

## **In the name of Him, the Most Gracious, the Most Merciful**

### **Homework 1**

#### **Reading Comprehension (1)**

A typical organic light emitting diode (OLED) lighting structure is composed of films of organic compounds and conductive layers sandwiched between two electrodes that provide positive and negative charges. When the two charges recombine in the organic layer, energy is given off in the form of photons, creating a patch of soft visible light. In the theory the efficiency of this energy conversion could reach 100 percent, researchers say.

Such a structure (excluding the substrate) has a depth that can be measured in mere nanometers, making for extremely thin, lightweight lighting products (and displays) that could be manufactured in sheet form. This opens the way for large area lighting and differentiates the OLED. From its cousin, the light-emitting diode (LED) is a device designed to be a point light source.

In the lab, at least, OLED material can be put on a variety of substrates, including plastic. The material also is environmentally friendly, containing no harmful elements such as the mercury found in fluorescent tubes.

A major challenge all OLED manufacturers face is how to make their products cost-competitive with the ultra-cheap incandescent and fluorescent lighting products on the market. "Cost will be the key to penetrating the marketplace," agrees Toyohit Tanaka, general manager and head of business development in Konica Minolta.

Questions:

1. Which one is likely to be an OLED structure?

- a) Electrode, conductive layer, electrode, films of organic compounds.
- b) Electrode, conductive layer, films of organic compounds, electrode.
- c) Conductive layer, electrode, electrode, films of organic compounds.
- d) Films of organic compound, electrode, electrode, conductive layer.

2. ....differentiates OLED from LED

- a) Ability for large area lighting.
- b) Light weight lighting
- c) Being measured in nanometers
- d) Extremely thin in displaying

3. According to the text fluorescent tubes.....

- a) do not contain mercury.
- b) are environmentally friendly.
- c) are not environmentally friendly.
- d) are like OLEDs.

4. Which one is among the remaining challenges for OLED's manufactory?

- a) Making them environmentally friendly.
- b) Having mercury in their structure.
- c) Making them as point light sources.
- d) Making them cheaper.

### **Reading comprehension (2)**

Face recognition technology that could revolutionize security systems worldwide has been developed by computer scientist at Sheffield Hallam University. The new specialist software can produce an exact 3-dimensional (3D) image of a face within 40 milliseconds. Other 3D systems that have been trailed have proved unworkable because of the time it takes to construct a picture and an inaccurate result. The ground-braking invention, by experts in the University's Materials and Engineering Research Institute (MERI), was tested by Home Secretary Charles Clarke on a recent visit to Sheffield. It could be used for tighter security in airports, banks, and government buildings and identification (ID) cards.

The breakthrough comes days after members of parliament (MPs) backed the compromise plans for identity cards, meaning from 2008 people applying for a new passport will also get an identity card, with their biometric details stored on a central register. The new technology works by projecting a pattern of light onto the face, creating a 2D image, from which 3D data is generated. Biometric features are

extracted by a “parameterization” process, giving a digital mapping of a face that would form part of a fool-proof security system.

It is said that, this technology could be used wherever there is a need for heightened security. It is well suited to a range of applications including person identification from national databases, access control to public and private locations, matching 3D poses to 2D photographs in criminal cases, and 3D facial biometric data for smart cards such as ID and bank cards. We have developed a variable, working system at the cutting edge of 3D technology.

Questions:

5. The previous software for 3D face recognition was unworkable because it was.....

- a) fast
- b) slow
- c) slow and inaccurate
- d) fast but inaccurate.

6- In the new technology discussed in the passage, 3D data is generated from.....

- a) 2D image
- b) light patterns
- c) biometric features
- d) digital mapping

7- The new technology could be used for .....

- a) access control.
- b) identification in criminal cases.
- c) person identification.
- d) all of the above.

### **Reading Comprehension (3)**

With thousands of functions and a manual large enough to be dangerous if it falls off a desk, Mathematica is a powerful math tool with steep learning-curve, well-suited for math gurus but likely to be overwhelming for ordinary mortals.

8. What may a “guru” be as mentioned in the above passage? Respected and influential.....

- a) man.
- b) fellow.
- c) expert.
- d) analyst.

#### **Reading Comprehension (4)**

The low voltage installation in a building is basically an extension of public supply and distribution network. The latter is the responsibility of the “supply authority” which for operational reasons will impose certain technical constraints on the design and operation of the former.

9. What does “latter” refer to? (Author)

- a) Low voltage installation
- b) Public supply
- c) Distribution network
- d) 2 and 3

#### **Reading Comprehension (5)**

In the past, the major concerns of a VLSI designer were area, performance, cost and reliability; power considerations were mostly of only secondary importance. In recent years, however, this has begun to change and, increasingly, power is being given comparable weight to area and speed in VLSI design.

10. The major concerns of a VLSI designer ....

- 1) Only include cost and reliability.
- 2) Are restricted to performance and cost.
- 3) Cover factors such as power, area and reliability.
- 4) Include power consumption, area, performance, cost and reliability.