SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

COLLEGE OF ENGINEERING AND TECHNOLOGY

NAME OF THE PROGRAM: B.TECH NANO/ MIXED

ACADEMIC YEAR: 2021-22(ODD)

Subject Code and title: 18NTO308T/Smart sensor systems

Year and Semester: V **Date of Exam: 25/10/2021**

Mode of Exam: Online (GCR) **Time: 100 minutes**

Type of Test: CLA2

	Q. No.	Part A. Answer all questions Questions(10x1=10)
	1	Which of the following is not a light detector a. Photodiode b. Photoresistor c. Solar cell d. Phototransistor
	2	Silicon based photodetectors works with in the wavelength region of a. 190 – 1100 nm b. 400 – 1700 nm c. 800 – 2600 nm d. 400 – 14000 nm
	3	Collision detector is ---------- type a. quantitative b. qualitative c. passive d. absolute
	4	In an LDR resistance decreases with ____ light intensity a) Increasing b) Decreasing c) Constant d) For both increasing and decreasing
	5	what is the energy of light travelling in vacuum, if its wavelength is 500nm? a. 2.47eV b. 2.47J c. 3eV d. 3J
	6	Which of the following statement is not correct about the longitudinal waves a. The medium contents oscillate in the direction of wave propagation

		b. Alternate physical compression and expansion of the medium with certain frequencies c. A medium is required for the acoustic wave propagation d. It will propagate in vacuum as light
	7	The speed of sound in air at standard temperature and pressure is around a) 244m/s b) 344m/s c) 444m/s d) 433 m/s
	8	Velocity of the sound in a fluid can be identified from a) Sqrt(Bulk modulus/Density) b) Sqrt(Density/Bulk Modulus) c) Sqrt(Youngs modulus/Density) d) Sqrt(Density/Youngs modulus)
	9	What is the velocity of sound in water? (density of water at room temperature= 997.77Kg/m^3, bulk modulus of water=2.15GPa) a. 1467.9m/s b. 1467.9Km/s c. 1500miles/minutes d. 1500m/s
	10	Sound sensor operating in water is known as ----------. a. microphone b. pressure sensor c. transducer d. hydrophone
	Q. No.	**PART B. Answer any four questions (4x4=16 marks)**
	11	Write a note on surface acoustic wave sensors with suitable figures.
	12	What is Hall effect? Write the expression for Hall voltage and Hall coefficient.
	13	Briefly explain the working of a photodiode with suitable diagram.
	14	What are the three types of radiation detectors? Briefly explain each.
	15	Describe the working of a capacitive touch sensor.

Q. No.	PART C. Answer all questions (2x12=24 marks)
16	(a) Define temperature of a body. Explain briefly about the three types of heat transfer mechanisms **OR** (b) Write a note on chemical sensors.
17	(a) Define microphone and briefly explain the working of the four different types of microphones with suitable figures. **OR** (b) Write a note on force sensors with suitable figures.