A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59513

B.E./B.Tech. DEGREE EXAMINATION, NOV 2019

Elective

Electronics and Instrumentation Engineering

15UEI913 – INSTRUMENTATION FOR AGRICULTURE AND FOOD PROCESSING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Function of transducer is to convert CO1- R

   (a) Electrical signal into non-electrical quantity

   (b) Non-electrical quantity into electrical signal

   (c) Electrical signal into mechanical quantity

   (d) All of these

2. Identify Intelligent sensor in the following CO1- R

   (a) Thermocouple (b)Smart thermostat (c) PIR sensor (d) LDR

3. The software used to drive microprocessor-based systems is called CO2- R

   (a) Assembly language (b) Firmware

   (c) Machine language code (d) BASIC interpreter instructions

4. Useful soil moisture for plant growth is CO2- R

   (a) Capillary water (b) Gravity water (c) Chemical water (d) All the above

5. FSSAI stands for CO3- R

   (a) Food Safety and Regularity Authority of India

   (b) Food Systems and Standards Authority of India

   (c) Food Safety and Standards Authority of India

   (d) Food Safety and systems Authority of India

6. Which one is artificial food colours CO3- R

(a) Blue (b) Quinoline yellow (c) Citrus Red (d) Green

7. Spectroscopy deals with study of interaction between CO4- R

(a) Matter and radiation (b) Frequency and light

(c) Voltage and current (d) Energy and electron

8. Identify the ultrasonic frequency range used in Gas medium (air) is_____ CO4- R

(a) 20khz to 100khz (b) 5khz to 200khz (c) 10khz to 500khz (d) 5khz to 100khz

9. Tell the most abundantly found greenhouse gas? CO5- R

(a) Carbon dioxide (b) Water vapor (c) Methane (d) Nitrous oxide

10. Which gas is the greatest overall contributor to the greenhouse effect? CO5- R

(a) Water vapor (b) Carbon dioxide (c) Nitrous oxide (d) Methane

PART – B (5 x 2= 10Marks)

11. Identify the difference between sensors and transducers. CO1- R

12. When auto drip irrigation system is needed? CO2- U

13. Label the detectors used in food colour analysis. CO3- R

14. List the application of Near Infra-red measurement technology. CO4- R

15. List the major factor characterizing the greenhouse climates. CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Examine how direct and indirect methods of measuring grain moisture level CO1- App (16)

Or

(b) Illustrate the working of the following CO1- U (8)

(i) Humidity transducer

(ii) Carbon -di -oxide gas transducer CO1- U (8)

17. (a) Demonstrate on the Soil nutrient estimation system using microprocessors. CO2- App (16)

Or

(b) With neat diagrams, explain the role of SCADA in Agriculture. CO2- Ana (16)

18.	(a)	Explain the working principles of Reflectance Spectro photometry.	CO3- Ana	(16)
		Or		
	(b)	(i)Analyze the importance of Colour measurement in food industry.	CO3- U	(8)
		(ii) Explain working principle of any one Spectrophotometers.	CO3- U	(8)
19.	(a)	Explain the working principle of Time-of-flight measurement system using ultrasonic transducer.	CO4- U	(16)
		Or		
	(b)	(i) Explain how Ultrasonics been used in food processing.	CO4- U	(8)
		(ii) Point out the various steps involved in Food Rheology.	CO4- U	(8)
20.	(a)	Summarize the various processes involved in Greenhouse instrumentation.	CO5- U	(16)
		Or		
	(b)	Discuss the working principles of bio sensor used in agriculture.	CO5- U	(16)