

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Explain Embedded systems briefly. (7M)
b) What are the differences between Microprocessor and Microcontroller. (8M)

Or

- c) Describe the pin description of 8051. (8M)
d) Write about RISC and CISC. (7M)

2. a) Draw the Architecture of 8051. (8M)
b) Explain the external memory and special function registers? (7M)

Or

- c) Explain the internal RAM & ROM Organization of 8051. (7M)
d) Explain different IO ports and CPU register in 8051. (8M)

3. a) What are Arithmetic and logic instructions in 8051. (8M)
b) Describe Assembly language programming. (7M)

Or

- c) What are different addressing modes in 8051. (8M)
d) Describe JUMP loop and CALL instructions. (7M)

4. a) Explain ADC and DAC interfacing. (8M)
b) Explain interfacing to external memory. (7M)

Or

- b) Write about 8051 timer programming. (8M)
c) Explain LCD and Keyboard interfacing. (7M)

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:

- a) What are the differences between harvard architecture and von Neumann architecture?
b) Draw the pin diagram of 8051 MC.
c) How many ports are present in 8051 MC and explain them.
d) What are the special function registers present in 8051.
e) What are logical operations in C.
f) Explain data conversion programs in C.
g) Explain stepper motor interfacing.
h) Explain DC motor interfacing.

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Describe the measurement of length using callipers with neat sketch. (15M)
Or
b) Explain about pneumatic and optical comparators. (15M)
2. a) How do you measure density using
i) Pressure head type. (8M)
ii) Vibration type (7M)
Or
b) Explain the viscosity measurement using
i) Saybolt's viscometer (8M)
ii) Rotating vane type. (7M)
3. a) With neat diagram explain velocity transducers.
i) Electromagnetic type (8M)
ii) Capacitive type tacho meter (7M)
Or
b) With neat diagram explain Acceleration measurement.
i) Potentiometric type (8M)
ii) Piezo electric type (7M)
4. a) Explain the following
i) Ultrasonic leak detectors (8M)
ii) Thermal conductive leak detectors (7M)
Or
b) What is NEMA? Explain NEMA types. (15M)

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:
- a) What is micrometer? Explain.
 - b) What is Bevel protractor? Explain.
 - c) Explain hot wire gas bridge type density method.
 - d) Explain friction tube viscometer.
 - e) Explain stroboscope for velocity measurement.
 - f) What is gyro? Explain.
 - g) What is limit switches? Explain.
 - h) Explain intrinsic safety methods.

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Explain the components of man-instrument system with a neat diagram. (10M)
b) Explain about cell composition. (5M)

Or

c) What are bioelectric potentials? Explain. (5M)

d) What are the problems encountered in measuring a timing system. (10M)

2. a) What is electrode? Explain different types of electrodes in biomedical instrumentation. (15M)

Or

b) What are active and passive transducers? Explain with application and examples. (15M)

3. a) Explain about cardiovascular system. (8M)

b) Explain the cardiac output with PQRST curve. (7M)

Or

c) Explain about parameters related to respiratory system. (8M)

d) Explain about respiratory volume. (7M)

4. a) Explain about CT scan and MRI scan. (8M)

b) Explain about ultrasonic measurement. (7M)

Or

c) Explain about pacemakers and defibrillator. (8M)

d) What are the components of biotelemetry system? Explain. (7M)

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:

a) What are resting and action potential?

b) Explain about pulse sensors.

c) Explain about systolic and diastolic pressure.

d) What are tonometers? Write its uses.

e) Explain about biomaterials.

f) What is telemetry?

g) Write the different types of electrodes in biomedical industry.

h) Explain about x-ray equipment.

ADIKAVI NANNAYA UNIVERSITY::RAJAMAHENDRAVARAM
III B.TECH – II SEMESTER
BTEIE604: DIGITAL SIGNAL PROCESSING
MODEL QUESTION PAPER

Time: 3hrs.

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)
Answer ALL Questions

1. a) Find the solution to the following linear convolution difference equation
 $y(n) - \frac{3}{2}y(n-1) + \frac{1}{2}y(n-2) = (\frac{1}{2})^n$ for $n \geq 0$
with initial conditions $y(-1) = 4$ and $y(-2) = 10$ (10M)
b) Explain causality and Stability of a linear time invariant system (5M)

Or

c) Determine the frequency response, Magnitude and Phase responses and time delay of the systems given by $y(n) = x(n) - x(n-1) + x(n-2)$ (10M)
d) Derive the relationship between impulse response and frequency response of a discrete time system (5M)
2. a) Find the DFT of the Following sequence using FFT DIF $X(n) = \{1,2,3,5,5,3,2,1\}$ (10M)
b) Find the N-Point DFT for $X(n) = a^n$ for $0 < a < 1$ (5M)

