Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14EI2011** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRONIC INSTRUMENTATION** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | **Course Outcome** | **Marks** |
|  | | **PART-A(20X1=20 MARKS)** | | |
| 1. | The usage of electronic instruments is becoming more extensive because they have \_\_\_\_\_\_\_\_   1. a high sensitivity and reliability 2. a fast response and compatability with digital computers 3. the capability to respond to signals from remote places 4. all the above | | CO1 | 1 |
| 2. | In signal generators \_\_\_\_\_\_\_\_\_\_\_\_   1. Energy is created 2. Energy is generated 3. Energy is converted from a simple DC source into AC energy at some specific frequency 4. All the above | | CO1 | 1 |
| 3. | A multimeter is used to measure \_\_\_\_\_\_\_\_\_\_\_\_   1. Resistance 2. Current 3. Voltage 4. All the above | | CO3 | 1 |
| 4. | A PMMC meter has an internal resistance 500Ω and the current required for its full scale deflection is 100µA. The power consumed by the meter is\_\_\_\_\_\_\_\_\_\_   1. 5µW 2. 0.5µW 3. 5W 4. 10µW | | CO1 | 1 |
| 5. | Digital instruments are those which \_\_\_\_\_\_\_\_\_\_   1. Have numerical readout 2. Use LED or LCD displays 3. Have a circuitry of digital design 4. Use deflection type meter movement | | CO1 | 1 |
| 6. | In an electronic ohmmeter, an operational amplifier is used as a \_\_\_\_\_\_\_\_\_\_\_\_   1. summer 2. multiplier 3. buffer amplifier 4. integrator | | CO2 | 1 |
| 7. | In semiconductor strain gauges, the change in resistance on application of strain is mainly on account of change in \_\_\_\_\_\_   1. length of wire 2. diameter of wire 3. resistivity   (d) both a & b | | CO2 | 1 |
| 8. | Loading effect is principally caused by \_\_\_\_\_\_\_ instruments.   1. high resistance 2. low sensitivity 3. high sensitivity 4. high range | | CO1 | 1 |
| 9. | A strain gauge is a passive transducer and is employed for converting \_\_\_\_\_\_\_\_\_\_   1. mechanical displacement into a change of resistance 2. pressure into a change of resistance 3. force into displacement 4. none of the above | | CO2 | 1 |
| 10. | A 31/2 digit voltmeter, the largest number that can be read is \_\_\_\_\_\_\_\_\_\_   1. 0999 2. 4999 3. 9999 4. 1999 | | CO3 | 1 |
| 11. | Self generating transducers are \_\_\_\_\_\_\_\_\_\_ transducers.   1. Active 2. Passive 3. Secondary 4. digital | | CO2 | 1 |
| 12. | Frequency can be measured by using \_\_\_\_\_\_\_\_\_\_   1. Maxwell’s bridge 2. Schering bridge 3. Wein’s bridge 4. Wheatstone bridge | | CO2 | 1 |
| 13. | The essential elements of an electronic instruments are \_\_\_\_\_\_\_\_\_\_\_\_   1. Transducer 2. Signal conditioner 3. Indicating device 4. All the above | | CO1 | 1 |
| 14. | A (0-1)mA meter has a sensitivity of \_\_\_\_\_\_\_\_\_   1. 1 kΩ/v 2. 1mA 3. 1kΩ 4. 1000A | | CO1 | 1 |
| 15. | Piezoelectric crystals are used for the measurement of \_\_\_\_\_\_\_\_\_\_ changes.   1. Static 2. Dynamic 3. Static and dynamic 4. Oscillations | | CO3 | 1 |
| 16. | The current sensitivity of a meter is expressed in \_\_\_\_\_\_\_\_\_\_\_   1. Ampere 2. Ohm/ampere 3. Ohm/volt 4. Ampere/division | | CO3 | 1 |
| 17. | Which of the following can be used for pressure measurement?   1. Thermometer 2. Bolometer 3. Pyrometer 4. Bourdon tubes | | CO3 | 1 |
| 18. | A Hall’s effect pick-up can be used for measuring \_\_\_\_\_\_\_\_\_\_\_   1. Pressure 2. Magnetic flux 3. Relative humidity 4. Current flow | | CO3 | 1 |
| 19. | A wheatstone bridge circuit using strain gauges can be used for measuring \_\_\_\_\_\_\_\_\_\_\_\_   1. Static strain 2. Dynamic strain 3. both (a) & (b) 4. Weight | | CO2 | 1 |
| 20. | Astable multivibrator \_\_\_\_\_\_\_\_\_\_\_   1. gives one output pulse for every two input pulse 2. gives a timed output pulse for a trigger input 3. gives a train of output pulses for a trigger input 4. gives four output pulses for a single input pulse | | CO2 | 1 |

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|  | **PART B(10 X 5= 50 MARKS)**  **(Answer any 10 from the following)** | | |
| 21. | State the advantages of an electronic instruments. | CO1 | 5 |
| 22. | Write short notes on displays and alarms. | CO2 | 5 |
| 23. | Draw the block diagram of Digital Storage Oscilloscope. | CO2 | 5 |
| 24. | Differentiate transducer and sensor with an example. | CO1 | 5 |
| 25. | State the advantages of Regulated Power Supply (RPS). | CO3 | 5 |
| 26. | State the principle on which the digital meters work. | CO1 | 5 |
| 27. | List five transducers which help to acquire agriculture parameters. | CO2 | 5 |
| 28. | Explain with a block diagram the working of a frequency counter. | CO1 | 5 |
| 29. | State the function of Cathode Ray Oscilloscope (CRO). | CO3 | 5 |
| 30. | Enumerate the components of a digital system. | CO1 | 5 |
| 31. | State the important features available in a commercial digital multimeter. | CO2 | 5 |
| 32. | Draw the functional block diagram of a signal generator. | CO1 | 5 |

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|  | | **PART C(2 X 15= 30 MARKS)**  **(Answer any 2 from the following)** | | |
| 33. | | Sketch the circuit of a simple BJT emitter-follower voltmeter circuit and compare it to a non-electronic voltmeter. | CO1 | 15 |
| 34. | | Draw the front panels of a typical digital multimeter, showing the terminals and controls. Explain terminal connections, function selection, range selection, and meter readings. | CO2 | 15 |
| 35. | a. | Compare virtual instruments with traditional instruments. | CO2 | 7 |
| b. | Write notes on advantages and applications of virtual instrument software. | CO3 | 8 |