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PaperId: 231765 RollNo: | | | | | | | | | | | | | |

BTECH
(SEM-VII) THEORY EXAMINATION 2022-23
MICRO & SMART SYSTEMS

Time: 3Hours ***Total Marks:100***

Note:1. AttemptallSections. If require any missing data; then choose suitably.

2. Any special paper specific instruction.

SECTIONA

1. Attempt *all* questions in brief. 2x10= 20

(a) What is the difference between Micro systems versus MEMS?
(b) Whatdoyoumeanbysmart systems?
(c) Give the applications of smart materials andMicrosystems.
(d) Which transducer is known as 'self-generating transducer'?
(e) Explainmicromachining process.
(f) Whatis dynamic range?
(g) Write the applications of piezo-resistive pressure sensor?
(h) What is the use of Hall Effect sensors?
(i) What is the difference between tactile and non-tactile sensor?
(j) Define intelligent sensor.

SECTIONB

2. Attempt any *three* of the following: 10x3=30

(a) Explain in detail Siliconcapacitive accelerometer.
(b) Whatarethegoalsand applicationsofintegrated Microsystem?
(c) What are smart-material systems? Evolution of smart materials, structures and systems.
(d) Explain Micro machined transducers. Evolution of micro-manufacturing. Applications areas.
(e) Describeand salient features of sensors, actuators, and systems.

SECTIONC

3. Attempt any *one* part of the following: 10x1=10

(a) Describepiezoelectric inkjet print headandtheircharacteristics.
(b) Discuss in detail about piezo-resistive pressure sensor.

4. Attempt any *one* part of the following: 10x1=10

(a) Writeashort noteonadvanced processes for micro fabrication
(b) ExplaintheEmerging trendsSilicon wafer processing.

5. Attempt any *one* part of the following: 10x1=10

(a) Describe Poisson effect and the anticlastic curvature of beams.
(b) Explainmodeling of coupled electromechanical systems.

6. Attempt any *one* part of the following: 10x1=10

(a) What is residual stress and stress gradients? Give difference between them.
(b) Explain integration of Microsystemsand microelectronics.

7. Attempt any *one* part of the following: 10x1=10

(a) Explainin brief microsystems packaging.
(b) Describemechanical domain, electrostatic domain, and magnetic domain.

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