

AU – 2560

Third Semester B. E. (Biomedical Engineering) Examination

TRANSDUCERS AND SIGNAL CONDITIONING

Paper – 3 BM 03

(USC – 10100)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and Separate answer book must be used for Section A and B in Pharmacy and Cosmetic Tech.
- (2) Answer **Three** questions from Section A and **Three** questions from Section B.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Diagrams should be given wherever necessary.
- (5) Illustrate your answer wherever necessary with the help of neat sketches.
- (6) Use pen of Blue/Black ink/refill only for writing the answer book.

SECTION A

1. (a) State and explain dynamic characteristics of transducer. 7
- (b) Draw and explain block diagram of generalised instrumentation system. 7

OR

2. (a) What is transducer ? Give the classification of transducer with example. 7
- (b) Explain basic configuration of control system. 7

OR

3. (a) Explain piezo-electric transducer for force measurement. 6
- (b) Describe the operation of LVDT for force measurement. 7

4. (a) Derive an expression for gauge factor of a strain gauge. 7

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- (b) What are the different types of force measuring transducers ? Explain any one. 6
5. (a) Explain construction and working of bimetallic strip transducer for the temperature measurement. 6
- (b) Explain tachometers for velocity measurement. 7

OR

6. (a) Describe photoelectric pulse counting method for velocity measurement. 6
- (b) What is thermocouples ? Describe its construction and working. 7

SECTION B

7. (a) Explain working principle and construction of variable area type flow transducer. 7
- (b) Describe ultrasonic transducers for level measurement. 7

OR

8. (a) State the Bernoulli's theorem. Explain any one type of differential pressure transducer for flow measurement. 7
- (b) Explain microwave type level gauge. 7
9. (a) Explain construction and working of elastic type pressure transducer. 7
- (b) Describe construction and working of load cell. 6

OR

10. (a) Describe ionization type pressure transducer. 6
- (b) Explain capacitive type differential pressure sensor. 7

11. (a) Explain working principle of pH meter in detail. 6
(b) What is microphone and state its different types. Explain dynamic microphone. 7

OR

12. (a) Explain piezo-electric humidity meter in detail. 7
(b) Explain working principle of wire hygrometer. 6

