(Time: 3 hrs)   **(Total Marks: 80)**

N.B. 1. Question no 1 is compulsory, solve any 3 questions from remaining 5 questions.
2. Assume Suitable data whenever necessary.
3. Figures in the right indicate full marks.

Q 1)   a) Compare various cloud service models.   (05)
      b) Write a note on Amazon Web Service (AWS)   (05)
      b) List the benefits associated with Virtualization?   (05)
      d) How cloud firewall is different from a traditional firewall?   (05)

Q 2)   a) Explain the architecture of Xen hypervisor in detail   (10)

      b) What is cloud computing? Differentiate between various cloud deployments
        models.   (10)

Q 3)   a) What are the benefits of public cloud for small and medium business (SMB)
        Organizations?   (10)

      b) What do you understand by Service Oriented Architecture (SOA)?
        Explain how it supports cloud computing?   (10)

Q 4)   a) What are the challenges with cloud data security?   (10)

      b) Explain AAA model for cloud computing in detail.   (10)

Q 5) a) Explain GFS file system of cloud in detail, also specify how Bigtable
        reside on GFS.   (10)

      b) Draw and explain the architecture of mobile cloud computing.

        Also list its challenges and benefits.   (10)

Q 6)   Write a note on **(any two)**   (20)
      (a) Google's no SQL system
      (b) Eucalyptus Architecture
      (c) Open Stack Architecture

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Time : 3 Hrs   **Marks : 80**

N.B : **(1) Question 1** is compulsory.
      (2) Out of remaining **ANY 3**
      (3) Assume suitable data wherever required.

1. Solve **ANY FOUR**   (**20**)

  (a) How does a project's scope support the MOV concept?

  (b) Describe how a project's MOV can support an organization's goals and strategies.

  (c) What are the attributes of a project?

  (d) What is a process metric & a product? Give an example.

  (e) What are some hidden costs of outsourcing? Why is it important to consider these costs?

 2. (a) What are seven IT project risk management processes? Explain each?   (**10**)

   (b) Describe the three approaches to implementing an information system.   (**10**)

3. (a) Describe the PMBOK area of project time management & What is a work package?   (**10**)

  (b) Describe the roles of a project manager. What qualities are required for a good project
    manager? What is the difference between a work group and a real team?   (**10**)

4. (a) Briefly describe the five scope management processes & describe the scope planning process
                                                   (**10**)
  (b) Explain the phases of project life-cycle and compare it with SDLC.   (**10**)

5. (a) Describe the relationship among scope, schedule, and budget   (**10**)

  (b) Describe the criteria that should be used to make a project selection decision.   (**10**)

6. (a) Describe the five phases of the IT project methodology   (**10**)

  (b) Describe the functional organizational structure & project organizational structure   (**10**)

(3 Hours)   **Marks : 80**

Note: 1. Question Number 1 is compulsory.
2. Solve any **three** from remaining questions.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary

(1) a. Define frequency resuse with a neat diagram. Consider a transmitter supporting 80 voice channels over an area of 250 kms. If this area is equally divided into 8 cells, each supported by lower power transmitters so that each cell supports 50% of the channels. Determine:
(i) The coverage area of each cell (ii) Total area of voice channels available in cellular systems.   **(10 marks)**

   b. Define the threats and challenges in wireless systems. Explain the different types of device security issues   .   .   **(10 marks)**

(2) a. Why is tunneling required in VPN. What are the protocols which support VPN.   **(10   marks)**

   b. Why is the concept of Spread Spectrum important? Briefly explain FHSS and DSSS concept.   **(10 marks)**

(3) a. Detail the Bluetooth protocol stack with neat diagram.   **(10 marks)**
   b. Elaborate the main factors of change in economics of wireless technology   **(10 marks)**

(4) a. Classify 802.11 MAC management functions. Explain Power management function in detail   **(10 marks)**

   b. Explain Hidden and Exposed terminal problem with solution.   **(10 marks)**

(5) a. Neatly explain the WLL Architecture. Explain the two local loop techniques with diagrams   **(10 marks)**
   b. Discuss the GSM System Architecture in detail   **(10 marks)**

(6)   Write short notes on (any 2):   **(20 marks)**

a. Mobile IP

b. Wireless Sensor Networks

c. Handoff Strategies

d.. Wimax Technologies

(3 hours) [80 marks]

