
4.	Types of data warehouse does not include ____
Option A:	Enterprise data warehouse
Option B:	Data marts
Option C:	Data acquisition center

Option D:	Operational data warehouse
5.	Which of the following is an example of the business value of collaborative CRM?
Option A:	Provides all users with the tools and information that fit their individual roles and preferences
Option B:	Improves efficiency and integration throughout the supply chain
Option C:	Empowers all employees to respond to customer demands more quickly
Option D:	Synchronizes customer interaction with greater convenience through a variety of channels, including phone, fax, e-mail, chat, and mobile devices
6.	A manufacturing approach that integrates several computerized systems, such as computer-assisted design (CAD), computer assisted manufacturing (CAM)
Option A:	Sales force automation
Option B:	Computer-integrated manufacturing
Option C:	Product Lifecycle Management
Option D:	Management of interdependent items
7.	A business strategy that enables manufacturers to share product-related data that support product design and development and supply chain operations is _____
Option A:	Planning Production and Operations
Option B:	Quality Control
Option C:	Product Lifecycle Management.
Option D:	Control and Auditing
8.	_____ act as online intermediaries that harness the power of social networks for introducing, buying, and selling products and services.
Option A:	Group shopping sites
Option B:	Shopping Communities
Option C:	Social marketplaces
Option D:	Peer-to-peer shopping models

9.	Which of the following statements is false?
Option A:	Companies that use Software-as-a-Service are running applications on the vendor's hardware.
Option B:	Application service providers are similar to Software-as-a-Service providers.
Option C:	Companies that purchase open-source software cannot modify it.
Option D:	Outsourcing refers to acquiring IT applications from outside contractors.
10.	Place the stages of the systems development life cycle in order:
Option A:	Investigation – analysis – design – programming/testing – implementation – operation/maintenance
Option B:	Investigation – design – analysis – programming/testing – implementation – operation/maintenance
Option C:	Analysis – design – investigation – operation/maintenance – programming/testing – implementation
Option D:	Investigation – analysis – design – programming/testing – operation/maintenance – implementation

<b>Q2</b> <b>(20 Marks)</b>	<b>Solve any Two out of Three</b>	<b>10 marks each</b>
A	What is Cloud Computing? Explain its models.?	
B	Explain the types of information system in business organization.	

C	Identify the three major types of controls that organizations can use to protect their information resources, and provide an example of each one?
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<b>Q3</b> <b>(20 Marks)</b>	<b>Solve any Two out of Three</b>	<b>10 marks each</b>
A	Explain Data warehouse and Data mart in detail.	
B	Differentiate between knowledge and information and explain the significance of knowledge for a business firm.	
C	Differentiate computer network wired and wireless technology with example?	

<b>Q4</b> <b>(20 Marks)</b>	<b>Solve any Two out of Three</b>	<b>10 marks each</b>
A	Explain the various phases of SDLC models.	
B	What are the functional areas of information system?	
C	Describe how cloud computing can help organizations expand the scope of their business operations.	

Examinations Commencing from 22<sup>nd</sup> November 2021 to 5<sup>th</sup> January 2022

