
UNIVERSITI SAINS MALAYSIA

First Semester Examination
2015/2016 Academic Session

December 2015/January 2016

CPT342 – Knowledge Management & Engineering
[Pengurusan & Kejuruteraan Pengetahuan]

Duration : 2 hours
[Masa : 2 jam]

INSTRUCTIONS TO CANDIDATE:

[ARAHAN KEPADA CALON:]

- Please ensure that this examination paper contains **NINE** questions in **SEVEN** printed pages before you begin the examination.

*[Sila pastikan bahawa kertas peperiksaan ini mengandungi **SEMBILAN** soalan di dalam **TUJUH** muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]*

- Answer **ALL** questions.

*[Jawab **SEMUA** soalan.]*

- You may answer the questions either in English or in Bahasa Malaysia.

[Anda dibenarkan menjawab soalan sama ada dalam bahasa Inggeris atau bahasa Malaysia.]

- In the event of any discrepancies, the English version shall be used.

[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi bahasa Inggeris hendaklah diguna pakai.]

1. Answer the following questions.
 - (a) List all principles in the development practice of knowledge-based system.
 - (b) Draw a diagram of knowledge model suit in the development of knowledge-based system and list **two (2)** advantages of the knowledge model suit.

(10/100)

2. A company that provides house rental services has two main departments. Processing department is responsible for application processing and screening. Publishing department is responsible for advertising list of available renting houses and list of success applicants. Processing department usually involves judgement and consideration in the decision making process whereas publishing department usually a straightforward process. Based on this scenario answer the following questions.
 - (a) Decompose a task process of the company.
 - (b) Construct a OM3 worksheet of the company.

(10/100)

3.
 - (a) List a detail plan for carrying a brainstorming and consensus decision workshop for a breast cancer diagnosis system.
 - (b) Pick **one (1)** of the following and describe the operation.
 - (i) Laddering.
 - (ii) Protocol analysis.

(10/100)

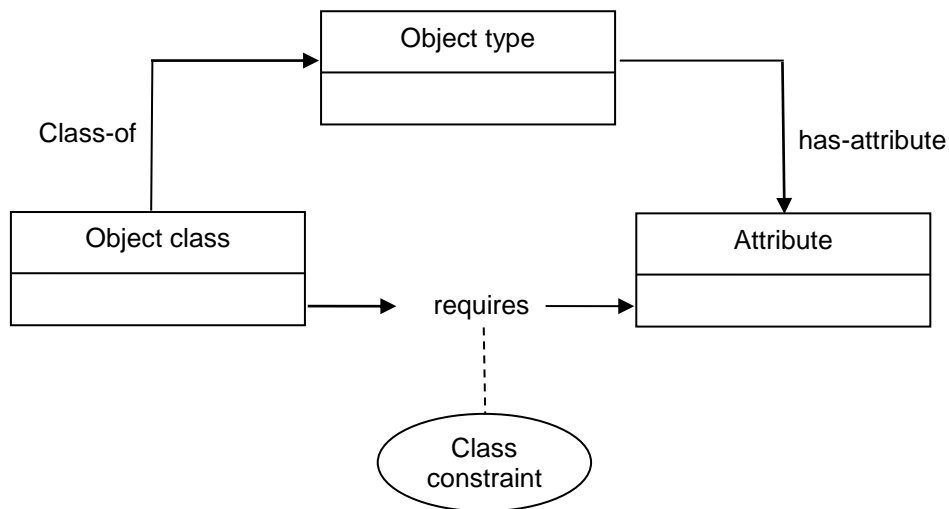
4. Construct an inference structure of the following domains.
 - (a) Project monitoring system (a system that is able to monitor the progress of a housing construction project).
 - (b) Leaf identifier system (a system that is able to identify leaves by using a classification process).

