

PAPER CODE: ELE-1B

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

I B.Sc. – II SEMESTER SUPPLEMENTARY EXAMINATION – MARCH  
2016

ELECTRONICS –I  
ELECTRONIC DEVICES AND CIRCUITS  
(For Present II & III Year Students)

Time: 3 hrs.

Max.Marks: 50

PART – A

I Answer any THREE of the following essays:  $3 \times 9 = 27$

1. Define junction diode? How it works with P-N junction diode under forward and reverse biasing.
2. Explain working of PNP transistor.
3. Explain the construction and operation of JFET and explain its characteristics.
4. Explain construction and working of SCR with the help of neat diagram.
5. Mention the construction and working of LED.

PART – B

II Answer any FIVE of the following:  $5 \times 3 = 15$

6. Explain how zener diode used as a voltage regulator.
7. What are h-parameters
8. What are FET parameters and give the relation among them.
9. Explain how UJT is used as a relaxation Oscillator.
10. Write about a photo diode.
11. The constant of a transistor is 0.9 what would be the change in the collector current corresponding to a change of  $\mu A$  in the base current in a CE arrangement.
12. What are the advantages of FET Over BJT
13. What is tunneling Phenomenon.

PART – C

III Answer any FOUR of the following:  $4 \times 2 = 8$

14. What is junction Capacitance.
15. Define  $\alpha$  and  $\beta$  parameters of a transistor.

16. A Silicon UJT has an interbase resistance of  $10\text{ k}\Omega$  its intrinsic stand off ratio is 0.6. Find the values of resistances  $R_{B1}$  and  $R_{B2}$ .
18. Write few applications of LED.
19. Write diode equation.
20. What is MOSFET.

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CH.S.D.ST. THERESA 'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

I B.Sc. – II SEMESTER END EXAMINATION – MARCH 2016

ELECTRONICS PAPER 1B

ELECTRONIC DEVICES

Time: 3 hrs.

Max.Marks: 50

PART - A

Answer any THREE of the following essays:

3x9=27

1. Explain the working of PN-Junction diode in forward bias and reverse bias. Draw its VI characteristics.
2. Explain the working of PNP transistor in CB configuration.
3. Describe the construction and working of N-channel Enhancement MOSFET. Draw its Drain and Transfer characteristics and explain.
4. Describe the construction and working of photo voltaic cell.
5. Draw full wave rectifier circuit and explain its working. Obtain expression for its efficiency.

PART – B

Answer any FIVE of the following:

5x3=15

6. Describe, How zener diode used as voltage regulator.
7. Explain the need for transistor biasing.
8. Explain thermal run away.
9. Explain the working of LDR.
10. When the reverse gate voltage of 15V is applied to a FET, the gate current is  $10^{-3} \mu\text{A}$ . Find the resistance between Gate and Source.
11. Define the Parameters of FET.
12. Explain the working of  $\pi$  section filter.
13. Explain three terminal Ic regulators.

PART – C

Answer any FOUR of the following:

4x2=8

14. What is depletion region.
15. What is early effect.
16. Define pinch-off voltage
17. Explain photo Transistor.
18. Draw the block diagram of regulated power supply.
19. Write two advantages of JFET over BJT

PAPER CODE: ELE-2A

CH.S.D.ST.THERESA'S AUTONOMOUS COLLEGE FOR WOMEN:ELURU

II B.Sc. – III SEMESTER END EXAMINATION – OCTOBER 2016

ELECTRONICS PAPER III

DIGITAL ELECTRONICS

Time: 3 hrs.

Max.Marks:50

PART - A

Answer any THREE of the following:

3x9=27M

1. Explain about the roles of is & is compliment and give one example each?
2. Explain about canonical and standard form of Boolean algebra?
3. Discuss briefly about RTL & DTL logic?
4. Define a counter? Explain briefly about Mod-16 counter.
5. Explain briefly about P and L (Programmable Array Logic)

PART –B

Answer any FIVE of the following:

5x3=15M

6. a) Convert  $(127.047)_8$  in to binary number. 2M  
b) Convert  $(12)_{10}$  in to Binary number. 1M
7. Prove the Boolean Identity equation  
 $(A+B)(A+C) = A+BC$
8. Simply the Boolean expression using K-MAP method.  
 $F(A, B, C) = \Sigma (2, 3, 5, 7)$
9. Explain the operation of Magnitude comparator.
10. Discuss about shift left register.
11. Write about Semi-conductor memories.
12. Draw the diagram of Master-Slave JK-F/F
13. Draw the logic circuit and Timing diagram for NOR gate and Explain

PART – C

Answer any FOUR of the following:

4x2=8M

14. Convert Hexa-decimal  $E5F8_{16}$  in to Decimal
15. Explain about D-Flip flop
16. Draw the circuit diagram for AND gate and give its truth table.
17. Draw the circuit diagram of Full adder.
18. Write about De-Multiplexer
19. Distinguish the difference b/w synchronous and Asynchronous Counter.

