

SULIT



**KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI**

**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN TINGGI**

JABATAN KEJURUTERAAN ELEKTRIK

PEPERIKSAAN AKHIR

SESI I : 2023/2024

DEC40073: DATABASE SYSTEM

TARIKH : 31 DISEMBER 2023

MASA : 11.15 PG – 1.15 PTG (2 JAM)

Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.

Bahagian A: Struktur (3 soalan)

Bahagian B: Esei (2 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 60 MARK**BAHAGIAN A : 60 MARKAH****INSTRUCTION:**

This section consists of **THREE (3)** structure questions. Answer all questions.

ARAHAN :

Bahagian ini mengandungi TIGA (3) soalan struktur. Jawab semua soalan.

QUESTION 1**SOALAN 1**

- CLO1 (a) Explain the terms of Field, Record and File in Database Concept.

Terangkan istilah Medan, Rekod dan Fail dalam Konsep Pangkalan Data.

[5 marks]

[5 markah]

- CLO1 (b) Explain **TWO (2)** Database Language with **ONE (1)** example for each Database Language.

Terangkan DUA (2) Bahasa Pangkalan Data dengan SATU (1) contoh untuk setiap Bahasa Pangkalan Data.

[5 marks]

[5 markah]

- CLO1 (c) Refer to the STUDENT and COURSE Table A1(c) below, exhibit the result based on the following relational algebra.

Merujuk kepada Jadual A1(c) PELAJAR dan KURSUS di bawah, tunjukkan keputusan berdasarkan hubungan algebra tersebut.

- i) π CourseName, Credit Hours(COURSE)
- ii) σ CourseCode = DEC601(STUDENT)
- iii) π StudNo, ICNo (σ CourseCode = DEC602 or Section = DTK4B(STUDENT))
- iv) π StudName, Section (σ CGPA > 2.50 and CourseCode=DEC601(STUDENT))
- v) π StudNo, CGPA (σ CGPA > 3.00 and (Section = DTK4A or CourseCode = DEC601)(STUDENT))
- vi) π StudName, Section (σ CGPA $\geq$ 2.50 or (Section = DTK4A and CourseCode = DEC603)(STUDENT))

Table A1(c)/Jadual A1(c)

STUDENT

StudNo	StudName	ICNo	Section	CGPA	CourseCode
JKE01	Saleh	820106-01-5237	DTK4A	3.00	DEC602
JKE02	Fatimah	820603-08-5822	DTK4A	2.50	DEC601
JKE03	Ahmad	820719-01-5011	DTK4B	3.21	DEC601
JKE04	Abu	850325/04-2203	DTK4B	3.22	DEC603
JKE05	Mastura	820829-03-5565	DTK4B	2.99	DEC602
JKE06	Noraini	802305-05-3350	DTK4A	3.99	DEC603

COURSE

CourseCode	CourseName	Credit Hours
DEC602	Computer System Diagnosis And Maintenance	2
DEC601	Database System	2
DEC603	Internet Based Controller	2

[10 marks]
[10 markah]

QUESTION 2**SOALAN 2**

CLO1

- (a) Based on to Figure A2(a), fill the most accurate terms for each part in the Database Management System (DBMS) Component Module.
- Merujuk rajah A2(a), isikan terma yang betul bagi setiap bahagian Modul Komponen dalam Sistem Pengurusan Pangkalan Data (DBMS).*



Figure A2(a) / Gambarajah A2(a)

[5 marks]

[5 markah]

CLO1

- (b) SQL Commands can be divided into two parts:

- i) Data Manipulation Language (DML)
- ii) Data Definition Language (DDL)

Explain the **DDL** Commands in part of SQL which allow the formation, deletion and modification of database and tables.

Perintah SQL boleh dibahagikan kepada dua bahagian:

- i) Bahasa Manipulasi Data (DML)*
- ii) Bahasa Definisi Data (DDL)*

Terangkan perintah DDL dalam bahagian SQL yang membenarkan pangkalan data dan jadual dicipta, dipadam atau diubah.

[5marks]

[5 markah]

CLO1 Write the process of the following Entity-Relationship Model with the aid of a diagram

i) 1:M (one to many)

ii) M:M (many to many)

Tulis secara jelas proses Model Entity-Relationship tersebut dengan bantuan gambarajah.

i) 1:M (satu ke banyak)

ii) M:M (banyak ke banyak)

[10 marks]

[10 markah]

QUESTION 3

SOALAN 3

CLO1 (a) Explain the terms Attribute, Tuple, Domain and Cardinality.

Terangkan maksud istilah bagi Attribute, Tuple, Domain dan Cardinality.

