Question 1

a) Discuss three disadvantages and three advantages of a distributed database management system (DDBMS) **(6 marks)**

b) Compare and contrast homogeneous and heterogeneous distributed database management systems. **(4 marks)**

c) Discuss the advantages of fragmentation within distributed databases **(4 marks)**

d) Compare and contrast strategies for the placement of data in distributed database design. **(8 marks)**

e) Identify the role of transparency in distributed database design **(3 marks)**

Question 2

a) Identify the operational reasons for implementing a OODBMS as opposed to a RDBMS. **(4 marks)**

b) Explain the concept of Pointer Swizzling and its role in achieving acceptable performance in object DBMS's **(8 marks)**

c) Discuss three disadvantages and three advantages of an object-oriented database system (OODBMS) **(6 marks)**

d) The Object-Oriented Database Manifesto documents thirteen mandatory features for an OODMS. Identify seven of these features and analyse their impact on Database Design **(7 marks)**

Question 3

a) What features of OLAP would support a national supermarkets chain business Analytics **(6 marks)**

b) Analyse the statement, “OLAP is just an extended set of grouping functions”. **(6 marks)**

c) Describe the architecture, characteristics, and issues associated with each of the following categories of OLAP tools:

MOLAP, ROLAP, DOLAP, HOLAP **(8 marks)**

d) Discuss the relationship between data warehousing and OLAP. **(5 marks)**

Question 4

a) Design a data warehouse structure for a national car dealer chain to provide business decision makers with the important data they need. The company records information about its dealerships, customers and cars sold in its database. For each dealership it records location and manufacturer. For each car it records make, model and total cost. For customer it records name and address. For each sale the dealership, date, salesman and car are recorded. Using the four-step dimensional modelling process design a star schema for the data warehouse. **(9 marks)**

b) In data mining terms, explain how Classification and Value Prediction are used as Predictive Modelling methods. **(8 marks)**

c) Identify two methods used for Descriptive Modelling and explain how that can be used to derive useful information from a data set. **(8 marks)**