PAPER CODE: ELE-2A

CH.S.D.ST.THERESA'S AUTONOMOUS COLLEGE FOR WOMEN:ELURU

II B.Sc. – III SEMESTER END EXAMINATION – OCTOBER 2016

ELECTRONICS PAPER III

DIGITAL ELECTRONICS

Time: 3 hrs.

Max.Marks:60

PART - A

Answer any THREE of the following:

3x10=30M

1. Explain about the roles of is & is compliment and give one example each?
2. Explain about canonical and standard form of Boolean algebra?
3. Discuss briefly about RTL & DTL logic?
4. Define a counter? Explain briefly about Mod-16 counter.
5. Explain briefly about P and L (Programmable Array Logic)

PART –B

Answer any FIVE of the following:

5x4=20M

6. a) Convert  $(127.047)_8$  in to binary number. 2M  
b) Convert  $(12)_{10}$  in to Binary number. 1M
7. Prove the Boolean Identity equation  
 $(A+B)(A+C) = A+BC$
8. Simplify the Boolean expression using K-MAP method.  
 $F(A, B, C) = \Sigma (2, 3, 5, 7)$
9. Explain the operation of Magnitude comparator.
10. Discuss about shift left register.
11. Write about Semi-conductor memories.
12. Draw the diagram of Master-Slave JK-F/F
13. Draw the logic circuit and Timing diagram for NOR gate and Explain

PART – C

Answer any FIVE of the following:

5x2=10M

14. Convert Hexa-decimal  $E5F8_{16}$  in to Decimal
15. Explain about D-Flip flop
16. Draw the circuit diagram for AND gate and give its truth table.
17. Draw the circuit diagram of Full adder.
18. Write about De-Multiplexer
19. Distinguish the difference b/w synchronous and Asynchronous Counter.
20. Draw the circuit diagram for NAND gate.

PAPER CODE: ELE-2B

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

II B.Sc. – IV SEMESTER END EXAMINATION – APRIL 2016

ELECTRONICS PAPER II

(Op Amp)

Time: 3 hrs.

Max.Marks: 50

PART -A

Answer any THREE of the following questions:

3x9=27

1. Explain the single input balanced/unbalanced output amplifier with neat circuit diagrams.
2. Draw the circuit diagrams of inverting and non-inverting amplifier and explain their operations. Derive expression for their voltage gain.
3. Explain the virtual ground concept in an op-amp?
4. Draw and solving second order differential equation.
5. What is an Oscillator? Explain the principle and describe working of a phase shift Oscillator.

PART – B

Answer any FIVE of the following:

5x3=15

6. Describe op-amp as low pass filter.
7. Explain the concept of current series feed back?
8. Draw the schematic diagram of an inverting amplifier.
9. Explain the dual input unbalanced output amplifier.
10. What are the different characteristics of an ideal operational amplifier.
11. Discuss the working of Wien bridge oscillator.
12. Define the term Slew rate, input off set voltage and input bias current.
13. Give the circuit diagram of series voltage regulator using op-amp.

PART – C

Answer any FOUR of the following:

4x2=8

14. Define differentiator.
15. What do you understand by open loop gain.
16. Define differential amplifier.
17. What are the requirements for Oscillation?
18. Define CMRR
19. State three benefits of negative feedback.

SUBJECT CODE: ELE-4A

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU

III B.Sc. – V SEMESTER END EXAMINATION - OCTOBER 2017

ELECTRONICS PAPER VI

THE 8085 MICROPROCESSOR AND ITS APPLICATIONS

Time: 3 hrs.

Max.Marks: 50

PART - A

I Long Answer questions. Answer any THREE of the following:  $3 \times 9 = 27M$

1. Draw the pin diagram of 8085 Microprocessor and explain it.
2. Draw and explain the Timing diagram of Opcode fetch cycle.
3. Write an assembly language program for division of two 8-bit numbers and draw the flowchart.
4. What are different types of data transfer schemes. Describe Direct Memory Access.
5. Sketch the block diagram of 8257 DMA controller and explain its functioning.

PART – B

II Short Answer Questions. Answer any FIVE of the following:  $5 \times 3 = 15M$

6. Explain the difference between a Microprocessor and a Microcomputer.
7. Explain the flags of 8085 Microprocessor.
8. Explain the addressing modes of 8085 Microprocessor.
9. What is an assembler? Explain about assembler directives?
10. Write an ALP for smaller of two given numbers.
11. Distinguish between memory mapped I/O and I/O mapped I/O.
12. Write a short note on the concept of address space partitioning.
13. Discuss the control word of 8255.