Instructions:

> **Question 1 is compulsory.**
> **Answer any 3 from remaining 5 Questions.**
> **Figures to the right indicate full marks.**
> **Assume suitable data wherever necessary**

Q1. a. Explain 4, 8 and m connectivity between pixels (5)

b. Explain euclidean, D4, D8 and Dm distance by taking a suitable example
(5)

c. How is line detected? Explain using the operators and also demonstrate by taking a set of points how edge linking can be done. (5)

d. What is a Median filter, maximum filter and minimum filter? When is the median filter not effective in noise removal (5)

Q2. a. Do histogram equalisation on the following image which has 8 discrete pixel levels (0 - 7), transforming it into a histogram equalised image also with 8 discrete grey levels in the range (0-7). (10)

```
1 1 1 1 1 1 1 1
0 2 5 5 5 5 2 0
0 3 2 6 7 2 3 0
0 3 3 2 2 3 3 0
0 2 3 2 2 3 3 0
0 3 2 4 4 2 4 0
0 2 6 4 4 4 2 0
1 1 1 1 1 1 1 1
```

b. What is the effect of repeatedly applying a contrast stretching and intensity slicing preserving background on a digital image (10)

Q3. a. Consider an 8- pixel line of gray-scale data, {12, 10, 13, 13, 10, 13, 57, 54}, which has been uniformly quantized with 6-bit accuracy. Construct its 3-bit IGS code. (10)

b. Given an input image F of size (3 X 3). Find filtered image R using median filter using mask M. (10)

F =		
3	2	1
5	2	6
7	9	1

R=		
R1	R2	R3
R4	R5	R6
R7	R8	R9

M=		
0	1	0
1	1	1
0	1	0

Q4. a. Show that a high pass-filtered image in the frequency domain can be obtained by using the method of subtracting a low pass filtered image from the original (10)

b. How many Huffman codes possible for a 3-symbol source? Construct these codes. (10)

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Q5. a. Segment the given 8X8 image using Region splitting. Let the predicate be threshold<=3.
Also draw the quad tree. (10)

5	6	6	6	7	7	6	6
6	7	6	7	5	5	4	7
6	6	4	4	3	2	5	6
5	4	5	4	2	3	4	6
0	3	2	3	3	2	4	7
0	0	0	0	2	2	5	6
1	1	0	1	0	3	4	4
1	0	1	0	2	3	5	4

b. Explain the process of high boost filtering mathematically (10)

Q6. Write Short note: (Any 4) (20)
a) Biometric Authentication
b) Hough Transform
c) Opening and Closing Operations
d) Justify the statement Laplacian is not a good edge detector
e) Differentiate lossy and lossless Compression

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(Time: 3 Hours)   Total Marks: 80

(1) Ques 1. is compulsory.

(2) Attempt any 3 of the remaining 5 questions.

Q1 (a) What is AI? List down all components of AI.   (04)

   (b) Explain the limitations of Propositional logic with suitable example.   (04)

   (c) Describe the Bayes theorem.   (04)

   (d) Explain any AI problem with suitable example.   (04)

   (e) Solve the given crypt arithmetic puzzle: (04)

                          BASE

                        + BALL

                        GAMES

Q2.   a) Explain Hill Climbing and Simulated Annealing with suitable example.   (10)

      b) Explain Goal Based and Utility based agent with block diagram.   (10)

Q3. a) What is Prolog? What do you mean by Structure in Prolog?
       Write a Prolog Program for family information systems.   (10)

    b) What is heuristic function? Explain 8 puzzle problem.
       Explain the PEAS descriptor of Wumpus world problem.   (10)

Q4. a) Consider the following sentence   (10)

       (i) Mammals drink water.

       (ii)Man is Mortal.

       (iii) Man is Mammal.

       (iv) Bob is Man.

