[Total No. of Questions: 5]

SEAT No. :

[Total No. of Pages: 2]

F. Y. B.Sc.(Computer Science)
ELECTRONIC SCIENCE
ELC-121: Instrumentation Systems
(Semester - II)(New CBCS 2019 Pattern)(Paper-I)

Time:2 Hours] *[Max.Marks: 35*

Instructions to the candidates:

1) *Q.1 is compulsory.*
2) *Solve any three questions from Q.2 to Q.5.*
3) *Figure to the right indicates full marks.*
4) *Draw neat diagrams wherever necessary.*
5) *Questions from 2 to 5 carries equal marks.*

Q.1) **Solve any five of the Following.** **[5×1=5]**

a) Define Actuator with one example.

b) Active sensor are self-generating device- State True or False.

c) Define the term: Input Offset Voltage.

d) Which are two types of film sensor?

e) Draw the symbol of OP-AMP and label it.

f) List any two temperature sensors.

Q.2) **a) Attempt any two of the following:** **[2×3=6]**

i) Describe block diagram of instrumentation system.

ii) Using neat diagram explain the working principle of LDR.

iii) Draw smart instrumentation system. Give two advantages

b) Draw diagram of Inverting amplifier using op-amp. Derive an expression for the output. **[1×4=4]**

Q.3) a) Attempt any two of the following: **[2×3=6]**

i) Explain working principle of ultrasonic sensor and state any two applications.

ii) State the techniques use for thin film fabrication. List application domains of Thin film sensors.

iii) Explain with neat diagram working principle of PIR sensor.

b) Identify the following configurations & find their output voltage. **[1×4=4]**

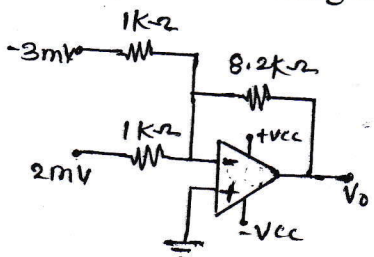

Fig.Ca)

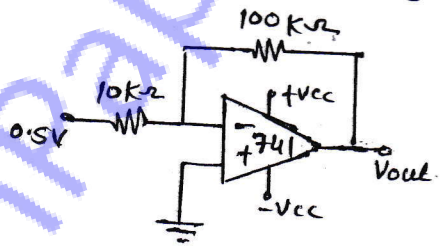

Fig.Cb)

Q.4) a) Attempt any two of the following: **[2×3=6]**

i) Differentiate between sensor and transducer.

ii) Draw the circuit diagram of Adder for op-amp. Derive the expression for its output voltage.

iii) Explain op-amp as comparator.

b) Explain construction and working of DC motor. **[1×4=4]**

Q.5) Solve any four of the Following: **[4×2.5=10]**

a) Define the following term for sensor: i) Linearity ii) Sensitivity

b) Explain working principle of stepper motor.

c) Give any four applications of tilt sensor.

d) Draw the block diagram of op-amp. State ideal value of Bandwidth.

e) Explain concept of virtual ground.

f) State any five advantages of Smart sensors.

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