

SULIT



BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

PEPERIKSAAN AKHIR
SESI DISEMBER 2014

FP304: DATABASE SYSTEM

TARIKH : 22 APRIL 2015
MASA : 11.15 AM - 1.15 PM (2 JAM)

Kertas ini mengandungi **SEMBILAN BELAS (19)** halaman bercetak.

Bahagian A: Objektif (20 soalan)

Bahagian B: Struktur (2 soalan) & Esei (2 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALANINI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT



SECTION A : 30 MARKS
BAHAGIAN A : 30 MARKAH**INSTRUCTION:**

This section consists of **TWENTY (20)** objective questions. Mark your answers in the OMR form provided.

ARAHAN :

Bahagian ini mengandungi **DUA PULUH (20)** soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.

CLO1
C1

1. A Software that defines a database, stores the data, produces reports and creates data entry screens is a _____

Perisian yang mentakrifkan mengenai pengkalan data, penyimpanan data, penghasilan laporan dan menghasilkan skrin kemasukan data ialah _____

- A. Relational Database / *Pangkalan Data Terhubung*
- B. Database Management System / *Sistem Pengurusan Pangkalan Data*
- C. Data Dictionary / *Kamus Data*
- D. Data Integrity / *Integriti Data*

CLO1
C2

2. “Describes about how data is stored in database and relationships among the data”.

“Menerangkan tentang data yang disimpan di dalam pangkalan data dan hubungan antara data tersebut”.

Referring to the statement above, state the level of the ANSI – SPARC architecture.

Merujuk kepada kenyataan di atas, nyatakan tahap senibina ANSI – SPARC.

- A. Internal level
Tahap dalaman
- B. Conceptual level
Tahap konseptual
- C. Physical level
Tahap fizikal
- D. External level
Tahap luaran

- CLO1
C3
3. Choose the database application that describes an online commercial site such as Zalora.com.
Pilih aplikasi pangkalan data yang menerangkan mengenai laman komersil seperti Zalora.com.
- A. Single-user database application
Aplikasi pangkalan data satu pengguna
 - B. Multiuser database application
Aplikasi pangkalan data berbilang pengguna
 - C. E-commerce database application
Aplikasi pangkalan data e-perdagangan
 - D. Desktop database application
Aplikasi pangkalan data desktop
- CLO1
C1
4. State the normal form with no partial dependencies.
Nyatakan bentuk normal yang tiada kebersandaran separa.
- A. 1NF
 - B. 2NF
 - C. 3NF
 - D. BCNF
- CLO1
C2
5. Identify which of the following relations would be produced by the relational algebra statement below.
Kenalpasti penyataan di bawah di mana hubungan yang dihasilkan oleh algebra hubungan.
- DEPARTMENT - EMPLOYEE**
- A. Compute the inner join between the DEPARTMENT and EMPLOYEE relations.
Mengira cantuman dalaman antara hubungan DEPARTMENT dan EMPLOYEE
 - B. Compute the natural join between the DEPARTMENT and EMPLOYEE relations.
Mengira cantuman asli diantara hubungan DEPARTMENT dan EMPLOYEE.
 - C. Compute the set difference between the DEPARTMENT and EMPLOYEE relations.
Mengira perbezaan antara hubungan DEPARTMENT dan EMPLOYEE.
 - D. Compute the cross product between the DEPARTMENT and EMPLOYEE relations.
Mengira 'cross product' antara hubungan DEPARTMENT dan EMPLOYEE.

CLO1
C3

6. Choose the characteristics of a relation scheme

Pilih ciri-ciri skema hubungan

- i. Order of attributes and tuples does not have significance.
Kedudukan attribut dan tuple tidak penting.
 - ii. Values of an attribute are all from the different domain.
Nilai atribut adalah semua dari domain yang berbeza.
 - iii. Relation name is distinct from all other relation names in database.
Nama hubungan adalah berbeza daripada semua nama-nama hubungan lain di dalam pangkalan data.
 - iv. A name of a relation is defined by a set of attributes and domain name pairs.
Nama hubungan ditakrifkan oleh satu set atribut dan pasangan nama domain.
- A. i and ii
B. i, ii and iii
C. i, ii, iii and iv
D. ii, iii and iv

CLO1
C17. Select the **CORRECT** statement about relationships.*Pilih pernyataan yang **BETUL** mengenai hubungan.*

- A. Relationships always exist between 3 or more attributes.
Hubungan sentiasa wujud antara 3 atau lebih atribut
- B. Relationships always exist between 3 or more entities.
Hubungan sentiasa wujud antara 3 atau lebih entiti.
- C. Relationships always exist between 2 entities (or one entity and itself).
Hubungan sentiasa wujud antara 2 entiti (atau satu entiti dan dirinya).
- D. Relationships always exist between 2 attributes.
Hubungan sentiasa wujud antara 2 atribut.