(10/100)

5. Construct a domain schema of the following domain.
 - (a) A cancer detection system (a system that is able to diagnose cancer from a given X-ray).
 - (b) An investment planner system (a system that is able to assess the current investment and able to choose the good one).

(10/100)

6. The diagram below shows a domain schema template for a classification based expert system category. Answer the following questions.



- Name **one (1)** example of object-type, object class and attribute.
- List **three (3)** rules of class constraint (based on the answer given in 6(a)).
- Construct in brief a knowledge base (based on the answer given in 6(a)).

(15/100)

7. (a) Construct an induction table for analyzing a plan to set up a new branch of a company at a new place. Many factors involved in the assessment such as population density, competitors, family income, transportation and many more.
- (b) Construct an inference tree of chances in getting malaria. Someone has 50% chance to get malaria if he/she lives in the area of malaria zone neighbourhood, 30% chance if he/she has been bitten by mosquitos, and 80% chance if he/she is tested positive in blood test.

(10/100)

8. Construct a forward chaining approach to determine the status of a personal loan application based on the following production rules and applicant status.

Production rules:

R1: IF has RM 40K or more
THEN can have loan

R4: IF has RM 20K or less
THEN cannot have loan

R2: IF has less than RM 40K AND employed
THEN can have loan

R5: IF has less RM 20K AND
employed
THEN can have loan

R3: IF age is 40 or less AND has a permanent job
AND 10K monthly salary
THEN can have loan.

Applicant status:

He has been working for 10 years since graduated and obtained employment with a salary of RM 2K a week. He has since saved RM 200 a month.

(15/100)

9. (a) Define knowledge management and its process.
(b) Explain the concept of conversion and connecting in knowledge management.

(10/100)

KERTAS SOALAN DALAM VERSI BAHASA MALAYSIA

[CPT342]

- 5 -

1. Jawab soalan berikut.
 - (a) Senaraikan semua asas-asas di dalam amalan pembangunan sistem berdasarkan pengetahuan.
 - (b) Lukiskan gambar rajah sut model pengetahuan untuk sistem berdasarkan pengetahuan dan senaraikan **dua (2)** kelebihanannya.

(10/100)

2. Sebuah syarikat menyediakan perkhidmatan sewa rumah yang mana mempunyai dua jabatan utama. Jabatan pemprosesan bertanggungjawab dalam pemprosesan permohonan. Jabatan percetakan bertanggungjawab dalam mengiklankan senarai rumah sewa dan senarai pemohon yang berjaya. Jabatan pemprosesan selalunya membabitkan pertimbangan di dalam proses membuat keputusan manakala jabatan percetakan selalunya proses yang biasa. Berdasarkan senario ini, sila jawab soalan di bawah.
 - (a) Pecahkan proses tugas syarikat tersebut.
 - (b) Bina OM3 lembaran kerja syarikat tersebut.

(10/100)

3.
 - (a) Senaraikan perincian terperinci untuk mengadakan bengkel keputusan bersama dan perah-otak untuk sistem diagnosis kanser payudara.
 - (b) Pilih **satu (1)** daripada di bawah dan terangkan operasinya.
 - (i) Tindakan.
 - (ii) Analisa protokol.

(10/100)

