University : Menoufia **Faculty**: Electronic Engineering **Department** : Communications **Academic Level** : 4th Year **Course Name**: Elective 5 Broadcasting and Television Engineering **Course Code** : ECE 416		**Date** : 16 January 2019 **Time** : 3 Hours **No of pages** : 1 **Full Mark** : 70 marks **Exam** : Final **Examiner** : Professor Adel Abdel Masieh ....

Answer all the following questions

Question No. 1 (8 marks)

The gain of the video detector in a TV receiver is -10 dB. If the input voltage is 8 V and the output V_{pp} is 2.15 V, find the modulation index of the signal before detection.

Question No. 2 (14 marks)

(a) On what basis the number of pictures/sec is chosen in TV?

(b) Explain the reason for making the frequency of the local oscillator greater than the vision carrier.

Question No. 3 (8 marks)

Derive an expression for the maximum video frequency required for the luminance signal.

Question No.4 (16 marks)

(a) For color TV what is compatibility? What are the properties of color TV signal to fulfill compatibility?

(b) A TV picture consists of 2×10^5 pixels. Each pixel assumes 8 brightness levels which are equally likely. Number of frames per second is 25. The required S/N ratio is 2500. Calculate the bandwidth required to transmit the video signal.

Question No. 5 (24 marks)

(a) What are the different types of delays in a digital audio broadcasting (DAB) network?

(b) Define single frequency network and explain how DAB saves frequency to cover shadow areas.

(c) Explain how DAB can save more power than FM transmitters.