(3 hours)   Total Marks: 80

N.B. (1) Question no. **1** is **compulsory**.
(2) Attempt any **three** out of remaining **four** questions.
(3) **Figures** to the **right** indicate **full** marks.

Q.1 Attempt any **Four** out of **Five** questions

a. Explain OCED framework for Green IT	5
b. What is Green Washing?	5
c. What is Triple Bottom frame work ?	5
d. What is Life Cycle Assessment? Explain 4 stages of LCA.	5
e. Explain SITS value curve in SITS strategic framework.	5

Q.2   a. Explain life cycle of a device or hardware in detail.   10
b. Give few examples to illustrate how context awareness leads to "Smarter"
device ?   10

Q.3   a. Explain sustainable software methodologies.   10
b. What are different power states of hard disk ?   10

Q.4   a. Briefly describe and compare the major system level energy management
schemes?   10
b. Describe key facilities and IT components within data centres.   10

Q5.   a. What is strategic thinking, planning and implementation for green initiatives?   10
b. Descibe strength and weaknesses of G-readiness framework   10

Q.6 Write a short note on (**any four**)

a. Strategies to reduce carbon emission suggested by BSR	5
b. Three R's of Green IT	5
c. Differences between WEEE, RoHS and REACh	5
d. Explain Green enterprise from Value chain perspective	5
e. In brief explain SICT capability building blocks	5

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(3 Hours) (Total Marks : 80)

N.B. : (1) Question No. 1 is **compulsory.**
    (2) Attempt any **three** from remaining **five** questions.
    (3) Assume suitable **data**, if **necessary**.

Q.1 a. Explain in detail hidden terminal and exposed terminal problem with respect to WLAN. **[05]**

    b. What is frequency reuse principle with neat diagram? Explain it with example. **[05]**

    c. Assume a cellular system of 32 cells with cell radius of 1.6km, a total spectrum allocation that supports 336 traffic channels and a reuse pattern of 7. Calculate the total service area covered with this configuration, the number of channels per cell and total system capacity. Assume regular hexagonal topology. **[05]**

    d. Explain piconet and scatternet w.r.t Bluetooth. **[05]**

Q.2 a. Explain WEP protocol in detail with neat diagram. **[10]**

    b. What is spread spectrum? Explain FHSS in detail. **[10]**

Q.3 a. What is WLL? Explain in detail MMDS and LMDS working in WLL based technology **[10]**

    b. Explain GPRS architecture in detail with neat diagram. **[10]**

Q.4 a. What is Ad-hoc network? Discuss and compare MANET and VANET architecture. **[10]**

    b. Explain wireless multiple access techniques with suitable diagrams. **[10]**

Q.5 a. Explain the evolution of cellular systems highlighting 1G/2G/3G. **[10]**

    b. Define threats and challenges in wireless communication. Explain different types of device security issues **[10]**

Q.6 Write a short note on the following (solve any **four**) : **[20]**
    a. Wi-Max
    b. Zigbee architecture
    c. Mobile IP
    d. UMTS architecture
    e. Wireless sensor networks architecure

(3 Hours) [Total Marks:80]

NB: 1. **Question no. 1 is compulsory.**
2. Answer any **three** out of the **remaining** questions.
3. Assume data, if missing, with justification.

Q.1.(a) Describe different types of attributes with example. [05]

(b) Explain KDD process with diagram. [05]

(c) Define and explain: **i)** Support **ii)** Confidence **iii)** Information Gain **iv)** Entropy **v)** Gini index [05]

(d) Apply K-means Algorithm to divide the given set of values {2,3,6,8,9,12,15,18,22} into 3 clusters. [05]

Q.2.(a) Explain DBSCAN clustering algorithm with an example [10]

(b) Explain Regression. Explain linear regression with example. [10]

Q.3.(a) Suppose we have five objects with name A, B, C, D and E. Apply single linkage clustering and draw dendrogram for the given data. [10]

	X	Y
A	1	1
B	1.5	1.5
C	5	5
D	3	4
E	4	4
F	3	3.5

(b) What is an outlier? Describe methods that are used for outlier analysis. [10]

Q4.(a) Using the given training dataset classify the following tuple using Naïve Bayes Algorithm: [10]
<Homeowner: No, Marital Status: Married, Job experience:3>

Homeowner	Marital Status	Job experience (in years)	Defaulted
Yes	Single	3	No
No	Married	4	No
No	Single	5	No
Yes	Married	4	No
No	Divorced	2	Yes
No	Married	4	No
Yes	Divorced	2	No
No	Married	3	Yes
No	Married	3	No
Yes	Single	2	Yes

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(b) What are multiple level and multidimensional association rules? Explain with suitable examples for each. **[10]**

Q5. (a) Explain Business Intelligence issues **[10]**

(b) Explain Market-Basket analysis with example. **[10]**

Q6. (a) What is data visualization? Explain any 3 visualization techniques with example. **[10]**

(b) Suppose that data for analysis includes the attribute age. The age values for data tuples are (in increasing order): **[10]**
13,15,16,16,19,20,20,21,22,22,25,25,25,25,30,33,33,35,35,35,35,36,40,45,46,52,70
i) What is mean of data? What is median of data?
ii) What is mode of data? Comment on data's modality.
iii)What is mid-range of data?
iv)Give the five- point summary of the data.
v) Show box plot of the data.

