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Code No.: 31306 S

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (E.C.E.) III Year I-Semester Supplementary Examinations, May/June-2017**

**Electronic Instrumentation**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. A particular ammeter requires a change of 2 A in its coil to produce a change in deflection of the pointer by 5 mm. Determine the sensitivity and deflection factor.
2. Find the no. of significant figures of the following  
i) 400.00    ii) 0.0010    iii) 50,600    iv) 300. (= three hundred point)
3. Calculate the gage factor of a strain-gage if a 1.5 mm diameter conductor that is 24 mm long changes by 1 mm and diameter changes by 0.02 mm under a compression force.
4. Illustrate a typical application of photo voltaic cell.
5. Two machines of equal SPL of 85 dB are switched ON simultaneously. What is the resultant SPL?
6. List out the salient features of semiconductor thermo-meter.
7. Describe the role of trigger delay line in CRO.
8. The input to a 10 bit ADC is 2 V. Reference is 5 V. What is the binary output?
9. Distinguish between skin surface electrode and needle electrode.
10. State the principle of generation of X-rays.

**Part-B (5 × 10 = 50 Marks)**

11. a) Define and distinguish between [4]  
i) Accuracy and precision  
ii) Sensitivity and resolution using suitable examples.  
b) What is "Loading effect" and explain how it can be avoided? [2]  
c) A voltmeter having a sensitivity of  $1000 \Omega/V$  reads 100 V on its 150 V scale when connected across an unknown resistor in series with a multi-ammeter. If the multi-ammeter reads 5 mA, calculate (i) apparent resistance of un-known resistor (ii) actual resistance of the unknown resistor (iii) error due to the loading effect of the voltmeter. [2]
12. a) Draw the sketch, give the constructional details and working of LVDT. Give its applications. [5]  
b) Compare and contrast the photo-emissive, photo-conductive and photo-voltaic transducers. Name one application each for all transducers. [5]
13. a) Describe the theory, construction and working of thermo-couple. Why are thermo-couples provided with an air-light Jacket and what is the effect of Jacket on its performance? List the different materials used for the thermo couples. [5]  
b) Explain the construction and working of different types of microphones. [5]

14. a) Draw the block diagram of a Swept-super heterodyne spectrum analyzer and explain its operation. [5]  
b) With a neat sketch of DTB oscilloscope, explain its operation. [5]
15. a) Define resting and action potentials. Draw the wave form describing these potentials and explain various mechanisms. [5]  
b) Classify and describe different bio-potential electrodes. [5]
16. a) Explain about elements of ISO 9001. [5]  
b) Explain the principle and working of a constant temperature type hotwire anemometer. [5]
17. Write short notes on any *two* of the following: [5]  
a) Hygrometers [5]  
b) Virtual instrumentation [5]  
c) CT Scanners. [5]

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