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Total Number of Pages: 01

**M.TECH**  
**EIPE-101**

**1<sup>st</sup> Semester Regular/ Back Examination 2015-16**

**Digital Instrumentation**

**Time: 3 Hours**

**Max Marks: 70**

**Question Code:T867**

**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) Why hexadecimal system is used in microprocessor and microcontroller?
  - b) What do you mean by sampling? What is the necessity of sampling?
  - c) What is the utility of counter?
  - d) What is Master JK Flip flop? Draw its diagram.
  - e) What is unit impulse function? Derive its Fourier Transform.
  - f) What is the necessity of PLL in instrumentation?
  - g) What are techniques available for ADC?
  - h) How is the constant current source created with an OPAMP?
  - i) What are the modes of operation available with Timer counter?
  - j) Draw an Active low pass and high pass filter. Derive transfer function.
- Q2 a) What do you mean by synchronous counter and asynchronous sampling? (3)  
b) Draw a synchronous counter and explain briefly about it. (7)
- Q3 a) How ADC is done using successive approximation method? Discuss. (6)  
b) Discuss construction of a digital voltmeter. (4)
- Q4 How is the digital voltmeter constructed for measurement of voltage, current and resistance (10)
- Q5 a) What is the utility of time base generator in CRT? How DSO is different from CRO as far as operational part is concerned. (6)  
b) Discuss Digital Printers and plotters. (4)
- Q6 a) What is the utility of digital signal analyser? Explain briefly. (5)  
b) Explain briefly RF network analyser. (5)
- Q7 a) Discuss digital input card and its operating mode (6)  
b) How mode-1 of Programmable Timer counter is used? (4)
- Q8 Write short notes on any two: (5 x 2)
- a) DAC
  - b) RMS detector in Digital multimeter.
  - c) Interfacing IEEE cards
  - d) Digital tachometer