NEW

2017

BCA

6th Semester Examination

ELECTIVE - II

PAPER—3202

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

(*Image Processing*)

Answer any *five* questions.

1. (a) Define image, what is brightness ? What do you mean by Gray level ? What is resolutions ? 2+1+2+2

   (b) Describe the fundamental steps in image processing. 7

2. (a) What is meant by *illumination and reflectors ? Define* sampling and quantization. 4+3

(b) Write short note on neighbours of a pixel ? Write the expression to find the number of sits to store a digital image. 7

3. (a) Explain color image fundamentals. 7

(b) Explain CMY Model. 7

4. (a) What is image transformation ? What is the need for transformation ? 2+2

(b) Define Fourier transform. Write short note on DCT. 10

5. Specify the following properties of 2D Fourier transform. 14

(a) Separability

(b) Translation

(c) Periodicity

(d) Rotation and

(e) Scaling

6. (a) What is Pattern recognitions ? 3

(b) What do you mean by Pattern class ? 3

(c) Explain the various decision theoretic approaches to rewriting. 8

7. Write short note on : $3\frac{1}{2} \times 4$

(a) Convolution theorem

(b) FFT algorithm

(c) Human eye structure

(d) Filtering

8. (a) What is meant by image segmentation ? Mention the application of image segmentation. 7

(b) Explain about detection of discontinuities. 7

[*Internal Assessment : 30*]

[*PHP*]

Answer *Q. No. 1* and any *four* questions from the rest.

1. Answer any *five* questions : 5×2

(a) State the difference between http and https ?

(b) What so you mean by front end and back end is web programming ?

(c) Give the syntax of foreach loop ?

(d) State the types of syntax used for writing a PHP program.

(e) How can we obtain today's date from a server ?

(f) What is the importance of naming a page as 'index' ?

(g) How dir oriented HTML page differs with table oriented HTML page ?

2. (a) What are the components required for a PHP enabled environment to write a program ?

(b) What is the difference between Cellpadding and Cellspacing ? 12+3

3. (a) How can array be created is PHP ? Illustrate with one-dimensional and two-dimensional array.

(b) What is advantages of using PHP over other scripting language ?

(c) Write a PHP code to write a Hello world program. 6+6+3

4. (a) Briefly explain the forelims include, require, include-once, require once with an example.

(b) Why hidden fields are used in a form ? 12+3

5. (a) What do you mean by action, enctype, name and method of a form ?

(b) How does a browser communicates with a server ? 8+7

6. (a) State the differences between session and Cookie ?

   (b) Write a PHP code using session ?

   (c) What do you mean by phpinfo ( ) ?

   (d) When does the function mysal-query ( ) and mysal select-num ( ) are used ? 6+4+2+3

7. (a) How many types of errors are available is PHP ?

   (b) State the difference between mysal-fetch-row ( ) and mysal-fetch-assoc ( ).

   (c) Write a PHP code to insert the name and gender of a student in a mysal database. Give the HTML code of a form. 5+4+6

[*Internal Assessment : 30*]

[*Advanced OS*]

Answer *Q. No. 1* and any *four* questions from the rest.

1. Answer any *five* questions : 5×2

   (a) Why does "the interrupt disable method to achieve mutual exclusion" not work for multiprocessor systems ?

(b) How does Lamport's algorithm guarantee mutual exclusion ?

(c) Differentiate between forward-error and backward-error recovery.

(d) Write the difference between tightly coupled system and loosely coupled system with an example.

(e) What is the need for semaphore is synchronization.

(f) What are the characteristics of real time systems ?

(g) What are the components of Kernel modules ?

2. (a) Write down some utility of distributed system. 4

(b) Give a definition of middleware and show in a small diagram where it is positioned. 2+2

(c) What is single point of failure ? How does distributed system helps to address such failure ? 3+4

3. (a) What is client stub in RPC ? 2

(b) Write down the sequence of events in RPC. 6

(c) Discuss few design issues in RPC system. 7

4. (a) Write down the difference between logical clock and physical clock. 3

(b) Differentiate between reusable and consumable resources. 3

(c) What is deadlock ? How deadlock situation is handled in Meakawa's DME algorithm. 2+7

5. (a) Can the performance of multiporcessor system with two processors be worse than the performance of a uniprocessor (with an identical CPU) ? Explain the answer with an example.

(b) A task consists of several subtasks. If these communicate synchronously with each other frequently, which scheduling policy with suit for this scenario and why ? 8+7

6. Discuss in detail about the light weight process and its different levels. Write its advantages, disadvantages and performance of supporting lightweight process at these levels. 15

7. (a) Write the Chandy-Lamport's global state recording algorithm.

(b) Write short note on monitor. 8+7

[*Internal Assessment : 30*]

(*Advanced Networking*)

Answer any *five* questions : 5×14

1. (a) Compare and contrast between Frequency Division Multiplexing (FDM) and Time Division Multiplexing (TDM) techniques with relevant diagrams.

(b) What is pulse code modulation ? Briefly explain how it is used to convert analog signals into digital form.

(c) Differentiate between datagram network and virtual circuit network. 5+(2+4)+3

2. (a) What is congestion ? What are the factors that affect congestion ? Explain the concept of token bucket algorithm in controlling congestion.

(b) How does a router work in an internetwork ? Differentiate between static and dynamic routers. List some common routing protocols. (1+2+5)+(2+2+2)

3. (a) What are the different classes of addresses used in IPV4 ? List their ranges in dotted decimal rotation.

(b) Could HDLC be used in as data link control protocol for a LAN ? Explain your answer.

(c) Give a brief comparison between I-frame and U-frame. (1+2)+5+6

4. (a) Why are transport layer protocols like TCP and UDP called end-to-end protocols ? Bring out the difference between them.

