# NEW

## 2016

## 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 AND PATTERN RECOGNITION* )

Answer any *five* questions.

1. (a) What is the basic difference between the lens of eye and ordinary optical lense ? 2

   (b) Write down the name of light receptors in human eye. 2

   (c) Explain the term Aliasing and Moire Pattern. 4

(d) Define subjectie brightness and brightness adaptation. 4

(e) Define Weber ratio. 2

2. (a) What is the difference between global and local enhancement ? 2

(b) Distinguish between digital image and binary image. 2

(c) What do you mean by spatial domain and frequency domain image processing ? 2

(d) Write short note : 4+4

(i) Sampling ;

(ii) Zooming and Shrinking.

3. (a) What is pixel ? 2

(b) Describe the fundamental steps of digital image processing. 6

(c) What is the purpose of image sensors in an image processing system ? 4

(d) What is quantization ? 2

4. (a) Describe the process of edge detection using Laplacian. 6

(b) What is thresholding ? Explain about Global Thresholding. 3+5

**5.** (a) What is pattern recognition ? 3

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

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

**6.** (a) What is chain code ? How this code is used to represent an image ? 8

(b) Indicate how an image is segmented using region based segmentation. 6

**7.** (a) Write short note : 4+4

(i) Log Transformation and Power-Law Transformation.

(ii) Smoothing Linear filters.

(b) Explain the following terms : 3×2

(i) Bit plane slicing.

(ii) m-adjacency.

(iii) Fourier Transform.

***[Internal Assessment : 30]***

## [ *PHP / MY SQL* ]

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

1. Answer any *five* questions : 5×2

   (a) Differentiate between server and client.

   (b) What is DNS ?

   (c) Why PHP is called Hypertext Preprocessor ?

   (d) Why XML is being used in web programming ?

   (e) How can you obtain today's date in PHP ?

   (f) What do you mean by open source language ?

   (g) Why alt and title attribute is used in img tag of HTML ?

2. (a) How session and cookie differs ? Give an example of each to illustrate your point.

   (b) What is the difference between echo and print ?

   (6+6)+3

3. (a) How can we connect PHP and My SQL ?

   (b) Create the admission portal of your college, store the values into my sql and show the values from my sql in a tabular form.

   5+10

4. (a) What is $-GET and $-POST ? Describe with suitable example.

   (b) Why $-REQUEST is preferred than $-GET and $-POST ?

   (c) What is the difference between $var and $$var ?

   (d) What is a TCP ? How TCP works with IP during communication of client and server ?

   5+3+2+5

5. (a) Differentiate between for and for each loop.

   (b) Give a proper PHP code to upload an image. Also, create the HTML form needed for uploading.

   6+9

6. Explain the following function with example : 5+5+5

   (a) explode () and implode () ;

   (b) substr () and str_replace () ;

   (c) trim () and mysql_real_escape_string ().

7. (a) Difference between mysql_connect and mysql_ pconnect.

   (b) How many types of errors available in PHP ?

   (c) What is mysql_fetch_object ?

   (d) Write a program in PHP to print non prime number between 251 to 786.

   5+3+2+5

***[ Internal Assessment : 30 ]***

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## [ *ADVANCED OS* ]

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

1. Answer any *five* questions : 5×2

   (a) Describe critical region.

   (b) Differentiate between centralised & network OS.

   (c) Explain fork() system call with example.

   (d) Differentiate between logical and physical address space.

   (e) What is RPC ?

   (f) Define Dead locks.

   (g) Write the advantages of distributed system.

2. (a) Describe the two-phase commit protocol.

   (b) How does one measure the performance of mutual exclusion algorithm ?

   7+8

3. (a) What is the need for migration ? Explain different types of Migration.

   (b) Discuss the importance of Cache in Distributed Processing.

   (c) Explain Bus-Oriented Systems.

   5+5+5

4. (a) Explain different ways for multiprocessor synchronization.

   (b) Describe symmetric multiprocessor system. How it is different from separate spuervisor system ?

8+7

5. 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

6. (a) What is slab ? Explain different components of slab allocator ?

   (b) Describe Banker's algorithm for deadlock avoidance with supporting example.

8+7

7. Write short notes on (any *three*) : 3×5

   (a) RPC in Unix ;

   (b) Workstation model ;

   (c) Object based Distributed Shared Memory ;

   (d) DFS.

**[ *Internal Assessment : 30* ]**

## (*ADVANCED NETWORKING*)

Answer any *five* questions : 5×14

1. (a) Draw a hybrid topology with a ring backbone and two bus networks. 5

   (b) Assume six devices are arranged in mesh topology. How many cables are needed and how many ports are needed for each device ? 2+1

   (c) Write down the functionalities of transport and datalink layer in ISO/OSI ref. model. 3+3

2. (a) A signal travels through a medium and it's power is reduced to half. Determine the attenuation. 4

   (b) Draw the signal pattern for the following data if RZ encoding technique is used to encode the data in it's digital form :

   Data : 01001110

   What is the disadvantage of using RZ encoding technique ? 4+2

   (c) Briefly describe Pulse Aplitude Modulation (PAM) technique for analog to digital conversion. 4

3. (a) Draw a 16-QAM constellation diagram using 3 amplitudes and 8 phases. 5

   (b) What are the advantages of QAM over ASK or PSK ? 3

   (c) What is interleaving and bitpadding in TDM ? 3+3

4. (a) Given a bit sequence 1011011 and a divisor in polynomial form as $x^3 + x + 1$. Find the CRC. 5