Program: ALL Institute Level Optional Course 1

Curriculum Scheme: Rev2016

Examination: BE Semester VII

Course Code: ILO 7015 and Course Name: Operations research

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The LP problem will not have a feasible solution.
Option A:	If all elements in the pivot column are positive.
Option B:	If all the elements in the pivot row are negative.
Option C:	If all the elements in RHS column are non-negative.
Option D:	If an artificial variable is present in the basis.
2.	In LPP, to convert $\geq$ inequality constraint into equality constraint, we must
Option A:	add a surplus variable
Option B:	subtract a surplus variable and add an artificial variable
Option C:	subtract a surplus variable and an artificial variable
Option D:	subtract a slack variable
3.	The optimality of current solution to a transportation problem with m rows and n columns can be checked if the number of positive allocations is
Option A:	m x n
Option B:	m + n
Option C:	m + n - 1
Option D:	m + n + 1
4.	The problem of assigning n workers to n tasks has
Option A:	n! solutions.
Option B:	(n-1)! Solutions.
Option C:	n solutions.
Option D:	n <sup>2</sup> solutions.
5.	The dual of the primal maximization LP problem having m constraints and n non-negative variables is
Option A:	minimization LP problem having n constraints and m non-negative variables.
Option B:	minimization LP problem having m constraints and n non-negative variables.
Option C:	maximization LP problem having m constraints and n non-negative variables.
Option D:	maximization LP problem having n constraints and m non-negative variables.
6.	As order size increases,
Option A:	total inventory costs will increase, reach a maximum and then decrease.
Option B:	total inventory cost will decrease, reach a minimum and then increase.
Option C:	ordering cost and inventory carrying cost, both will increase.

Option D:	ordering cost and total inventory cost, both will increase.
7.	In real life queuing system, if an arrival refuses to join the queue even if there is a space to join then this phenomenon is called as
Option A:	Balking
Option B:	Reneging.
Option C:	Jockeying.
Option D:	Dissenting.
8.	Any game can be solved by using
Option A:	Graphical method.
Option B:	Dominance principle.
Option C:	Linear Programming method.
Option D:	Game transpose method.
9.	When minimax and maximin values of the game are same
Option A:	No solution exists
Option B:	Solution has mixed strategies
Option C:	Solution has pure strategies
Option D:	Multiple solutions exist
10.	A stage in a dynamic programming problem represents
Option A:	number of decision alternatives
Option B:	different time periods in the planning period
Option C:	status of the system at a particular state
Option D:	condition of the decision process

Q2	Solve any Two Questions out of Three	10 marks each
A	<p>Write Dual of following LPP and solve it using graphical method. Find values of decision variables in primal using complementary slackness theorem.</p> <p>Maximize</p> $Z = 3x_1 + x_2 + 4x_3$ <p>Subject to</p> $6x_1 + 3x_2 + 5x_3 \leq 25$ $3x_1 + 4x_2 + 5x_3 \leq 20$ $x_1, x_2, x_3 \geq 0$	
B	<p>Solve the following linear program by the dual simplex method.</p> <p>Minimize</p> $Z = 2x_1 + 3x_2 + 5x_3 + 6x_4$ <p>Subject to</p> $x_1 + 2x_2 + 3x_3 + x_4 \geq 2$ $-2x_1 + x_2 - x_3 + 3x_4 \leq -3$ $x_1, x_2, x_3, x_4 \geq 0$	



C	<p>The owner of a chain of grocery store has purchased six crates for fruits. The following table gives the estimated profit at each grocery store when it is allocated various numbers of crates.</p>			
	No of crates	Stores		
		1	2	3
	0	0	0	0
	1	4	2	6
	2	6	4	8
	3	7	6	8
	4	7	8	8
	5	7	9	8
	6	7	10	8
<p>The owner does not want to split the crates among stores, but willing to make zero allocations. Find the allocations of crates to stores to maximize the profit.</p>				

Q3	Solve any Two Questions out of Three	10 marks each					
A	<p>Find the optimal transportation plan.</p>						
	Sources	Destinations					Supply
		1	2	3	4	5	
	A	5	4	2	3	7	80
	B	6	3	4	5	6	60
	C	4	6	7	4	3	40
	D	3	5	5	6	4	20
	Demand	60	60	30	40	10	Total 200
B	<p>A company is engaged in manufacturing different types of equipment for various consumers. The company has two assembly lines to produce its product. The processing time for each of the assembly lines is regarded as random variable and is described by the following distributions:</p>						
	Processing time in min		Assembly X		Assembly Y		
	40		0.10		0.20		
	42		0.15		0.40		
	44		0.40		0.20		
	46		0.10		0.15		
	48		0.25		0.05		
	<p>Using the following random numbers, generate data on the processing times for the 10 units of the product and compute the expected processing time for the product and average in process waiting time.</p> <p style="text-align: center;">5936, 8723, 1973, 3649, 9081, 2863, 3529, 4173, 5721, 6257.</p> <p>For the purpose, read the numbers horizontally, taking the first two digits for the processing time on assembly X and the last two digits for processing time on assembly Y.</p>						

