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**Question Paper Code: 59476**

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

Open elective

Civil Engineering

15UEC976 SENSORS AND ACTUATORS

(Common to CSE, EEE, EIE, Mechanical, IT, Chemical)

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

- Hall effect sensor is used to detect CO1- R  
(a) magnetic field (b) photoelectric sensor  
(c) electromagnetic field (d) flux density
- \_\_\_\_\_ sensors are used to detect non-magnetic but conductive materials CO2- U  
(a) pneumatic proximity (b) Capacitive Proximity  
(c) Eddy current proximity (d) inductive proximity
- \_\_\_\_\_ is used measure the speed of motor CO3- R  
(a) resistive sensor (b) tachogenerator  
(c) rotometer (d) galvanometer
- \_\_\_\_\_ unit of thermal conductivity CO4- R  
(a) watts (b) watts per kelvin (c) joules (d) kelvin
- \_\_\_\_\_ is the phenomenon is used to recover original size when it is heated CO5- R  
(a) pseudo effect (b) inverse pizeo effect (b) magnetic (b) shape memory

PART – B (5 x 3= 15Marks)

- Explain about optical sensor CO1- U

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|---|--------|
| 7. Explain about strain gauge             | CO2- U |
| 8. What are characteristic of Orificplate | CO3- U |
| 9. Define bimetallic strip                | CO4- U |
| 10. Define actuation                      | CO5- U |

PART – C (5 x 16= 80Marks)

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| 11. (a) Explain classification of sensor with examples                             | CO1-Ana (16)  |
| Or   |               |
| (b) Describe with neat diagram and working of Hall Effect sensor                   | CO1 -Ana (16) |
| 12. (a) Enumerate Bellow Pressure sensor and bourdon tube sensor with neat diagram | CO2 -U (16)   |
| Or   |               |
| (b) Explain about Capsule pressure sensor with neat diagram                        | CO2 -U (16)   |
| 13. (a) Describe with neat diagram and working of ultrasonic sensor                | CO3- U (16)   |
| Or   |               |
| (b) Explain about flow Pyro Electric sensor  | CO3- U (16)   |
| 14. (a) Explain about photo conductor and its working with neat diagram            | CO4-U (16)    |
| Or   |               |
| (b) Explain about photo diode and its working with neat diagram                    | CO4 -U (16)   |
| 15. (a) Explain about temperature micro sensor                                     | CO5- U (16)   |
| Or   |               |
| (b) Explain about bio Sensor   | CO5- U (16)   |