(b) Why the size of the sender window size must be less than $2^m$ in case of Go-Back-N-ARQ ? 4

(c) Briefly describe HDLC supervisory frame format. 5

5. (a) What do you mean by multiple access ? Describe any one controlled access protocol in detail. 2+5

(b) Briefly describe OSPF routing protocol. 7

6. (a) What is the purpose of an NIC ? 2

(b) What are the advantages of dividing an Ethernet LAN with a bridge ? 3

(c) What are the common traditional Ethernet implementations ? 2

(d) What do you mean by transparent bridge ? 3

(e) Describe the function of Network Address Translator. 4

7. (a) Briefly describe, what do you mean by Virtual Lan ? 4

(b) Write down the mechanism of RARP Protocol. 4

(c) What do you mean by default mask ? Give example. 2+1

(d) Differentiate between Subnetting and Supernetting. 3

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

(a) Classless addressing ;

(b) Pure ALOHA ;

(c) UDP ;

(d) Fibre Optic Cable ;

(e) Token bucket algorithm ;

(f) POP3 protocol.

**[*Internal Assessment : 30*]**

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## (*DATA WAREHOUSING AND MINING*)

Answer any *five* questions from the rest : $5 \times 14$

1. (a) Describing various data mining functionalities with an example. 8

(b) How data mining system can be classified ? 6

2. (a) What is descriptive and predictive data mining ? 4

(b) Compare clustering and classification. 4

(c) What is data mart ? Which scheme is suitable for data mart ? 4

(d) What is spatial mining ? 2

3. (a) Differentiate OLAP and OLTP. 8

   (b) Discuss the method for efficient computation of data cubes. 6

4. (a) Write about the multidimentional data model. 7

   (b) Explain how is it used in data warehousing. 7

5. (a) Explain the need of data mining in Retail Industry. 8

   (b) Discuss in detail about any one data mining tool. 6

6. (a) What is clustering? Briefly describe the partitioning and hierarchical clustering method. Give example in each case. 11

   (b) What is text mining? 3

7. (a) Give the advantages of web mining. 6

   (b) Discuss about the social impacts and various trends in data mining. 8

**[*Internal Assessment : 30*]**

## (*ADVANCED DBMS*)

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

1. Answer any *five* questions : 5×2

   (a) What do you mean by transaction ?

   (b) What is lossless decomposition ?

   (c) What do you mean by Functional dependency ?

   (d) What is trigger ?

   (e) What is metadata ?

   (f) State the need for query optimization.

   (g) What is referential integrity ?

   (h) What is DKNF ?

2. Consider the following schedules. The actions are listed in the order they are scheduled, and prefixed with the transition name :

   S1: T1:R(X), T2:R(Y), T1:W(Y), T2:W(Y), T1:R(Y), T2:R(Y)
   S2: T3:W(X), T1:R(X); T1:W(Y), T2:R(Z), T2:W(Z), T3:R(Z)

   For each of the schedules, answer the following questions :

   (a) What is the precedence graph for the schedule ? 3

   (b) Is the schedule conflict-serializable ? If so, what are all the conflict equivalent serial schedules ? 6

   (c) Is the schedule view-serializable ? If so, what are all the view equivalent serial schedules ? 6



(Continued)

**3.** (a) What is anomalies ? Discuss the different anomalies with suitable example. 1+4

(b) Consider relation R(A, B, C) and a set of function dependencies. F = {A→BC, B→C, A→B, AB→C}. Compute the Canonical cover for F. 5

(c) Explain the following terms 'Fully functional dependency' and Non-transitive dependency' with example. 5

**4.** (a) What is concurrency control ? Briefly describe locked-based protocol. 1+4

(b) What are the advantages of BCNF over other normal form ? 5

(c) Define Carcading rollback and deadlock. 3

(d) What is foreign key? 2

**5.** (a) Discuss the ACID properties of a database transaction. 4

(b) Describe the different state of the transaction. 5

(c) Write down the main difference between DBMS and RDBMS. 4

(d) What is DDL ? 2

**6.** (a) Write a short note about distributed database system.

(b) Write down the comparison the between DBMS and FBS.

(c) What is time stamping? How can it be used for concurrency control?

(d) What is data fragmentation?

7. (a) What is database recovery? 3

(b) Explain the mechanism of log based and shadow paging database recovery techniques? 6+6

**[*Internal Assessment : 30*]**

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## (*E-COMMERCE & ERP*)

Answer any *five* questions : 5×14

1. (a) Write different application areas of E-Commerce.

(b) What is e-cash and how does it works?

(c) What is digital signature?

5+5+4

2. (a) What is Electronic Data Interchange (EDI)?

(b) Explain the role of Web EDI in tramsmission of data.

(c) Write the disadvantages of EDI.

6+4+4

**3.** (a) What is supply chain Portal ?

(b) Explain any one supply chain planning tool.

(c) Explain the supply chain execution system.

4+5+5

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

(a) E-Governance ;

(b) Threats of E-Commerce ;

(c) Web Security ;

(d) Call Centre ;

(e) Data Warehouse ;

(f) VPN.

**5.** (a) Distinguish between CRM and SRM.

(b) Compare and contrast intranet and extranet with examples.

(c) Why are cyber laws required ?

8+4+2

**6.** (a) What is Knowledge Engineering (KE) ?

(b) What do you mean by BPR ? Explain with suitable examples.

6+8

7. (a) Explain C2B model with suitable example.

   (b) What is Public Key Infra structure (PKI) ?

   (c) What do you mean by WAP ? Explain in details.

6+4+4

***[ Internal Assessment : 30 ]***

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