

AF-124

April-2018

B.Sc., Sem.-VI

311 : Physics & Electronics

(Experimental and Measurement Techniques)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) Attempt **all** questions.
(2) Symbols used have their usual meaning.

1. (a) Discuss about the cycle of activities experimental science. 7

OR

What is Poisson Distribution ? Give its standard form.

- (b) To calculate the probability of obtaining 4 head in 6 (six) tosses using an unbiased coin. 7

OR

A die is thrown 8 times. Find the probability that '5' will show exactly twice.

2. (a) Discuss in detail temperature transducer. 7

OR

Write a short note on thermistor.

- (b) Explain the thermal radiation temperature measurements. 7

OR

Write short notes on thermocouples.

3. (a) What is pump speed ? Obtain the equation of pumping speed. 7

OR

Give application of vacuum system.

- (b) Explain the construction of vacuum equipment. 7

OR

Write short note on Turbomolecular pump.

4. Attempt any **two** questions : **14**
- (1) Explain “random error”
 - (2) Explain for transducer :
(i) Dead time (ii) Rise time (iii) Setting time
 - (3) Write short note on Infra-red pyrometers.
5. Answer the following short questions : **14**
- (1) What is error ?
 - (2) Define probability.
 - (3) What is sample distribution ?
 - (4) What is parent distribution ?
 - (5) Write down perfect gas equation.
 - (6) Give the value of universal gas constant (R).
 - (7) 1 mbar = _____ torr.
 - (8) Define optical density.
 - (9) Give the full form of LED.
 - (10) Write down the Stefan Boltzmann law.
 - (11) What is thermocouple ?
 - (12) What is value of boiling point of water ?
 - (13) What is detectability ?
 - (14) Define emissivity.
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April-2018

B.Sc., Sem.-VI

**311 : Physics & Electronics
(Instrumentation)**

Time : 3 Hours]

[Max. Marks : 70

Instructions : (1) All questions are compulsory and carry equal marks.
(2) The symbols have their usual meanings.

1. (a) Explain construction and working principle of strain Gauge transducer. What is Gauge factor ? Give advantage of the wire strain Gauge. 7

OR

Explain the construction and working of LVDT (Linear Variable Differential Transformer). Give the advantage and application of LVDT.

- (b) What is thermistor ? Explain (1) construction (2) Response time. Give the advantage and application of thermistor. 7

OR

What is transducer ? Describe the detail classification of transducer based on various aspects.

2. (a) Give the functions of Instruments. Compare electrical and electronic instruments and give the essentials of electronics instruments. 7

OR

Which two points must be kept in mind while measuring current flowing in a circuit ? With the proper circuit diagram explain how basic meter can be converted to D.C. Ammeter.

- (b) What are the measurement standards of instruments ? Explain with proper diagram construction and principle of operation of Basic meter. 7

OR

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.

3. (a) With the help of neat block diagram explain the working of Laboratory square and pulse wave generator. 7

OR

With the help of neat block diagram explain the working of AF sine and square wave generator.

- (b) Give classifications of the signal generators. Describe the conventional standard signal generator using neat schematic diagram. 7

OR

With the help of neat block diagram explain Random noise generator and sweep generator.

4. (a) Explain inductive and capacitive pressure transducer. 7

OR

Write note on piezoelectric transducer and Resistance temperature detectors.

- (b) Using proper diagram explain C.R.O. 7

OR

Using proper diagram explain C.R.T.