(b) Explain the concept of framing with respect to Data Link Layer.

(c) What is network firewall ? How is it different from on application firewall ? (2+3)+4+(3+2)

5. (a) In Go-Back-N-ARQ flow control, define and discuss the handling of

(i) a lost frame

(ii) a lost acknowledgment.

(b) Differentiate between link state and distance vector routing algorithms.

(c) Write the advantages and disadvantages of synchronous data transmission. (3+3)+4+(2+2)

6. (a) Explain IEEE 802·3 MAC frame format.

(b) Compare between pure ALOHA and slotted ALOH.

(c) Explain the dynamic model of ARP. 5+5+4

7. (a) Explain the three-way handshake for connection establishment.

(b) What are the functions of a gateway and a repeater.

(c) What is the significance of the word 'Ethernet' in ethernet LAN ? 6+(3+3)+2

8. Write short note (any *four*) : $4 \times 3\frac{1}{2}$

(a) ICMP ;

(b) Socket ;

(c) Datagram ;

(d) TELNET ;

(e) IPV6 ;

(f) Checksum.

[*Internal Assessment : 30*]

(*Data Warehousing*)

Answer any *five* questions : 5×14

1. (a) Define data mining. What is the advantages data mining over traditional approaches ? 2+4

(b) How is data mining related to Knowledge Data Discovery ? 4

(c) How data mining system can be classified ? 4

2. (a) Define decision tree. 2

(b) What are the advantages and disadvantages of the decision tree approach over other approaches for data mining ? 4

(c) Discuss briefly the tree construction principle. 3

(d) What is a classification problem? What is the difference between supervised and unsupervised classification? 2+3

3. (a) Discuss the mapping of data warehouse to multiprocessor architecture. 8

(b) Write details of data warehouse meta data. 6

4. (a) With a neat diagram, give a brief explanation of the various components of three-tier data warehousing architecture. 8

(b) What is sequence mining? How is related with temporal mining? 2+4

5. (a) What is clustering? Why is it difficult to handle categorical data for clustering? 2+4

(b) Distinguish between partition clustering and hierarchical clustering. 8

6. (a) Discuss the social impacts of data mining. 10

(b) What is data mart? What are the types of data mart? Which schema is suitable for data mart? 2+2

7. (a) Discuss the issues to be consider during data integration. 8

(b) Describe *different methods of* data cleaning. 6

8. Write short note (any *four*) : $4 \times 3\frac{1}{2}$

(a) Spatial mining ;

(b) Personal Data Marts ;

(c) Partitioning algorithm

(d) Web mining ;

(e) Issues and challenges in data mining ;

(f) Cluster analysis.

[*Internal Assessment : 30*]

(*Advanced DBMS*)

Answer *Q. No. 1* and any *four* from the rest.

1. Answer any *five* questions : 5×2

(a) Why 4NF in normal form is more desirable than BCNF ?

(b) What is Serializability ? How it is tested ?

(c) Define the properties of transaction.

(d) What do you mean by query optimization.

(e) Name and briefly describe the five SQL built-in functions.

(f) What is data fragmentation ?

(g) What is referential integrity ?

2. (a) What do you mean by functional dependency ? 3

(b) What are the main characteristics of functional dependencies. 6

(b) Compute the closure of the following set F of functional dependencies for relation schema.

R(A, B, C, D, E)

A→BC, CD→E, B→D, E→A.

List the candidates keys for R. 6

3. (a) What are the difference between Embedded SQL and Dynamic SQL. 4

(b) Write short note on Armstrong's axioms. 6

(c) What is two phase locking protocol ? How does it guarantee serializability. 2+3

4. (a) Distinguish between conflict and view serializability. 4

(b) What do you mean by integrity constrain. 3

(c) What is meant by check points entry in system log. 4

(d) "Primary key is one type of integrity constrains" — Explain. 4

5. (a) Why does the concurrency control require in transactions ? 5

(b) How does database system control concurrent transactions ? Describe any of the concurrent transaction control policies. 2+4

(c) Describe the state diagram of a transaction. 4

6. (a) What do you mean by distributed database design ? What strategies and objectives are common to most of DDBMSs ? 2+3

(b) Describe horizontal and vertical fragmentation. Explain with an example. 4

(c) What is data replication ? Why is data replication useful in DDBMSs ? 2+2

(d) What is data allocation ? Discuss. 2

7. Write short note (any *four*) : 3×5

(a) Object-oriented database ;

(b) 2PL ;

(c) Time stamping ;

(d) Database security ;

(e) Multi-valued dependencies ;

(f) Data model and its types.

[*Internal Assessment : 30*]

(*E-Commerce and ERP*)

Answer any *five* questions : 5×14

1. (a) Write the advantage of E-Commerce.

(b) Write short notes on 'Cyber Laws'. 7+7

2. (a) Discuss the relationship Between E-commerce and Networking.

(b) Discuss the good infrastructure Requirement for E-Commerce. 7+7

3. (a) What is the advantage of E-Governance ?

(b) What is the Risk of E-Commerce ? 7+7

4. Write short notes : 7+7

(a) Rules and Regulations for controlling E-Commerce ;

(b) Weaknesses of call center ;

5. (a) What is Enterprise Resource Planning ?

(b) Discuss the Features of ERP. 4+10

6. (a) Write a short note on "Four C'S".

(b) Comparison between Traditional and Electronic Commerce. 7+7

7. (a) Write the importance of EDI.

(b) Write short notes : $7+3\frac{1}{2}+3\frac{1}{2}$

(i) B 2 B

(ii) B 2 C

[*Internal Assessment : 30*]