   Prove *Bob is Mortal* using modus ponen & Resolution.

    b) Differentiate between Informed and Uninformed search techniques. Also explain
       A* algorithm with suitable example.   (10)

Q5. a) Explain Planning in AI. Compare and contrast between Partial Order Planning and Conditional Planning. Also explain the real time application of hierarchical planning. (10)

b) What is uncertainty ? Explain Bayesian Network with example. (10)

Q6.Attempt any 4 :

a) Backward chaining with an example. (05)

b) Expert Shell system architecture. (05)

c) Conditional Probability. (05)

d) Knowledge base agent. (05)

e) Depth limited search. (05)

(3 hours)   **[Total: 80 Marks]**

Note: 1) Question no. 1 is compulsory.
        2) Solve any THREE question out of remaining FIVE.
        3) Assume suitable data wherever applicable.

1. Develop a business plan for online grocery store for selling organic items based on the   20
   following guidelines:
   (1) Identify the business model.
   (2) Develop the strategic plan based on Strategic Objectives, Strategic definition,
       Marketing plan, SCM and CRM plan.
   (3) Implementation should include few screenshots of websites demonstrating: Business
       model, revenue model(s) used, CRM and SCM activities, Marketing activities, Strategic
       objectives like mission, vision and objectives, Security concern, Payment mode.
   (4) One example of use-case scenario.

2. (a) Discuss the various electronic payment methods.   10
   (b) Distinguish between E-Commerce and E-Business. What are different mechanisms for
       online auctions?   10

3. (a) Explain different types of Portals with an example. Illustrate with an example
       Buy Side E-Commerce and Sell –Side E-Commerce.   10
    (b) Differentiate between strategy and tactics. Explain five force model and importance of
       value chain.   10

4. (a) Explain in detail the SOSTAC framework to promote the product.   10
   (b) Publisher wants to set up online business for his firm. Which type of revenue   10
       models will be used by him for revenue generation?

5. (a) Identify and examine the issues involved in the development of E-Commerce   Website.
                                                                                                 10

   (b) How Porter's Five Forces can be applied to variousonline business industries?   10

       Explain by giving examples.

6. (a) What is blind signature? Explain with example how it is used in online payment   10
       method?

   (b) Discuss which E-CRM tool is used by HDFC to acquire, maintain, and expand customer
       relations worldwide by using the internet.   10

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(3 Hours) [Total Marks : 80]

N.B.:
(1) Questions No. 1 is compulsory.
(2) Solve any three questions from remaining five questions.
(3) Assume suitable data if necessary.

Q1   In the Cold Storage House, there is a main Building and three (03) consumable   (20)
      items storage blocks in the campus. The main building is the inventory
      management block where registration of new items takes place. The main building
      has 4 floors.

      The Cold storage has identified ERP software, which should be accessible by the
      employees. The software is installed on a server at the inventory management
      block. At the ground floor, there are 12 computers at the scanning section. At other
      remaining floors, there is one computer user each. The farthest distance between
      the computer on the top most floor and the ground floor is less than 50 meters.

      The consumable items storage blocks have 3 floors each, with 06 computers in
      the ground floor of each block. The max distance between the storage blocks and
      the inventory management blocks is less than 150 Meters. The computers in the
      storage block may be increased based on future expansion plans.

          1. Hardware requirement analysis in main building with quantity.
          2. Hardware requirements analysis in storage blocks.
          3. The employees should receive dynamic IP addressing from a central
          server.
          4. Network should be loop free at Layer 2
          5. Every computer should be able to access the ERP software from each
          of the location using a fixed IP address.
          6. IP Network design table.
          7. Identify configurations on the hardware wherever appropriate.
          8. Network topology diagram with necessary equipment's.

Q2.   (a) What is a DMZ? Explain its importance in Network Security? Discuss its   (10)
           limitations.
      (b) What is Ethernet technology? Discuss advantages of Ethernet over Token Ring,   (10)
           FDDI and ATM LAN Emulation (LANE).

Q3.   (a) What is WAN? What key features should be considered for selecting a WAN   (10)
           provider?
      (b) What is TIA-942-A Data Center Standard? What guideline does it includes?   (10)

Q4.   (a) What is a Data center? List three data center topologies? Explain any one in detail.   (10)

      (b) Discuss the wireless network component architecture with diagram.   (10)

Q5. (a) What is a SAN? Discuss its role in data centers. (10)

(b) What is network Virtualization? How it is incorporated in Software Defined (10)
Networks?

Q6. (a) Explain how SDN changed traditional Enterprise Network Design? Highlight (10)
with example.

(b) Describe the relevance of Narrow Band and Spread Spectrum WLAN (10)
technologies

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