CLO1
C2

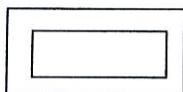
8. Choose the correct symbol of entity in the Entity Relationship Model.

Pilih simbol yang betul bagi entiti di dalam Model Perhubungan Entiti.

A.



B.



C.



D.

CLO1
C3

9. Based on figure A1 below, MOTHER and CHILDREN entities are relate to each other. The relationship on the MOTHER side indicates that ...

Berdasarkan Rajah A1 di bawah, entiti MOTHER dan CHILDREN berkait antara satu sama lain. Hubungan terhadap MOTHER menunjukkan ...

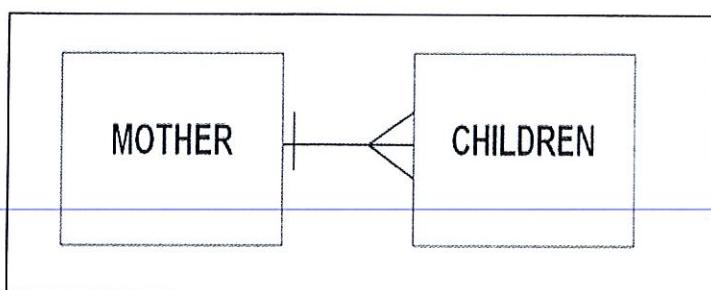


Figure A1 / Rajah A1

- A. A mother can have many children
Satu ibu boleh mempunyai ramai anak
- B. A mother can have only one children
Satu ibu hanya boleh mempunyai seorang anak
- C. A child can have only one mother
Satu anak hanya boleh mempunyai seorang ibu
- D. A child can have one or more mother
Satu anak boleh mempunyai satu atau lebih ibu

CLO2
C1

10. Venn Diagram below shows:
Gambarajah Venn di bawah menunjukkan:

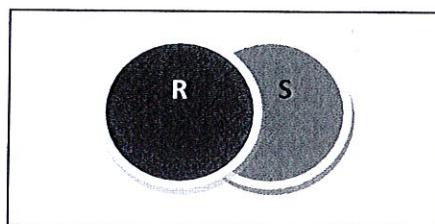


Figure A2 /Rajah A2

- A. $R \cup S$ C. $R \times S$
B. $R \cap S$ D. $R - S$

CLO2
C2

11. Identify the basic element in Entity Relationship Diagram.

Kenalpasti elemen asas dalam gambarajah hubungan entiti.

- i. Entity / Entiti
- ii. Attribute / atribut
- iii. Relationship / Hubungan
- iv. Primary Key / Kunci Utama

- A. i and ii
B. i, ii and iii
C. i, ii, iii and iv
D. ii and iii

CLO2

C1

12. Choose the correct Entity Relationship Model diagram based on the situation given.

Pilih Model Perhubungan Entiti yang betul berdasarkan situasi yang diberi.

A PAINTER can paint many PAINTING,
Each PAINTING is painted by one PAINTER

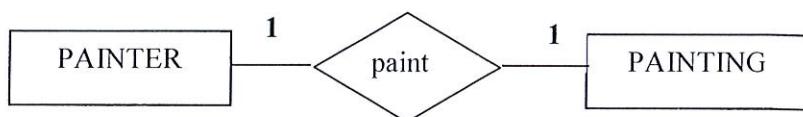
A.



B.



C.



D.



CLO2

C1

13. Select the correct SQL command that will remove a table from database.

Pilih arahan SQL yang betul yang akan menghapuskan satu hubungan dari pangkalan data

- A. Delete From Customer;
- B. Drop Table Customer;
- C. Delete Customer;
- D. Drop Customer;

CLO2
C1

14. The CUSTOMER table contains these columns:

Jadual CUSTOMER mengandungi lajur berikut :

```
CUSTID NUMBER(10),  
NAME VARCHAR2(50),  
CREDIT_LIMIT NUMBER(7,2),  
CATEGORY VARCHAR2(50);
```

You need to calculate the average of credit limit for all customers in each category. Choose which is the correct group function should you use to calculate this value.