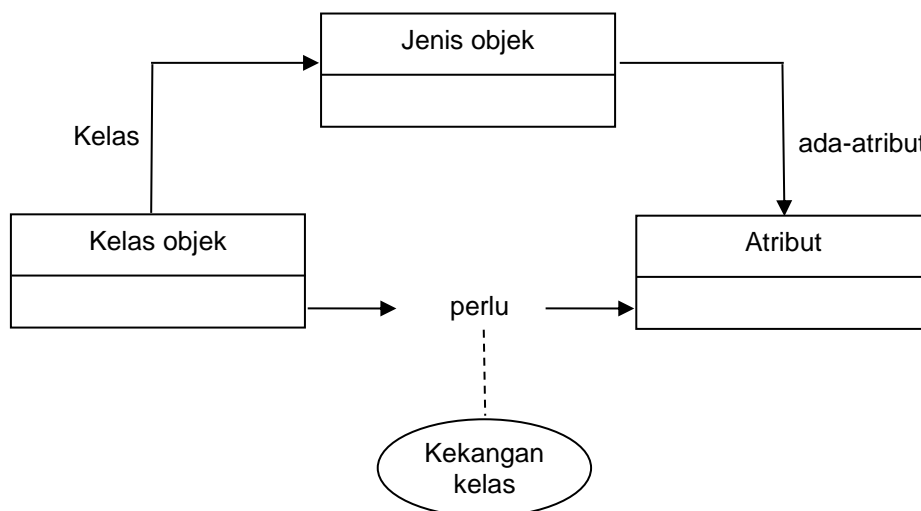
4. Lukiskan struktur inferen terhadap domain di bawah.
 - (a) Sistem pemantauan projek (sistem yang berupaya memantau perkembangan pembinaan projek perumahan).
 - (b) Sistem pengenalan pasti daun (sistem yang berupaya mengenal pasti daun dengan menggunakan proses pengklasifikasian).

(10/100)

5. Bina skema domain untuk domain di bawah.
- Sistem pengesanan kanser (sistem yang berupaya mengesan kanser daripada X-ray).
 - Sistem perancangan pelaburan (sistem yang berupaya menganalisis pelaburan semasa dan memilih jenis pelaburan yang baik).

(10/100)

6. Gambar rajah di bawah adalah skema domain untuk sistem pakar pengetahuan berjenis pengklasifikasian. Jawab soalan berikut.



- Namakan **satu (1)** contoh jenis kelas, objek kelas dan atribut.
 - Senaraikan **tiga (3)** undang-undang terhadap kekangan kelas (berdasarkan kepada jawapan yang diberikan pada bahagian 6(a)).
 - Bina dengan ringkas asas pengetahuan (berdasarkan kepada jawapan yang diberikan pada bahagian 6(a)).
7. (a) Bina jadual induksi untuk menganalisis rancangan mendirikan cawangan baru sebuah syarikat di tempat yang baru. Banyak faktor terlibat di dalam penganalisisan seperti kepadatan penduduk, pesaing, pendapatan keluarga, pengangkutan dan lain-lain.
- (b) Bina pokok inferen terhadap peluang menghadapi penyakit malaria. Seseorang mempunyai peluang 50% untuk mengidap penyakit malaria sekiranya beliau tinggal di kawasan kejiranan zon malaria. 30% peluang sekiranya beliau telah digigit nyamuk dan 80% peluang sekiranya beliau disahkan positif ujian darah.

(15/100)

(10/100)

8. Bina penghampiran rantaian-depan untuk mendapatkan status permohonan pinjaman peribadi berdasarkan pengeluaran undang-undang dan status peminjam di bawah.

Pengeluaran undang-undang:

R1: KALAU ada RM 40K atau lebih
MAKA dapat pinjaman

R4: KALAU ada RM 20K atau kurang
MAKA gagal pinjaman

R2: KALAU kurang RM 40K
DAN bekerja makan gaji
MAKA dapat pinjaman

R5: KALAU kurang RM 20K
DAN bekerja makan gaji
MAKA dapat pinjaman

R3: KALAU umur 40 atau kurang DAN bekerja tetap
DAN gaji 10 K sebulan
MAKA dapat pinjaman

Status peminjam:

Peminjam telah bekerja selama 10 tahun semenjak pengijazahan dengan gaji RM 2K seminggu. Peminjam juga telah menyimpan sebanyak RM 200 sebulan semenjak beliau mula bekerja.

(15/100)

9. (a) Definisikan pengurusan pengetahuan dan prosesnya.
(b) Terangkan konsep penukaran dan pencantuman di dalam pengurusan pengetahuan.

(10/100)