5. Answer the following questions in short : 14

- (1) Give the definition of transducer.
 - (2) Give principle disadvantage of piezoelectric transducer.
 - (3) Give any one name of acoustical transducer.
 - (4) Find the sensitivity of 0-1 mA meter.
 - (5) Define analog instrument.
 - (6) A high input-resistance voltmeter has high/low loading effect.
 - (7) An ac instrument using a half wave rectifier reads how many percentage of the D.C. value ?
 - (8) What is an electromagnetic flow meter ?
 - (9) What are the difference between AC and DC voltmeter ?
 - (10) What do you mean by a loading effect of voltmeter ?
 - (11) How is the function generator different from signal generator ?
 - (12) What do you mean by loading effect of voltmeter ?
 - (13) Heart of CRO.
 - (14) Define a gauge factor for strain gauge.
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April-2018

B.Sc., Sem.-VI

**311 : Physics & Electronics
(Modern Communication)**

Time : 3 Hours]

[Max. Marks : 70

- Instructions :**
- (1) All questions carry equal marks.
 - (2) The symbols have their usual meanings.
 - (3) Figures to the right indicate marks.

1. (a) Draw the block diagram of Basic Telephone System. Explain transmit and receive mode. 7

OR

With block diagram explain Cordless Telephone concepts and Limitations.

- (b) Discuss BORSCHT functions in the Subscriber Interface with block diagram. 7

OR

With a PBX block diagram explain Private Telephone System.

2. (a) Explain Cellular Telephone System. With block diagram explain Cellular Concepts. 7

OR

Explain Frequency Reuse and Frequency Division Multiple Access with diagrams.

- (b) Draw the block diagram of a typical AMPS unit & explain operational procedure. 7

OR

Explain 4G Advanced Cell Phone Systems in detail.

3. (a) Explain the terms: E-Mail, File Transfer, WWW, E-Commerce, Searches, VoIP & Video. 7

OR

Explain Frame Relay and Asynchronous Transfer Mode with figure.

- (b) Write a note on Storage Area Networks. 7

OR

With block diagram explain operations for accessing data by using Internet SCSI protocol.

4. (a) What is Node ? Explain WANs, MANs and LANs in detail. 7
- OR**
- Explain Star Topology and Ring Topology in detail with block diagram.
- (b) Explain Client-Server and Peer-to-Peer LANs in detail. 7
- OR**
- Explain types of WLANs with block diagram.
5. Answer the following : 14
- (1) Define : Subscriber Loop
 - (2) What is Varistor ?
 - (3) Give full form of SDMF.
 - (4) Give full form of DECT.
 - (5) What is Duplexing ?
 - (6) Give full form of MIN.
 - (7) Give full form of GPRS.
 - (8) Define Push-to-talk feature.
 - (9) What is Router ?
 - (10) Give full form of SMTP.
 - (11) Give full form of NIC.
 - (12) Define : PAN
 - (13) Give full form of STP.
 - (14) Give full form of NAT.
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311 : Physics & Electronics

(Visual Basic)

Time : 3 Hours]

[Max. Marks : 70

1. (a) Explain the Visual Basic Integrated Development Environment. 7
OR
Explain the Project Menu of VB.
(b) Explain Text Box Controls in VB. 7
OR
Describe the term Form designer.
2. (a) Write short note on Nested Loops statements in VB. 7
OR
Write short note on if-then-else statement in VB.
(b) Write a VB script to print first 25 terms of Fibonacci sequence. 7
1,1,2,3,5,8,13.....
OR
Explain the uses of following :
(1) Edit menu (2) File menu
3. (a) Write a VB script to print Automorphic number from 1 to 100. 7
OR
Write a note on Scope of Global variables in VB.
(b) Write a VB script to print sum of two digits prime numbers from 11 to 99. 7
OR
Explain List Box Controls in VB.
4. (a) Explain Object Browser in VB. 7
OR
Write a VB script to calculate nCr using For loop.
(b) Write a VB script to print sum of Odd numbers from 1 to 100. 7
OR
Write note on Runtime error handling in VB.

5. Write short answer :

14

- (1) Write syntax of print command.
 - (2) How we change caption property ?
 - (3) Define Explicit Variable in VB .
 - (4) Write syntax of Inputbox command.
 - (5) Default Project name in VB and can it be change ?
 - (6) Visual Basic indexing the array.
 - (7) Write short cut key to paste any portion within that form.
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