Paper Id: | 1 | 3 | 1 | 3 | 1 | 7 | **Roll No.** | | | | | | | | | | |

B.TECH
(SEM VI) THEORY EXAMINATION 2018-19
DIGITAL MEASUREMENT TECHNIQUES

Time: 3 Hours   *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   2 x 7 = 14

   a.   Differentiate between accuracy and precision
   b.   What is the function of zero level comparator?
   c.   What do you understand by Gating error?
   d.   What is the drawback of Fast-Low frequency measurement method?
   e.   Define threshold voltage in digital measurements
   f.   What is the difference between Attenuator DAC and WR type DAC?
   g.   Explain the process of Quantization with suitable example

SECTION B

2.   Attempt any *three* of the following: 7 x 3 = 21

   a.   Explain why the conventional method of frequency measurement is not suited for very low frequency measurement?
   b.   Give specific applications of average frequency measurements?
   c.   Draw the circuit diagram and waveforms for power system frequency measurement
   d.   What are the requirements of an ideal phase meter? Explain direct phase measurement method.
   e.   Explain Vernier technique for small time interval measurement with neat circuit diagram

SECTION C

3.   Attempt any *one* part of the following: 7 x 1 = 7

   (a)   Draw the circuit diagram for minimal realizations of an inverting type PGA using dependent switching.
   (b)   What are Single Mode switching and group switching? Draw the general RS Realization of a driving point consistence in all combinations

4.   Attempt any *one* part of the following: 7 x 1 = 7

   (a)   Why dB meter is used in digital measurement? Draw the circuit and explain the procedure for dB measurement.
   (b)   With suitable circuit diagram, show how fast low frequency measurement is done using frequency multiplier circuit. Also draw the waveforms.

5.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

    (a)   Using suitable circuit diagram, explain in detail the working of weighted reference type voltage DAC

    (b)   Draw the circuit diagram of VTC using comparator and a monostable multi-vibrator and explain its working

6.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

    (a)   Drive an expression for the total number of N-bit multistage DAC

    (b)   State and prove Sampling theorem with waveforms and explain how signal is recovered from its samples

7.   **Attempt any *one* part of the following:**   **7 x 1 = 7**

    (a)   Explain Time Division Multiplexing with suitable circuit scheme

    (b)   Give statement of minimum digitally PGA. Draw the minimal realization circuits using Group mode switching