

**University of Asia Pacific**

**Department of Computer Science & Engineering**

**Mid-Semester Examination Summer-2016**

**Program: B. Sc. Engineering (4<sup>th</sup> Year/2<sup>nd</sup> Semester)**

Course Title: Artificial Intelligence & Expert System      Course No. CSE-407      Credit: 3.00

Time: 1.00 Hours.      Full Mark: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicate marks.

- Q.1      a) What are the original vision and present vision of Artificial Intelligence (AI)?      (10)  
b) Explain the test mechanism to determine the intelligence of a machine. Also describe an important invention project of AI.      (10)
- Q.2      a) Differentiate between human and machine from knowledge representation and organization perspectives.      (10)  
b) What is an expert system? Design and describe a simple rule-based expert system.      (10)
- Q.3      a) What is meant by intelligent agent? Discuss the properties of an intelligent agent.      (10)  
b) Explain the PEAS description of a medical diagnosis system.      (10)
- Q.4      a) Describe briefly the classification of intelligent agents.      (10)  
b) Write short notes on the following:      (10)  
    (i) Deductive logic and inductive logic  
    (ii) Propositional and predicate logic

*Best of Luck*

Department of Computer Science & Engineering

Mid-Semester Examination Spring-2016

Program: B. Sc. Engineering (4<sup>TH</sup> Year/ 2<sup>ND</sup> Semester)

Course Title: VLSI Design Course No. CSE 411

Credit: 3.00

Time: 1.00 Hours.

Full Mark: 60

There are Four Questions. Answer any Three. Figures in the right margin indicate marks.

1. Consider the following function -  
 $F = (A+B). (C+D)$ 
  - a) What is the name of the function? 3
  - b) Sketch a transistor-level schematic. 10
  - c) Sketch a stick diagram for the given function. 7
2. Consider an nMOS transistor. Now derive  $I_{DS}$  vs  $V_{DS}$ 
  - a) Cutoff region 3
  - b) Linear region 10
  - c) Saturation region 7

Assume the transistor is ideal.  
You must provide sufficient description of the symbol while deriving the equations.
3. a) Explain the following formula: 5
$$C_g = k_{ox} \epsilon_0 \frac{WL}{t_{ox}} = \epsilon_{ox} \frac{WL}{t_{ox}} = C_{ox} WL$$
  - b) What is LOCOS? Explain the process. 5
  - c) With the help of a proper diagram, show lateral view of MOS. Clearly mark the interesting points. 10
4.
  - a) Briefly describe threshold voltage for a CMOS. 5
  - b) What is Etching? Describe two popular techniques for etching. 5
  - c) Explain velocity saturation and mobility degradation. 10

University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Summer-2016

Program: B. Sc. Engineering (4<sup>th</sup> Year/2<sup>nd</sup> Semester)

Course Title: Pattern Recognition

Course No. CSE-437

Credit: 3.00

Time: 1.00 Hours.

Full Mark: 60

There are Four Questions. Answer any Three. All questions are of equal value/Figures in the right margin indicate marks.

- Q.1 a) Define pattern recognition. Mention the different approaches of pattern recognition. (10)
- b) Draw and explain the block diagram of a pattern recognition system. (10)
- Q.2 Develop a pattern recognition system for automatic sorting of two incoming fishes (salmon and seabass) on a conveyor belt on the basis of their recognizing features (length/lightness). (20)
- Q.3 a) Define prior and posterior probabilities, likelihood and evidence. Also write down the Bayesian decision equation on the basis of the above-mentioned terms for the fish classification/recognition problem given in Q. 2. (20)
- b) Explain confusion matrix for a two-category situation.
- Q.4 You are a visitor in Australia and go to a doctor to comply with the immigration rule. (20)
- The doctor selects you at random to have a blood test for swine flu. It is suspected that currently swine flu affects 1 in 10,000 visitors in Australia. The test is 99% accurate, in the sense that the probability of a false positive is 1% and the probability of a false negative is zero. You test positive.
- (i) What is the new probability that you have swine flu?
- (ii) Now imagine that you went to a friend's wedding in Mexico recently. It is known that 1 in 200 people who visited Mexico recently come back with swine flu. Given the same test result as above, what should your revised estimate be for the probability you have the disease?

*Best of Luck*

Department of Computer Science & Engineering

Mid-Semester Examination Spring-2016

Program: B. Sc. Engineering (4<sup>th</sup> Year/ 2<sup>nd</sup> Semester)

Course Title: Computer Interfacing Course No.: CSE 435 Credit: 3.00

Time: 1.00 Hours. Full Mark: 60

There are Four Questions. Answer any Three. Figures in the right margin indicate marks.

1.
  - a) Sketch a Disk with four platters. 5
  - b) Define the following in a disk 5  
i) Track ii) Sector iii) Cylinder
  - c) Store a file of 10000 records on a disk with the following characteristics 10  
Number of bytes per sector = 512  
Number of sectors per track = 40  
Number of tracks per cylinder = 11  
Number of cylinders = 1331  
How many cylinders does the file require if each data record requires 128 bytes?
2.
  - a) Explain internal fragmentation for secondary memory. 5
  - b) Define the following terms 5  
i) Seek Time ii) Rotational Delay iii) Transfer Time
  - c) What are the characteristics of magnetic storage and fast sequential reading? 10
3.
  - a) What is RAM? Briefly describe its characteristics. 5
  - b) Define the following 5  
i) Land ii) Pit
  - c) What are the solutions to store file efficiently in CD-ROM? 10
4.
  - a) Describe EPROM in details. 5
  - b) Briefly discuss the classification of scanners. 5
  - c) Calculate the total capacity of the disk with following features 10  
Number of bytes per sector = 128  
Number of sectors per track = 160  
Number of tracks per cylinder = 3  
Number of cylinders = 1000