Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **M.TECH**

EIPE 101

1st Semester Regular / Back Examination – 2016-17

DIGITAL INSTRUMENTATION

BRANCH(S):EIE

Time: 3 Hours

Max marks: 70

Q.CODE:Y891

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: (2 x 10)

a) Name the different types of A/D converters.
b) How many number of bytes required representing the decimal number 1856357 in packed BCD form?
c) As converter from negative to positive logic which gate can be used?
d) Why digital measuring instruments are required encoding and decoding?
e) When we develop the digital instrument, why it is necessary to define the logic polarity?
f) Why it is necessary to measure the time period rather than the frequency during measurement of low frequency?
g) Why interfacing required in instrumentation system?
h) Sampling rate is 1 KHz, discrete frequency is π/2.Find the analog frequency corresponding to the discrete frequency.
i) What is the purpose of multiplexing?
j) What is the time base signal in a CRO?

Q2 a) With the help of a functional block diagram, describe the principle of operation of a digital multimeter. (5)

b) Explain the operating principle of a DVM using a suitable block diagram. (5)

Q3 a) With suitable diagram explain ADC with dual slope integration. (5)

b) Explain the principle of operation of digital frequency meter .Discuss how to measure the frequency of unknown signal. (5)

Q4 a) With proper diagram discuss the measurement of time period of the signal. (5)

b) Explain the microprocessor based data transmission system with necessary diagram. (5)

Q5 a) Explain the operation of digital tachometer. Discuss its applications. (5)

b) With functional block diagram explain the different types of digital printer and plotter. (5)

Q6 a) Draw the block diagram of a storage-type oscilloscope and explain the working of (5)

each block. How does the digital oscilloscope differ from the conventional analog storage oscilloscope?

b) In a CRT, the distance between the deflecting plates is 1.0 cm, the length of the deflecting plates is 4.5 cm and the distance of the screen from the centre of the deflecting plates is 33 cm. If the accelerating voltage supply is 300 volt, calculate deflecting sensitivity of the tube. (5)

Q7 a) What do mean by RMS. Explain with diagram how to detect using digital multimeter. What are the RMS specifications? (5)

b) What do mean by sampling? State different types of sampling with diagram. Explain how to avoid aliasing effect?

Q8 Write short notes on any two (5 x 2)

a) RF Network Analyser
b) Noise figure meters
c) Digital magnetic tapes
d) Instrumentation Amplifier