

<b>Mansoura University</b> <b>Faculty of CIS</b> <b>Information technology Dept.</b> <b>4<sup>th</sup> year exam</b>		<b>Mid-Term Exam</b> <b>Multimedia System</b> <b>14 November, 2016</b> <b>Time allowed: 1 Hours</b>
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**Student Name:** \_\_\_\_\_

**Section:** \_\_\_\_\_

**Question I: Answer the following questions:**

1. GIF and JPEG are two commonly used image representations. What images are suitable to be represented as GIF and JPEG? Do they usually use lossless or lossy compression?
2. Give three colour models other than RGB/CMYK and explain the benefits of using the model by showing a practical application for each model.
3. Design a new look-up table to store 24 bit color in equal 9 bit index, then find the corresponding index for RGB color pixel value(100,229,115)

**Question II: Answer the following questions**

1. With respect to lookup tables in bitmapped color images:
  - a) What is the main motivation behind using lookup tables?
  - b) Clearly explain how bitmapped images are represented using lookup tables?
  - c) Mention one disadvantage of using lookup tables.
2. How we can reduce the gray-level values down to 16 possible values in gray image (where each pixel containing 256 possible gray-level values). Explain the effect of decreasing the number of gray levels, and how we can deal with this effect?
3. JPEG is a popular image compression technique.
  - a) Draw the block diagram of the DCT-based compression scheme
  - b) For each stage that is lossy, state what information is discarded, and explain why JPEG can usually lose this information without adversely affecting image quality.
  - c) With reference to the lossy stages above, explain why JPEG would not be a good choice of compression algorithm to use to compress the images sent by a fax machine.