AL-112

April-2022

B.Sc., Sem.-VI

311-EA : Physics

(Experimental Measurement Techniques)

Time : 2 Hours]   **[Max. Marks : 50**

Instructions :   (1)   All questions in Section-I carry equal marks.

             (2)   Attempt any **three** questions in Section-I.

             (3)   Question-9 in Section-II is compulsory.

Section-I

1. (A) Discuss in detail about Gaussian distribution function and Poisson distribution function.   **7**

   (B) Explain systematic error.   **7**

2. (A) Explain the Binomial Distribution.   **7**

   (B) Find the probability of obtaining 4 head in 6 tosses using an unbiased coin.   **7**

3. (A) Write short note on Temperature Transducer.   **7**

   (B) Write short note on Photo-emissive detector.   **7**

4. (A) Write short note on Thermistor.   **7**

   (B) Write short note on Thermocouples.   **7**

5. (A) Discuss about systematic error arising from experiment design.   **7**

   (B) Write short note on Optical Pyrometer.   **7**

6. (A) Obtain the equation of effective pumping speed $\dfrac{1}{Se} = \dfrac{1}{C} + \dfrac{1}{Sp}$ **7**

   (B) Give application of Vacuum.   **7**

7. (A) Give application of Photo diode.   **7**

   (B) Write Short note on Vacuum pump.   **7**

8. (A) Write short note on Capacitance gauge.   **7**

   (B) Write short note on Pirani gauge.   **7**

Section-II

9. Answer in short (Any **8** out of **16**)   **8**

    (1) What is the correct number of significant figures in 0.00025 ?

    (2) What is the difference between mistake & error ?

    (3) $R = \dfrac{V}{I}$ Here V = (100 ± 5) V and I = (100 ± 0.2). A Find percentage error in R.

    (4) The _____ is a measure of how close the measured value is to the true value of quantity.

    (5) The magnitude of the difference between the individual measurement and true value of the quantity is called _____ .

    (6) What is the formula for binomial distribution ?

    (7) A Poisson distribution for the tossing of a biased coin, the mean for this distribution is μ. The standard deviation for this distribution is given by _____ .

    (8) Define Probability.

    (9) What is Seebeck effect ?

    (10) Give the time constant of RC circuit.

    (11) What is Ideal gas ?

    (12) What is mean free path ?

    (13) Give full form of LASER.

    (14) 1 Ryd = _____ J.

    (15) 1 mbar = _____ torr.

    (16) What is Hysteresis ?

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AL-112

April-2022

B.Sc., Sem.-VI

311-EC : Physics

(Visual Basic)

Time : 2 Hours]   **[Max. Marks : 50**

Instructions :   (1)   All questions in Section-I carry equal marks.

                (2)   Attempt any **three** questions in Section-I.

                (3)   Question-9 in Section-II is compulsory.

Section-I

1.	(A)	Explain uses of VB in Education.	7
	(B)	Explain First Screen of VB.	7
2.	(A)	Explain Various Controls in VB.	7
	(B)	Explain Page Setup Option in VB.	7
3.	(A)	Write a VB script to print first 15 natural numbers.	7
	(B)	Write a VB script to print all three digited odd numbers.	7
4.	(A)	Write note on Nested For Loop in VB.	7
	(B)	Explain If Then Else statement in VB.	7
5.	(A)	Write a VB script to print two digited even numbers.	7
	(B)	Write note on InputBox Command in VB.	7
6.	(A)	Describe Switch statement briefly in VB.	7
	(B)	Describe Do While statement briefly in VB.	7
7.	(A)	Explain Variables in VB.	7
	(B)	Explain Dim Statement.	7
8.	(A)	Write a VB script to calculate nPr.	7
	(B)	Write a VB script to calculate sum from 1 to 99.	7

SECTION – II

9.   Answer in short (Answer any **Eight**)   **8**
       (1)   Write short cut key for copy any text.
       (2)   Write short cut key to run any project.
       (3)   Write short cut key for redo .
       (4)   Write short cut key for paste
       (5)   Explain Project Explore in VB
       (6)   Explain Code View in VB.
       (7)   Default file name in Vb.
       (8)   Explain Design View in VB.
       (9)   Write short cut key to open new file.
       (10) Default form name in VB.
       (11) Write short cut key to cut any text in VB.
       (12) Write short cut key to print any project.
       (13) Write short cut key to save any project.
       (14) Write short cut key to open any file in VB.
       (15) Write short cut key to find any Text.
       (16) Write short cut key for undo.

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AL-112

April-2022

B.Sc., Sem.-VI

311-EB : Physics

(Instrumentation)

Time : 2 Hours]   **[Max. Marks : 50**

Instructions :   (1)   **All** questions carry equal marks.

                    (2)   Answer any **three** questions.

                    (3)   The symbols have their usual meanings.

Section-A

1.   (A)   Give principle of self-generating inductive transducer. Explain construction and working of electromagnetic flowmeter.   **7**

     (B)   What is transducer ? Describe the detail classification of transducer based on various aspects.   **7**

2.   (A)   Give the types of microphones and discuss in detail carbon microphone.   **7**

     (B)   Explain construction and working principle of thermocouples. Define response time and give the applications of thermocouples.   **7**

3.   (A)   Give the difference of digital and analog voltmeter. Give its advantage. Using block diagram explain the working of digital voltmeter.   **7**

     (B)   Give comparison of VOM and VTVM. Explain in detail direct current FET Voltmeter.   **7**

4.   (A)   What are the measurement standards of instruments ? Explain with proper diagram construction and principle of operation of basic meter.   **7**

     (B)   Which two points must be kept in mind while measuring voltage across a component in the circuit? With the proper circuit diagram explain how basic meter can be converted to D.C. Voltmeter ?   **7**

5.   (A)   With the help of neat block diagram explain the operation of function generator.   **7**

     (B)   With the help of neat block diagram explain the working of AF sine and square wave generator.   **7**

6. (A) Give the classifications of the signal generators. Describe the conventional standard signal generator using neat schematic diagram. **7**

(B) Describe with the help of block diagram the operation of the pulse generator. **7**

7. (A) Explain the construction and working of LVDT (Linear Variable Differential Transducer). How can LVDT be used to measure pressure ? **7**

(B) What do you mean by electronic voltmeter? Explain the working of direct current VTVM using neat circuit diagram. **7**

8. (A) What is thermistor ? Explain (1) Construction (2) Response time. Give the advantage and application of thermistor. **7**

(B) Write note on piezoelectric transducer and resistance temperature detectors. **7**

Section-B

Answer following questions (any **eight**) **8**

1. What is the difference between a pulse and a square wave ?
2. Define analog instrument.
3. What is an electromagnetic flow meter ?
4. Can copper be used in resistance - temperature detector ? yes/no
5. Give one name of magnetic transducer.
6. The principal disadvantage of piezoelectric transducer is ?
7. Thermistor is made of ?
8. Define gauge factor.
9. Give one name of acoustical transducer.
10. Define passive transducer.
11. Give the unit of current sensitivity of meter.
12. What do you mean by loading effect of voltmeter ?
13. Sensitivity of 50μA meter movement is ?
14. Give the type of electronic recording instruments.
15. Shunt resistance required to convert 5mA meter with 20 Ω resistance into 5A ammeter ?
16. Square wave generated by pulse generator has a duty cycle ?

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