Anda perlu mengira purata had kredit bagi semua pelanggan dalam setiap kategori. Pilih fungsi kumpulan yang betul untuk mengira nilai tersebut.

- A. AVG
- B. SUM
- C. MAX
- D. COUNT

CLO2
C2

15. To remove a relation from an SQL database, we use the _____ command.

Untuk mengeluarkan hubungan dari pangkalan data SQL, kita menggunakan arahan _____.

- A. Delete / Padam
- B. Purge / Bersih
- C. Remove / Mengeluarkan
- D. Drop Table / Drop Jadual

CLO2
C2

16. Which of the following SQL command could display the number of people with the same last name.

Yang manakah antara pernyataan SQL berikut akan memaparkan bilangan orang yang mempunyai nama akhir yang sama.

- A. `SELECT FirstName, LastName, COUNT(empID)
FROM EMPLOYEES
GROUP BY LastName;`
- B. `SELECT empID, COUNT(LastName)
FROM EMPLOYEES
GROUP BY LastName;`
- C. `SELECT LastName, COUNT(LastName)
FROM EMPLOYEES
GROUP BY LastName;`
- D. `SELECT empID, DISTINCT(LastName)
FROM EMPLOYEES
GROUP BY LastName;`

CLO2
C3

17.

You want to display all product identification that has a quantity of 500 or more. You would also like supplier identification to be displayed according to product identification in the lowest to highest sequence.

Anda mahu memaparkan semua 'product identification' yang mempunyai kuantiti 500 atau lebih. Anda juga mahu 'supplier identification' dipaparkan mengikut 'product identification' secara turutan terendah ke tertinggi.

Identify which SQL command should you use to achieve the required results.

Kenalpasti pernyataan yang perlu digunakan untuk mendapatkan keputusan yang diperlukan.

- A.

```
SELECT product_id
      FROM product
     WHERE qty_per_unit >= 500
      ORDER BY supplier_id, product_id;
```
- B.

```
SELECT product_id
      FROM product
     WHERE qty_per_unit >= 500
      SORT BY supplier_id, product_id;
```
- C.

```
SELECT product_id
      FROM product
     WHERE qty_per_unit >= 500
      ORDER BY supplier_id, product_id DESC;
```
- D.

```
SELECT product_id
      FROM product
     WHERE qty_per_unit > 500
      SORT BY supplier_id, product_id;
```

CLO2
C1

18. Identify the transaction properties that once transaction changes are done, they cannot be undone or lost, even in the event of a system failure .

Kenalpasti ciri-ciri transaksi dimana apabila perubahan transaksi selesai ia tidak akan hilang walaupun berlaku kegagalan sistem.

- A. Isolation
- B. Durability
- C. Atomicity
- D. Consistency

- CLO2
C2 19. In a properly designed DBMS, concurrency control is provided by which of the following components.
- Komponen manakah yang menyediakan kawalan keserentakan dalam rekabentuk DBMS.*
- A. Process Manager
Pengurus proses
 - B. Cache Manager
Pengurus Cache
 - C. Transaction Manager
Pengurus Transaksi
 - D. Recovery Manager
Pengurus Pemulihan
- CLO2
C3 20. The situation that occurs when a user's changes to the database are lost by a second user's changes to the database.
- Keadaan yang berlaku apabila perubahan pengguna ke atas pangkalan data tersebut hilang oleh perubahan pengguna kedua untuk pangkalan data.*

The above statement refers to _____

Pernyataan di atas merujuk kepada _____

- A. Deadlock problem / *Masalah deadlock*
- B. Deadly embrace problem / *Masalah deadly embrace*
- C. Inconsistent read problem / *Masalah baca tidak konsisten*
- D. Concurrent update problem / *Masalah kemaskini serentak*

SECTION B : 70 MARKS**BAHAGIAN B : 70 MARKAH****INSTRUCTION:**

This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi **EMPAT (4)** soalan berstruktur. Jawab **SEMUA** soalan.

QUESTION 1**SOALAN 1**

- (a) List **TWO (2)** properties of databases.

Senaraikan DUA (2) ciri pangkalan data.