(Time: 3 Hours)   **[Total marks: 80]**

N.B.
  1) Question No. 1 is Compulsory. Attempt any 3 From remaining 5 Questions.
  2) Figure to right indicate full marks.
  3) Assume suitable data if necessary

Q.1   a) Explain Kernel based virtualization with the help of its architecture.   **[10]**

      b) What is Instance? Draw and explain life cycle of Instances.   **[10]**

Q. 2   a) Explain Disaster recovery as a service.   **[10]**

      b) Draw and Explain Openstack architecture.   **[10]**

Q.3   a) List & explain the advantage and disadvantages of cloud computing.   **[10]**

      b) Explain Bigtable in GFS.   **[10]**

Q. 4   a) Explain Xen Virtualization with the help of its architecture.   **[10]**

      b) Explain subnet, route table and Elastic IP address with Example?   **[10]**

Q.5   a) Draw and explain NIST & Cube model of cloud computing.   **[10]**

      b) Explain Simple Storage as Service and its feature.   **[10]**

Q. 6   Solve **Any Four**   **[20]**

      a) Google APIs.

      b) Explain Bucket in S3

      c) CDMI

      d) Analytics as a service

      e) Type of hypervisors

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(3 Hours)   **Marks : 80**

Note: 1) **Question number 1 is compulsory.**
         2) **Attempt any THREE from remaining questions.**

Q.1	**a.**	What is Evidence? Explain the various types of digital evidence.	**5**
	b.	How are ethical hackers different than malicious hackers?	**5**
	c.	Explain importance of forensic duplication and its method. Also list some duplication tools.	**5**
	d.	List and explain the various types of cybercrime	**5**
Q.2	**a.**	List and Explain the different types of Evidence in digital forensics.	**10**
	b.	What is an Intrusion Detection System? Explain different types of Intrusion Detection system.	**10**
Q.3	**a.**	Explain volatile data collection procedure for windows system.	**10**
	b.	What is Incident Response? Explain Incident Response Methodology in detail.	**10**
Q.4	**a.**	What are the steps involved in computer evidence handling? Explain in detail.	**10**
	b.	Explain RAID technique in detail	**10**
Q.5	**a.**	Explain guidelines for incident report writing. Give one report writing example.	**10**
	b.	List various Digital forensic tools and explain any one tool with case study.	**10**
Q.6	**a.**	Explain procedure to investigating routers	**5**
	b.	Explain the attacks on Network and its prevention.	**5**
	c.	What is Cyber-crime? What are the different roles of computer with respect to cybercrime	**5**
	d.	Explain importance of Hashing in Forensics analysis.	**5**

[3 Hours]   **[Marks : 80]**

Please check whether you have got the right question paper.

N.B: 1. Question No. 1 is compulsory.
             2. Attempt any 3 from remaining questions.
             3. Assume suitable data if required.

1.   a.   Discuss functional and Non-Functional requirements.   **5**

       b.   Explain the relationship among scope, schedule and budget?   **5**

       c.   What is Project? What are the attributes of a project?   **5**

       d.   Compare PERT and CPM   **5**

2.   (a)   Explain how Gantt-chart can be used for planning and controlling small projects with suitable example? What are the limitations of Gantt-Chart?   **10**

       (b)   What are the advantages of including milestones in the WBS? Why should the WBS be deliverable oriented?   **10**

3.   (a)   What is Agile methodology? Explain SCRUM.   **10**

       (b)   Explain the different types of testing?   **10**

4.   (a)   What do you mean by Project Charter and Plan? Are they different?   **10**

       (b)   Suppose you are the project manager of a large software development project. Mention at least three reasons for your project delay. What are the risks associated with project delay? Perform Risk assessment and prepare RMMM plan for the same.   **10**

5.   (a)   What is Function Point Analysis, explain in detail? What are its benefits in engineering process?   **10**

       (b)   What are the PMBOK Areas?   **10**

6.   (a)   Explain Mc Call's Quality factors?   **10**

       (b)   Explain in detail 4P's of project management.   **10**

[3 hours]   [Total Marks: 80]

NB :   1) **Question 1** is **compulsory**.
       2) Attempt any **three** questions from the **remaining** questions.
       3) Draw neat diagrams wherever necessary
       4) **Assume** suitable **data** wherever applicable.

Q1.	a	Explain virtual reality design	5
	b	Explain classification of MIDI messages	5
	c	Compare RIFF and TIFF file formats	5
	d	Explain applications of multimedia for entertainment, education and health science?	5
Q2.	a	What benefits are offered by compression schemes in designing multimedia systems.	10
	b	Explain different architecture for content organization in multimedia databases	10
Q3.	a	Explain different classes of databases used in multimedia	10
	b	Explain the design issues for multimedia authoring systems.	10
Q4.	a	Explain components of multimedia systems.	10
	b	How does workflow design for a departmental system differ from that for an enterprise-wide system.	10
Q5	a	Explain hypermedia application design considerations.	10
	b	Explain components of a distributed multimedia system.	10
Q6.	a	Explain multiserver network topologies	10
	b	Explain technology assessment for developing a business information model.	10

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