

B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH

FIFTH SEMESTER

EC9306 – MEASUREMENT AND INSTRUMENTATION

(REGULATIONS 2009)

Time: 3 Hours

Max. Marks:100

Answer All Questions

Part-A

(10 x 2 = 20 marks)

1. Differentiate gross error and systematic error. How can it be minimized?
2. An 820 Ω resistance with an accuracy of +10% carries a current of 10mA. The current was measured by an analog ammeter on a 25mA range with an accuracy of +2% of full scale. Calculate the power dissipated in the resistor, and determine the accuracy of the result.
3. What is the difference between photo-emissive, photo-conductive and photo-voltaic transducers?
4. State the principle of feedback effect.
5. Write any three applications of logic analyzer.
6. List out the merits of signal conditioning circuits in digital instruments.
7. What is the resolution of 3 1/2 digit display on 1V and 10V ranges? A 3 1/2 digital voltmeter has an accuracy specification of $\pm 0.5\%$ of reading ± 1 digit. What is possible error in volt when the instrument reading 2.00 V on 5 V scale.
8. What is meant by auto ranging? Find the period in seconds of a signal if the D-A count is 8026 and the time base frequency is 10 KHz.
9. State the advantages of virtual instrumentation in engineering process.
10. State any four applications of measurement systems in nanotechnology.

Part-B

(5 x 16 = 80 marks)

11. (i) Discuss the static and dynamic characteristics of a measurement system. (8)
(ii) By using a "micrometer screw", the following readings were taken of a certain physical length: 1.34, 1.38, 1.56, 1.47, 1.42, 1.44, 1.53, 1.48, 1.40, 1.59mm. Calculate the following: Arithmetic Mean, Average Deviation, Standard Deviation and Variance. (8)
12. (a)(i) Explain with neat diagram the principle of operation of variable capacitive transducers (8)

13.a.i) Is proactive routing suitable for ad hoc network?. State the reasons to support your answer also explain how sequence number can solve infinity problem in DSDV routing. (10)

ii) With scenario, explain the working mechanism of Ad hoc on demand distance vector routing. (6)

(OR)

13.b.) Describe any two hierarchical routing protocols in wireless sensor network with necessary scenario. (16)

14.a.i) Explain the system description of integrating WLAN with 3GPP using loose coupling approach. (8)

ii) Discuss briefly about LMDS and compare it with MMDS. (8)

(OR)

14.b.) Discuss on the objectives of internetworking. Draw the protocol stack of interworking of GPRS with WLAN. Explain the functions of WAF and search procedure for GIF. (16)

15.a.i) Discuss about various advanced broadband wireless access technologies. (8)

ii) Write a short note on various broadband techniques used to provide multimedia services. (8)

(OR)

15.b.) Explain with diagrams 4G enabling technologies and convergent devices. (16)

*****ALL THE BEST *****