[2 marks]
[2 markah]

CLO1

C1

- (b) Identify the benefits of using desktop database and server database.

Kenalpasti kelebihan menggunakan pangkalan data desktop dan pangkalan data pelayan.

[2 marks]
[2 markah]

CLO1

C1

- (c) Write the symbol of operators below:

Tuliskan simbol operator di bawah:

- i. Union
- ii. Intersection

[2 marks]
[2 markah]

CLO1

C2

- (d) Differentiate between entity integrity and referential integrity.

Bezakan antara integriti entiti dan integriti rujukan.

[2 marks]
[2 markah]

CLO2

C1

- (e) Draw the Venn diagrams for traditional set operators:

Lukiskan gambar rajah Venn bagi set operator tradisional:

i. $B - A$

ii. $A \cap B$

[2 marks]
[2 markah]

CLO2

C3

- (f) From the relation scheme below, list the primary key and foreign key.

Dari skema hubungan di bawah, senaraikan kekunci utama dan kekunci asing.

STUDENT (stdID, stdName, stdAge, stdLocation, stdSex)

REGISTER (stdID, courseID, regDate)

COURSE (courseID, courseName, credit)

[2 marks]
[2 markah]

CLO1

C1

- (g) Draw the symbol of elements of ERD below:

Lukiskan simbol elemen Erd di bawah:

i. Multivalued attribute

ii. Weak entity

[2 marks]
[2 markah]

CLO1
C3

- (h) Based on the scenario below, sketch the Chen Entity Relationship Diagram (ERD) includes the cardinality.

Berdasarkan senario di bawah, lakarkan Gambarajah Hubungan Entiti (ERD) model Chen termasuk kardinaliti.

An Academic Advisor advises many students;
Each student is advised by one Academic Advisor

*Penasihat Akademik menasihati ramai pelajar,
setiap pelajar dinasihatkan oleh seorang Penasihat
Akademik*

[2 marks]
[2 markah]

CLO2
C1

- (i) State **TWO (2)** types of relationship.

Nyatakan DUA (2) jenis hubungan.

[2 marks]
[2 markah]

CLO2
C3

- (j) Transfer the relation scheme below to Crow's Foot model.

Tukarkan skema hubungan di bawah kepada model Crow's Foot.

BOOK (BookID, BookName, Author, Publisher)

[2 marks]
[2 markah]

QUESTION 2**SOALAN 2**CLO2
C1

- (a) Explain two basic commands for each sublanguage in Structured Query Language (SQL).

Namakan dua arahan asas bagi setiap sub-bahasa dalam SQL .

- i. Data Definition Language(DDL) / *Bahasa Definisi Data*
- ii. Data Manipulation Language(DML) / *Bahasa Manipulasi Data*

[4 marks]
[4 markah]CLO2
C2

- (b) Write the SQL command for the following statements :

Tuliskan pernyataan SQL bagi pernyataan berikut :

- i. Create POLITEKNIK database

Hasilkan pangkalan data POLITEKNIK

- ii. Select all columns from table named STAFF

Pilih semua lajur dari jadual STAFF[4 marks]
[4 markah]CLO2
C3

- (c) Write an SQL statement to add column email using a proper data type in a table named EMPLOYEE.

Tuliskan pernyataan SQL untuk menambah lajur email menggunakan jenis data yang bersesuaian di dalam jadual yang bernama EMPLOYEE.[2 marks]
[2 markah]CLO2
C1

- (d) State the purpose of concurrency control in database transaction.

Nyatakan kegunaan kawalan keserempakan di dalam transaksi pangkalan data.[2 marks]
[2 markah]CLO2
C2

- (e) Differentiate between Exclusive Lock and Shared Lock.

Bezakan antara 'Exclusive Lock' dan 'Shared Lock'.[2 marks]
[2 markah]

QUESTION 3**SOALAN 3**CLO1
C1

- (a) Define Database Management System (DBMS) and give an example.

Takrifkan Sistem Pengurusan Pangkalan Data (DBMS) dan berikan contoh.[3 marks]
[3 markah]Based on scenario given, answer **QUESTION 3(b)** and **3(c)**.*Berdasarkan senario yang diberikan, jawab **SOALAN 3(b)** dan **3(c)**.*

A company has a number of employees. The information of EMPLOYEE include Emp_ID and Emp_Name. The company also has several projects. Attributes of PROJECT include Proj_ID and Proj_Name. Each employee may be assigned to one or more projects. A project must have at least one employee assigned to it, and may have any number of employees assigned to it.