[4 marks]

[4 markah]

CLO1 (b) Based on Table A3(b), show the output based on relational algebra below:

Berdasarkan kepada Jadual A3(b), tunjukkan keluaran berdasarkan hubungan algebra tersebut:

i) $\text{HR_Department} \cup \text{Accounting_Department}$

ii) $\text{HR_Department} \cap \text{Accounting_Department}$

iii) $\text{HR_Department} - \text{Accounting_Department}$

iv) $\text{Accounting_Department} - \text{HR_Department}$

Table A3(b)/Jadual A3(b)

HR_Department		
EmployeeNo	EmployeeName	Position
7145	Jamil	Engineer
2541	Ahmad	Programmer
5687	Aminah	Technician
2256	Siti	Manager

Accounting_Department		
EmployeeNo	EmployeeName	Position
2541	Ahmad	Programmer
1432	Suriati	Salesman
8157	Azman	Clerk
5687	Aminah	Technician

[8 marks]

[8 markah]

- CLO1 (c) Based on the database scheme below, construct a table for EMPLOYEE and DEPARTMENT using SQL statement.
- Berdasarkan skema pangkalan data di bawah, binakan jadual PEKERJA dan JABATAN dengan menggunakan pernyataan SQL.*

EMPLOYEE (EmpId, Emp_Name, Emp_Age, Job_Title, DepartId)
 DEPARTMENT (DepartId, Depart_Name, Address)

[8 marks]

[8 markah]

SECTION B : 40 MARKS**BAHAGIAN B : 40 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** essay questions. Answer all questions.

ARAHAN :

Bahagian ini mengandungi DUA (2) soalan esei. Jawab semua soalan.

QUESTION 1**SOALAN 1**

CLO1

Your company wants to digitize the time cards. You have been assigned to design the database for submitting and approving the time cards. Referring to the information below:

- A timecard should have working hours and submission date.
- Each timecard is associated with exactly one employee.
- Each timecard should have a unique id.
- Each timecard has a status: either approved, not approved or pending.
- Each employee has a unique id.
- Each employee has name, gender and address.
- Each employee submits a time card on every pay period.
- Each employee either has a deposit or physical check as their method of payment.
- Each employee is associated with exactly one manager.
- Each manager has a unique id, name, gender and address.
- Each manager approves time cards for multiple employees.

Based on the above statements, draw a complete Entity Relationship Diagram (ERD).

Syarikat anda ingin mendigitalkan kad perakam masa. Anda telah diminta oleh syarikat untuk merekabentuk satu pangkalan data untuk menghantar dan meluluskan kad perakam masa. Berpandukan kepada maklumat berikut:

- *Kad perakam masa perlu mempunyai waku bekerja dan tarikh dikemukakan.*
- *Setiap kad perakam masa di khaskan kepada seorang pekerja.*
- *Setiap kad perakam masa mempunyai status: samada diluluskan, tidak diluluskan atau belum diluluskan.*
- *Setiap pekerja mempunyai id yang unik.*
- *Setiap pekerja mempunyai nama, jantina dan alamat.*
- *Setiap pekerja perlu menghantar kad perakam pada setiap tempoh bayaran.*
- *Setiap pekerja dikhaskan kepada seorang pengurus.*
- *Setiap pengurus mempunyai satu id yang unik, nama, jantina dan alamat.*
- *Setiap pengurus bertanggungjawab terhadap ramai pekerja.*
- *Setiap pengurus meluluskan kad perakam masa untuk ramai pekerja.*

Berpandukan pernyataan di atas, lukiskan gambarajah Hubungan Entiti yang lengkap.

[20 marks]

[20 markah]

QUESTION 2**SOALAN 2**

CLO1

Ahmad works as a database programmer in a company named ABC. Ahmad is assigned to execute a query to retrieve data from the database. Referring to Table B2, determine the query to obtain following instructions :

Ahmad bertugas sebagai pengaturcara pengkalan data di sebuah syarikat ABC.

Ahmad ditugaskan untuk melaksanakan pertanyaan untuk mendapatkan data dari pengkalan data tersebut. Merujuk kepada jadual B2, tentukan pertanyaan bagi arahan berikut:

- i) Field **Employee Name** and **Employee Salary** for all **Clerk**
- ii) All field for all **Manager**
- iii) Field **Employee Id** and **Employee name** whose names ending with L
- iv) Field **Employee name** and **Job** whose names beginning with Z or A and those salary greater than RM2300
- v) Field **Employee Id** and **Employee name** whose City = Ipoh or salary less than RM2000
- vi) Field **Salary** and **Employee name** whose City = Alor Star AND salary less than or equal RM2000
- vii) All field sorting ascending by **Employee name** and descending by **City**
- viii) Average salary for all employees

Table B2 / Jadual B2

EMPLOYEE

EmpID	EmpName	Job	Sal	City	DeptID
1123	Ahmad	Clerk	1500	Ipoh	10
1025	Kamal	Manager	4000	Ipoh	20
1425	Ali	Salesman	2300	Ipoh	40
1256	Fatimah	Clerk	1100	Alor Star	20
1354	Linda	Manager	3800	Alor Star	30
1752	Zaid	Salesman	2000	Taiping	40
2513	Zamani	Clerk	1500	Baling	30
2487	Zainal	CEO	6000	Alor Star	10

[20 marks]

[20 markah]

SOALAN TAMAT