PART – C

III Very Short Answer Questions. Answer any FOUR of the following:  
 $4 \times 2 = 8M$

14. What is a Mnemonics?
15. Explain any two logical instructions.
16. Give examples for two byte and three byte instructions.
17. What is a flowchart.
18. What is interrupt driven data transfer?
19. What is the function of the control signal INTR and INTA.

PAPER CODE: ELE-3A

CH.S.D.ST.THERESA'S AUTONOMOUS COLLEGE FOR WOMEN:ELURU

III B.Sc. – V SEMESTER END EXAMINATION – OCTOBER 2016

ELECTRONICS PAPER III

DIGITAL ELECTRONICS

Time: 3 hrs.

Max.Marks:50

PART – A

Answer any THREE of the following:

3x9=27M

1.a) Explain about the roles of 1's and 2's compliment with one example each.

OR

b) Explain about realization of logic gates using discrete components.

2. a) Explain about Canonical and standard form of Boolean algebra.

OR

b) Explain about 3 & 4 variable K-Map method with one example each.

3. a) Discuss briefly about the construction and working JK-Flip-flop.

OR

b) Explain briefly about clocked RS-F/F using NAND gate.

4. a) Explain about shift left register.

OR

b) Discuss about Mod-16 counter.

5. Explain about binary ladder of D/A converter.

PART - B

Answer any FIVE of the following:

5x3=15M

6. Convert the following Binary number  $(1100)_2$  in to Gray code. Vice versa.

7. Solve the Boolean expression.

$$(AB+C) (AB+D) = AB+CD$$

8. Explain about 2-variable map with one example.

9. Draw the diagram of Master – slave JK F/F

10. Distinguish the difference between sequential and combinational circuits.

11. Draw the diagram of Decade counter.

12. Explain about MUX and De-MUX.

13. Explain the terms pairs, Quads and Octets in K-MAP

PART-C

Answer any FOUR of the following:

4x2=8M

14. Convert  $(123)_8$  in to Hexa decimal conversion.

15. Draw the circuit diagram of EX-OR with truth table.

16. Write about 2x4 decoder.

17. Expand ASCII code and where do we use it?

18. Draw the diagram of D-F/F explain?

19. Difference b/w Asynchronous and Synchronous counter.



PAPER CODE: ELE-4A

CH.S.D.ST.THERESA'S AUTONOMOUS COLLEGE FOR WOMEN:ELURU

III B.Sc. – V SEMESTER END EXAMINATION – OCTOBER 2016

ELECTRONICS PAPER VI

8085 MICROPROCESSOR AND ITS APPLICATIONS

Time: 3 hrs.

Max.Marks:50

PART - A

Long Answer Questions. Answer any THREE of the following: 3x9=27M

1. Draw the architecture of 8085 Microprocessor and explain its working briefly.
2. With suitable examples, explain the addressing modes of 8085 microprocessor.
3. Write an assembly language program for division of two 8-bit numbers and draw the flowchart.
4. What are different types of data transfer schemes? Describe Direct memory Access.
5. Explain the operating modes of programmable peripheral interface 8255.

PART – B

Short Answer Questions. Answer any FIVE of the following: 5x3=15

6. Explain the difference between a microprocessor and a microcomputer.
7. Explain the operation of the Pins HOLD and HLDA of 8085.
8. Explain about Assembler Directives.
9. Explain various interrupts of 8085 microprocessor.
10. Write an Assembly Language program for subtraction of two 8-bit numbers.
11. Distinguish between memory mapped I/O and I/O mapped I/O.
12. How do you program 8257 to implement the DMA transfer?
13. Write an ALP FOR 1's complement of a binary number.

PART –C

Very short answer questions. Answer any FOUR of the following: 4x2=8

14. Define the terms Software and Hardware.
15. Explain the working of program counter.
16. Define state and machine cycle.
17. What is an Assembly Language program?
18. What is Interrupt driven data transfer?
19. Draw the Pin diagram of programmable interrupt controller 8259.

PAPER CODE: PHY-4B

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

III B.Sc. – VI SEMESTER SUPPLEMENTARY EXAMINATION– MARCH 2016

PHYSICS PAPER IV

ELECTRONICS AND NUCLEAR PHYSICS

(For 2009 – 12 & 2011 – 14 Batches)

Time: 3 hrs.

Max.Marks: 60

PART - A

Answer any THREE of the following:

3x10=30

1. What is a Junction diode? Explain its working under forward bias and reverse bias conditions.
2. What is Barkhausen Criterion? Explain the construction and working of a phase shift Oscillator with a neat circuit diagram.
3. Discuss the working of Logic gates with their truth tables.
4. Explain the Gamow's theory of  $\alpha$ -decay.
5. Explain the principle, construction and working of Geiger-Muller counter.