Sebuah syarikat mempunyai beberapa orang pekerja. Atribut EMPLOYEE termasuk Emp_ID dan Emp_Name. Syarikat itu juga mempunyai beberapa projek. Atribut PROJECT termasuk Proj_ID dan Proj_Name. Setiap pekerja diberikan kepada satu atau lebih projek. Projek mesti mempunyai sekurang-kurangnya seorang pekerja yang diberikan kepadanya, dan mungkin mempunyai beberapa orang pekerja yang diberikan kepadanya.

CLO1
C1

- (b) i. Identify the entities.

Kenalpasti entiti.[1 mark]
[1 markah]

- ii. Identify the attributes.

Kenalpasti atribut[2 marks]
[2 markah]CLO1
C2

- (c) Draw the complete ERD includes keys and cardinality by using Chen's Model

Lukiskan ERD lengkap termasuk kunci dan kardinaliti menggunakan Model Chen[3 marks]
[3 markah]

QUESTION 4**SOALAN 4**CLO1
C1

- (a) State the syntax of relation scheme and give one complete example.

Nyatakan sintak bagi skema hubungan dan beri satu contoh yang lengkap.[3 marks]
[3 markah]CLO2
C2

- (b) Differentiate between primary key and foreign key.

Nyatakan perbezaan di antara kunci utama dan kunci asing.[3 marks]
[3 markah]CLO2
C1

- (c) List three (3) objectives of creating a conceptual model .

Senaraikan TIGA(3) tujuan mencipta model konsep[3 marks]
[3 markah]CLO2
C1

- (d) i. Describe
- TWO (2)**
- categories of SQL

*Huraikan **DUA (2)** kategori SQL*[3 marks]
[3 markah]

- ii. Explain the functions of the following SQL command.

Jelaskan fungsi arahan SQL berikut.

- a) ALTER TABLE
- b) DROP TABLE
- c) UPDATE

[3 marks]
[3 markah]

Question 4(e)(i) and 4(e)(ii) are based on the Relational Schema below

Soalan 4(e)(i) and 4(e)(ii) adalah merujuk kepada Skema Hubungan dibawah

CUSTOMER (cust_ID, cust_Name, cust_Add, cust_Contact)
BUY (cust_ID, productID, buyDate, buyQuantity)
PRODUCT(productID, productName, productQuantity, productType)

CLO2

C2

- (e) i. Identify the SQL (Structured Query Language) command for ...

Kenalpasti arahan SQL (Structured Query Language) untuk...

- a) Delete product type column of **PRODUCT** table.

*Padam kolumn jenis produk dari jadual **PRODUCT**.*

- b) List customer name, address and contact.

Senaraikan nama, alamat dan kontak pelanggan.

- c) Change product name from “Desktop” to “Laptop”.

Tukarkan nama produk “Desktop” kepada “Laptop”.

[3 marks]
[3 markah]

- ii. Write SQL command to add new column name **cust_Email** to **CUSTOMER** table.

*Tuliskan arahan SQL untuk tambah kolumn baru yang bernama **cust_Email** kepada jadual **CUSTOMER**.*

[3 marks]
[3 markah]

(f)

```
INSERT INTO mytab VALUES ('A');  
INSERT INTO mytab VALUES ('B');  
COMMIT;  
INSERT INTO mytab VALUES ('C');  
ROLLBACK;
```

CLO2
C2

Differentiate between COMMIT and ROLLBACK commands as above.

Berikan perbezaan di antara arahan COMMIT dan ROLLBACK seperti di atas.

[3 marks]
[3 markah]

CLO2
C3

(g) Record in the ORDER table has ORDER_ID = A01 and ORDER_AMOUNT = 4000.
Explain the transaction based on SQL command below.

Rekod di dalam jadual ORDER mempunyai maklumat ORDER_ID = A01 dan ORDER_AMOUNT = 4000. Terangkan tentang transaksi yang berlaku.

```
UPDATE order SET order_amount = order_amount * 5  
WHERE order_id = A01;  
COMMIT;  
UPDATE order SET order_amount = 15000  
WHERE order_id = A01;
```

[3 marks]
[3 markah]

SOALAN TAMAT