Or

c) Compute the DFT of the sequence $x(n) = \sin[\sin n\pi/4]$, where $N=8$ using DIT FFT (10M)
d) Given $x(n) = \{1,2,3,4,4,3,2,1\}$, find $x(k)$ using DIF FFT algorithm (5M)
3. a) Realize the following IIR system functions in the direct form I and II and also Parallel form

$$H(Z) = \frac{1}{(1+az^{-1})(1-bz^{-1})}$$
 (15M)

Or

b) What is a Keiser window? In what way is it superior to other window functions (5M)
c) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{1}{(s+Z)^2+(s+1)}$$
 (10M)
4. a) Draw the block diagram of multistage interpolator and explain each block (10M)
b) Derive an expression for the spectrum of output signal of an decimator (5M)

Or

c) The Desired frequency of a low pass filter is $H_d(e^{-jw}) = \begin{cases} e^{-j3w} & -\frac{3\pi}{4} \leq w \leq \frac{3\pi}{4} \\ 0 & , \text{Otherwise} \end{cases}$
Determine $H(e^{jw})$ for $M = 7$ using rectangular Window. (15M)

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:

- a) Find the power of the signal $x[n] = f(x) = \begin{cases} 3(-1)^n, & n \geq 0 \\ 0, & n < 0 \end{cases}$
- b) What is BIBO stability? What are the conditions of BIBO system?
- c) Show that the following systems are nonlinear and time invariant $y(n) - x(n)y(n-1) = x(n)$
- d) What are the basic building blocks of realization structures?
- e) What are the Advantages of DSP processors in relation to general purpose processors?
- f) State all properties of DFT?
- g) Compare direct form I and direct form II realization of IIR systems?
- h) What is the need for multirate signal processing?

ADIKAVI NANNAYA UNIVERSITY
III B.TECH – II SEMESTER
ELECTRONICS AND INSTRUMENTATION ENGINEERING
BTEIE 605 OBJECT ORIENTED PROGRAMMING THROUGH JAVA
MODEL QUESTION PAPER

Time: 3hrs.

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) why we need object oriented programming languages instead of structured programming Languages? Explain (8M)
b) How can we say that java is a complete object oriented programming language? Justify your answer. (7M)

Or

 - c) Explain the role of command line arguments in java programming (8M)
 - d) Write a java program to find the individual digits of a given number (7M)

2. a) with the help of syntax, flow chart and example program explain different conditional Statements supported by java (15M)

Or

 - b) Write and explain bitwise, logical and special operator supported by java (15M)

3. a) What is an array? Why we need them? list the different types of arrays supported by java? write a java program to multiply two (15M)

Or

 - b) Define a package? write a java program to illustrate the working of packages (8M)
 - c) How can we assign the priorities to a thread? Explain (7M)

4. a) With the help of a neat sketch, explain the exception handling mechanism. (7M)
b) Distinguish between applet and application programming. (8M)

Or

 - c) With the help of a neat sketch explain the life cycle of an applet (8M)
 - d) Write a java program to read information from the keyboard, store it in a file and display the same (7M)

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**
 - a. Give brief information about the history of java
 - b. Write a java program to find the factorial value of any given number.
 - c. Write about the precedence of arithmetic operators
 - d. Write a java program to illustrate increment and decrement operators
 - e. Describe about the thread synchronization
 - f. Describe about the naming conventions used for packages.
 - g. Write short notes on types of errors.
 - h. Write an applet program to generate circles and ellipses

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) What are the steps involved in the nMOS fabrication? Explain with neat sketches. (7M)
b) Explain the structures of n MOS enhancement mode, depletion mode and p-MOS enhancement mode transistors. (8M)
- OR**
- b) Derive the expression for the ratio between $Z_{p.u}$ and $Z_{p.d}$ if an nMOS inverter is to be driven from another nMOS inverter. (8M)
c) Draw and explain the operation of BiCMOS inverter. (7M)
2. a) What is a stick diagram? Explain about different symbols used for components in stick diagram. (8M)
b) Draw and Explain about the nMOS inverter design style. (7M)
- OR**
- c) Explain about Lambda Based Design Rules. (7M)
d) Design a stick diagram for 2 input NAND gate by using CMOS Logic. (8M)
3. a). Explain the concept of sheet resistance and apply it to compute the ON resistance (V_{DD} to GND) of an NMOS inverter having pull up to pull down ratio of 4:1, If n channel resistance is $R_{sn} = 10^4 \Omega$ per square. (7M)
b) What is inverter delay? How delay is calculated to for multiple stages? (8M)
- OR**
- b) Realize basic gates using NMOS. (8M)
c) Explain the structured design approach of parity generator. (7M)
4. a) Explain about building block architecture of FPGA. (8M)
b) Write the VHDL code to implement stack. (7M)
- OR**
- b) Write the VHDL code to implement four bit shift register. (8M)
c) Explain the design flow using FPGA. (7M)

