



Kafrelsheikh University - Faculty of Engineering			
Course	Communication systems (1)	Date	3/6/2018
Time	3 Hours	Mark	85
Students	3 <sup>rd</sup> year Electronics and Electrical Communications		

This exam measures ILOs no.: a.3, a.4, a. 8. a.18, a.25, b.2, b.7, b.15, c.1, c.14.

Answer all the following questions:

- 1- Drive the relationship between the viewing distance and the distance between adjacent pixel. (10 Marks)
- 2- Calculate the viewing distance for a minimum distance of 0.073 inches between two adjacent pixels, and then calculate the resolution required to achieve this viewing distance for a 50-inch screen TV. (Assume an aspect ratio of 4:3). (10 Marks)
- 3- Explain in detail the monochrome TV transmitter and receiver. (10 Marks)
- 4- Channel 1 of a two-channel PAM system handles 0-10 kHz signals; the second channel handles 0-12 kHz signals. The two channels are sampled at equal intervals of time using very narrow pulses at the lowest frequency that is theoretically adequate. The sampled signals are time-multiplexed and passed through a low-pass filter before transmission. At the receiver that pulses in each of the two channels are passed through appropriate holding circuits (i.e. sample-and-hold) and low-pass filters. (15 Marks)
  - a- What is the minimum clock frequency of the PAM system? (5 Marks)
  - b- What is the minimum cutoff frequency of the LPF before transmission that will preserve the amplitude information on the output pulses? (5 Marks)
  - c- If the signal in channel 1 is  $\sin 5000\pi t$  and in channel 2 is  $\sin 10000\pi t$ . Sketch these signals; sketch the wave shapes at the input to the first LPF, at the filter output, and at the output of the sample-and-hold circuit and output of the LPF in channel 2. (5 Marks)
- 5- Explain in detail the Model of generic system of interactive services. (10 Marks)
- 6- Explain in detail the adaptive PCM. (10 Marks)
- 7- What are the differences between the Entropy encoding and source encoding? Give 3 example for each coding system. (10 Marks)
- 8- Explain in detail the MPEG-4 video encoding process. (10 Marks)

Good Luck and Best Wishes

Dr. Ibrahim Elashry