



**PBC-003-1275003** Seat No. \_\_\_\_\_

**M. Sc. (ECI) (Sem. V) (CBCS) Examination**

**November / December - 2018**

**Advance Instrumentation : Paper - 19**

*(New Course)*

**Faculty Code : 003**

**Subject Code : 1275003**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**Instructions :** (1) All questions carry equal marks.  
(2) Figures on right hand side indicate marks.

1 (a) State whether the following statements are true or false : **6**

- (1) Wave analyzers are also referred to as frequency selective voltmeters.
- (2) The output power Wattmeter is designed to measure indirectly the output power in an arbitrary load.
- (3) The overall efficiency of coils and capacitors intended for RF applications is best evaluated using the Q value.
- (4) Magger is used to measure very low resistance.
- (5) A Wheatstone bridge may be used to measure the dc resistance of various types of wires.
- (6) Basic LCR bridge is also known as Skeleton type.

(b) Answer the following : **8**

- (1) Define the term recorder.
- (2) What do you mean by electrical transducer?
- (3) List five physical quantities that transducer measures.
- (4) What is the difference between an indicator and recorder?

- 2** Answer the following : (Any **Two**)
- (1) What is difference between a wave analyzer and a harmonic distortion analyzer? Draw the circuit diagram and explain the working of a heterodyne type wave analyzer. **7**
  - (2) Draw and discuss the basic wave analyzer. **7**
  - (3) Explain the working principle of an output power meter. **7**
- 3** Answer the following :
- (1) What is LCR Bridge? How can L, C and R be measured using a skeleton LCR bridge? **5**
  - (2) Discuss the principal applications of Kelvin's bridge. Also describe the operation of a Kelvin's bridge. **5**
  - (3) Discuss about Wheatstone's bridge. **4**
- OR**
- 3** Answer the following :
- (1) Give the types of recorders in detail. **5**
  - (2) Explain basic strip chart recorder. **5**
  - (3) Give the advantages and disadvantages of Digital data recording. **4**
- 4** Answer the following :
- (1) List the different types of transducers. Explain the working principle of thermistor. **5**
  - (2) What is a signal conditioner? What are the basic elements of a single conditioner? **5**
  - (3) How can measurements at microwave frequencies be done? Draw and discuss the cavity wavemeter. **4**

- 5** Answer the following : (Any **Two**)
- (1) Give the classification of electronic recording instruments. What are the basic components of a Magnetic recorder? Explain its operation. **7**
  - (2) Explain the principle of operation of a stroboscope. Also explain how the speed of a motor can be measured using a stroboscope. **7**
  - (3) What do you mean by sensitivity and selectivity of a radio receiver? How can it be measured? **7**
  - (4) What is an op.amp? Give the electrical characteristics of an ideal op.amp. Also discuss the integrator circuit using operational amplifier with diagram. **7**
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