



**UNIVERSITI TUN HUSSEIN ONN
MALAYSIA**

**FINAL EXAMINATION
SEMESTER II
SESSION 2010/2011**

COORSE NAME : MULTIMEDIA DATABASE

COORSE CODE : BIT 3193

**PROGRAMME : BACHELOR OF INFORMATION
TECHNOLOGY**

EXAMINATION DATE : APRIL/MAY 2011

DURATION : 2 ½ HOURS

INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

Instruction: Answer all Question

Q1 Disk stripping is a process in storing multimedia objects in multiple disks. It has become popular due to the availability of RAID architecture.

- (a) What does RAID stand for? (2 marks)
- (b) Give a reason why disk stripping is important due to the availability in storing multimedia objects. (2 marks)
- (c) Describe **TWO (2)** types of stripping techniques. (4 marks)
- (d) Assuming the b_{disk} represents the maximum disk bandwidth and b_{object} is the maximum bandwidth required for an object. Given $b_{\text{disk}} = 500$ and $b_{\text{object}} = 5$, calculate the maximum number of objects that can be retrieved concurrently from the disk. (2 marks)
- (e) Assume that there are five concurrent retrievals of 5 objects that are similar in nature (the size and consumption rates are the same). Consider the memory requirement of each object at a time instant T_1 : sub-object O_1 requires $B/6$, O_2 requires $B/3$ memory, O_3 requires $2B/3$ memory, O_4 requires B memory and O_5 requires $3B$ memory. Calculate total memory requirement for concurrent retrieval of these objects. (4 marks)
- (f) Given a multimedia database server with a main memory of M that need to support N concurrent object retrievals, calculate the minimum number of M in Bytes (B) to support the concurrent object retrievals. (Assume: $N = 500$). (4 marks)

Q2 Describe **THREE (3)** methods to generate Metadata from the Multimedia data. (6 marks)

Q3 There are **FIVE (5)** features used in the retrieval process called color, texture, appearance, shape and position.

- (a) Determine the possible method to measure each of the above features. (5 marks)
- (b) Each of the features used in the retrieval process have their own advantages. List them down. (5 marks)

Q4 “The only way in which one object can access the data of another object in OOM (Object Oriented Model) is by invoking the method of that other object. This is called ‘sending a message to an object’”

Source : Lecture note of Database Systems and Structures By Omar Zaiane, Simon Fraser University, Canada 1998.

(a) Explain the statement above in the context of object representation of a bank account. (10 marks)

(b) Explain what is the object-oriented model based on a collection of objects, like the E-R model. (6 marks)

Q5 Process of querying multimedia data in MMDBMS (Multimedia Database Management System) can be approached in two ways:

(a) Differentiate between those **TWO (2)** approaches. (4 marks)

(b) Explain the process of approach given above in detail. (8 marks)

Q6 Figure Q6 shows VIMSYS (Visual Information Management System) Data Model.

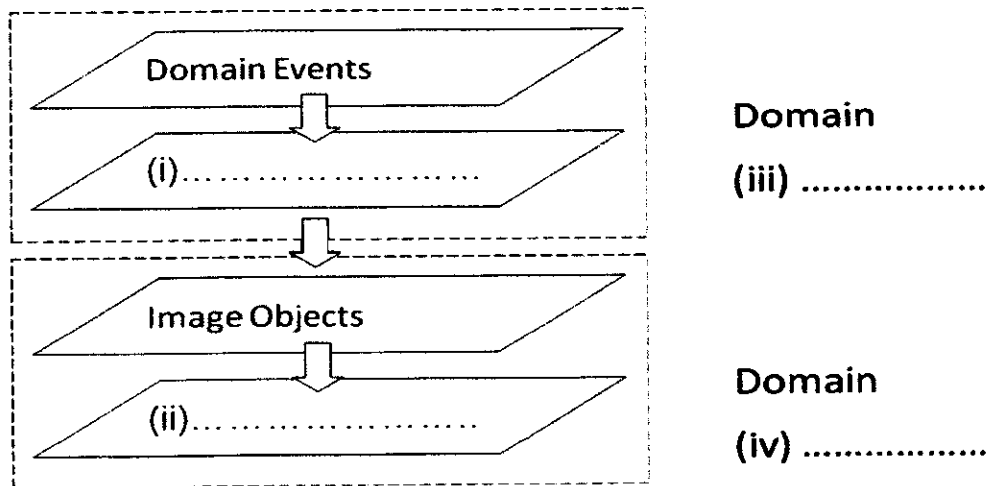


Figure Q6

- a. Fill in the blanks numbered **Q6 (i)** to **Q6 (iv)**. (4 marks)
- b. Image Object Layer has 2 Sub Layers. Describe that **TWO (2)** Sub Layers. (6 marks)

Q7 “To allow greater flexibility, multimedia systems evolve from pure C-S system to peer-to-peer (P2P) systems with the notion of a "user," which is defined in MPEG-21 as an entity to consume and to produce digital multimedia items”
Source Chapter 5 in Distributed Multimedia Database Technologies Supported by MPEG-7 and MPEG-21.
By Harold Kosch, CRC Press 2004.

- (a) Draw a diagram of P2P (Peer to Peer) Based Multimedia System Architecture. (10 marks)
- (b) Such a system is recommended to provide peer-to-peer services which may have several functions. List **THREE (3)** functions and explain them. (6 marks)

Q8 In Multimedia Database Management System Architecture, there are several issues need to be considered before any development. Discuss some of the issues in the Implementations consideration. (12 marks)