Section-B (5 X 3 =15 Marks)

5. Answer any FIVE of the following:
- a) Compare CMOS, Bipolar, BiCMOS technologies?
b) Define the terms figure of merit (ω_0), Pass transistor, g_{ds} .
c) Explain how stick diagrams can be used for layout diagrams.
d) Design a stick diagram for inverter using CMOS.
e) Explain a four line Gray code to Binary code converter.
f) Write short notes on switch logic and its arrangements.
g) List the applications of FPGA.
h) Explain the functions of LUT based logic block.

ADIKAVI NANNAYA UNIVERSITY
III B.TECH – II SEMESTER
ELECTRONICS AND INSTRUMENTATION ENGINEERING
BTEIE 606(b) INTRODUCTION TO GEO INFORMATION SYSTEMS
MODEL QUESTION PAPER

Time: 3hrs.

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

3. a) What is Geo Information System? Explain its working Principles and advantages over Convention maps (15M)
- Or**
- b) What is the necessity of Map Projection? Explain different types of Map Projection? (15M)
2. a) What are the Spatial and Non Spatial Data? Explain Data base Structure Models (15M)
- Or**
- b) What is DBMS? Explain different components of DBMS used in GIS with Schematic Diagram (15M)
3. a) Explain Digitization and Scanning Process ? (15M)
- Or**
- b) Explain Network and Vector Data Analysis? (15M)
4. a) Explain about Server side Strategies and mixed strategies (15M)
- Or**
- b) List out the Applications of GIS? Explain how GIS implemented for solving Multi Criterion Problems (15M)

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**
- a. What is GIS? Explain its basic function
 - b. Write about GIS work flow
 - c. What are database structure models
 - d. Differentiate Attributes and Layers
 - e. What are the sources of errors in GIS
 - f. What is raster data Analysis
 - g. What are the web Applications of GIS
 - h. Explain GIS based road network Planning

ADIKAVI NANNAYA UNIVERSITY
III B.TECH – II SEMESTER
ELECTRONICS AND INSTRUMENTATION ENGINEERING
BTEIE 606(c) PC BASED INSTRUMENTATION
MODEL QUESTION PAPER

Time: 3hrs.

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Explain about Data Acquisition and control using standard cards (15M)
Or
b) Draw and Explain the Input and Output Modules of PLC (15M)
2. a) Explain about Skip and MCR Functions of PLC (15M)
Or
b) Explain about Analog PLC Operation (15M)
3. a) Write a short notes on characteristics of PID Module and PLC PID Operation (15M)
Or
b) Explain the Process of Controlling of Robot using PLC (15M)
4. a) Explain SCADA Architecture in detail (15M)
Or
b) Explain SCADA Generations (15M)

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**
- a. What is PCI bus
 - b. What are the advantages and disadvantages of PLC
 - c. What is meant by tuning of PID
 - d. Explain Communication technologies used in SCADA
 - e. Explain the networking of PLC
 - f. Differentiate between batch and Continuous Process
 - g. Explain about different types of timers used in PLC
 - h. What are the major types of registers in a PLC

ADIKAVI NANNAYA UNIVERSITY
III B.TECH – II SEMESTER
ELECTRONICS AND INSTRUMENTATION ENGINEERING
BTEIE 606(d) PRINCIPLES AND APPLICATIONS OF NANOTECHNOLOGY
MODEL QUESTION PAPER

Time: 3hrs.

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Discuss the classification of Nanomaterials in details. (15M)
Or
b) Discuss Bottom up approach of synthesis of Nanomaterials (15M)
2. a) Explain the scope of nanotechnology in electrical, instrumentation, medicine, aerospace and Material science (15M)
Or
b) Explain in detail electric, magnetic, optical properties of nano structured materials. (15M)
3. a) Write a notes on fluorescence microscopes (15M)
Or
b) Write a notes on Carbon Nano tubes? (15M)
4. a) Explain about NEMS sensors in details (15M)
Or
b) Explain about Nanoprinting of DNA,RNA and protein (15M)

Section-B (5 X 3 =15 Marks)

5. **Write a Short Note on any FIVE of the following**
- a. Define Nanotechnology
 - b. What is Top down approach?
 - c. What are polymer based nanostructures?
 - d. What is CVD
 - e. Differentiate SEM & TEM
 - f. What is ballistic deflection transistors
 - g. Write short notes on Nanotechnology in cancer treatment
 - h. What is bio sensor

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