C	An owner of car service station on highway purchases cans of engine oil at the rate of Rs. 400 per can. He needs 40 cans every day. The holding cost can be approximated to Rs.2 per can per day. The shortage cost is Rs.10 per can per day. The ordering and other cost is Rs.1000 per order. Decide minimum cost procurement quantity. What is the maximum level of inventory? Sketch the inventory system. Also find optimal total estimated system cost and reorder point if lead time is 2 days.
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Q4.	Solve any Two Questions out of Three	10 marks each																															
A	<p>Reduce the following game using Principle of dominance and graphical method to determine optimal strategies for A and B. Find value of game.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="2" rowspan="2"></td> <td colspan="4" style="text-align: center;">B</td> </tr> <tr> <td style="text-align: center;">Y1</td> <td style="text-align: center;">Y2</td> <td style="text-align: center;">Y3</td> <td style="text-align: center;">Y4</td> </tr> <tr> <td rowspan="4" style="text-align: center; vertical-align: middle;">A</td> <td style="text-align: center;">X1</td> <td style="text-align: center;">20</td> <td style="text-align: center;">7</td> <td style="text-align: center;">8</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">X2</td> <td style="text-align: center;">8</td> <td style="text-align: center;">44</td> <td style="text-align: center;">15</td> <td style="text-align: center;">10</td> </tr> <tr> <td style="text-align: center;">X3</td> <td style="text-align: center;">13</td> <td style="text-align: center;">9</td> <td style="text-align: center;">19</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">X4</td> <td style="text-align: center;">9</td> <td style="text-align: center;">8</td> <td style="text-align: center;">14</td> <td style="text-align: center;">-1</td> </tr> </table>			B				Y1	Y2	Y3	Y4	A	X1	20	7	8	6	X2	8	44	15	10	X3	13	9	19	5	X4	9	8	14	-1	
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B	<p>Four different jobs are to be processed on four different machine. The machining cost associated with jobs and machine combination is given in the following table. Please provide optimal allocation of jobs on machines so that the total cost of processing is minimum. An asterisk represents restricted allocation.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Jobs/Machines</th> <th>M1</th> <th>M2</th> <th>M3</th> <th>M4</th> </tr> </thead> <tbody> <tr> <td>J1</td> <td style="text-align: center;">6</td> <td style="text-align: center;">8</td> <td style="text-align: center;">*</td> <td style="text-align: center;">7</td> </tr> <tr> <td>J2</td> <td style="text-align: center;">9</td> <td style="text-align: center;">6</td> <td style="text-align: center;">10</td> <td style="text-align: center;">7</td> </tr> <tr> <td>J3</td> <td style="text-align: center;">5</td> <td style="text-align: center;">8</td> <td style="text-align: center;">11</td> <td style="text-align: center;">8</td> </tr> <tr> <td>J4</td> <td style="text-align: center;">11</td> <td style="text-align: center;">5</td> <td style="text-align: center;">9</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>	Jobs/Machines	M1	M2	M3	M4	J1	6	8	*	7	J2	9	6	10	7	J3	5	8	11	8	J4	11	5	9	4							
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J4	11	5	9	4																													
C	<p>A bank has two counters for withdrawals. One counter handles withdrawals of value less than 1000 rupees and the other counter above 1000 and above. Analysis of service time shows an exponential distribution with mean service time of 6 minutes per customer for each counter. Arrival of customers follow Poisson distribution with mean 8 per hour for the first counter and 5 per hour for the second counter.</p> <ol style="list-style-type: none"> <li>i) What are the average waiting times per customer of each counter?</li> <li>ii) If each counter could handle all withdrawals irrespective of their value, how would the average waiting time change?</li> </ol>																																