PART – B

Answer any FIVE of the following:

5x4=20

6. Write a short notes on Series inductor filter.
7. Explain the various current components in a transistor.
8. Explain the positive and negative feedback in amplifiers.
9. Write a note on the working of half adder.
10. Convert the following numbers as indicated:
  - a)  $(1101, 101)_2 = (-----)_{10}$
  - b)  $(19)_{10} = (-----)_2$
11. Mention the types of nuclear forces.
12. Explain Geiger – Nuttal Law.
13. Write in brief about Scintillation counter.

PART – C

Answer any FIVE of the following:

5x2=10

14. Define  $\alpha$  show that it is always less than unity.
15. Draw the circuit diagram of a full wave bridge type rectifier.
16. Find the decimal equivalent of 1111.
17. Draw the transistor circuit in CE configuration.
18. Write the range – energy relation.
19. Mention any two properties of the Nucleus.
20. What is the principle of solid state detector.
21. What is ripple factor?

PAPER CODE: ELE-3B

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

III B.Sc. – VI SEMESTER END EXAMINATION – MARCH 2016

ELECTRONICS PAPER IIIB

BASIC COMMUNICATION TECHNIQUES

Time: 3 hrs.

Max.Marks: 50

PART – 'A'

- I Answer any THREE of the following:  $3 \times 9 = 27M$
1. Derive the equation of F.M. wave with the circuit operation of FM FET reactance modulator.
  2. What is Time Division Multiplexing (TDM). Draw the block diagram of a TDM system and explain the function of each block.
  3. What is the Principle of Pulse Code modulation (PCM) and with neat diagrams explain the PCM transmission system.
  4. Draw the block diagram of a A.M. super hetrodyne receiver and explain the function of each block.
  5. Write the constructional details of Yagi-UDA antenna, its operation and mention various applications.

PART – 'B'

- II Answer any FIVE of the following:  $5 \times 3 = 15M$
6. What is the need of modulation?
  7. Explain the working of AM diode detector.
  8. Define Frequency deviation, carrier swing, modulation index percentage of modulation and deviation ratio of FM wave.
  9. Explain the generation and demodulation of PPM.
  10. What are the applications of QPSK.  
Calculate the minimum sampling rate of a PCM system with a maximum audio signal frequency of 4 KHz.
  11. Compare A.M. and F.M. receivers.
  12. Define antenna Impedance and polarization.
  13. Explain the terms Isotropic radiator and Half-wave dipole.

PART – 'C'

- III Answer any FOUR of the following:  $4 \times 2 = 8M$
14. If a carrier is simultaneously modulated by two sine wave with a modulation indices of wave with a modulation indices of 0.3 and 0.4. Then Calculate the total modulation index of AM wave.
  15. Draw the frequency spectrum of A.M. wave for  $f_c = 600KHz$ ,  $f_m = 4KHz$  and  $E_c = 10$  volts  $E_m = 2.5V$  with a 100% of modulation.
  16. State the sampling theorem.
  17. What is the power required to transmit a signal from A.M.  $T_x$  for 100% of modulation with a carrier power of 400 mw.
  18. Calculate the length of half-wave dipole for an operating frequency of 20GHz.
  19. Define antenna gain and directivity.

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PAPER CODE:ELE-4B

CH.S.D.ST. THERESA'S AUTONOMOUS COLLEGE FOR WOMEN: ELURU.

III B.Sc. – VI SEMESTER END EXAMINATION – MARCH 2016

ELECTRONICS PAPER IV

THE 8051 MICROCONTROLLER

Time: 3 hrs.

Max.Marks: 50

PART - A

Answer any THREE of the following:

3x9=27

1. Explain memory and register bank organization of 8051 Micro controller.
2. Explain the following instructions with an example to each.  
(i) MUL (ii) DIV (iii) RLCA
3. Explain various addressing modes of 8051 micro controller with an example to each.
4. What is the difference between timer and a counter? Explain various times modes and their programming in 8051 Microcontroller.
5. Draw and explain interfacing procedure of 16K RAM with 8051 Micro controller.

PART – B

Answer any FIVE of the following:

5x3=15

6. Write a note on assembler directive of 8051 Micro Controller.
7. Explain assembling and running procedure of Micro controller program
8. Explain logical instructions of 8051 Micro Controller.
9. Explain about unconditional JUMP instructions.
10. Write an assembly Language program to find larger of given array of 8 bit numbers.
11. Explain bit manipulation instructions of 8051 micro controller.
12. Explain different serial communication methods.
13. Draw and explain interfacing of Key board with 8051 Micro-controller.

PART – C

Answer any FOUR of the following:

4x2=8

14. Distinguish between Microprocessor and Micro Controller.
15. Draw the structure of Flag register in 8051 Microcontroller and explain significance of each bit.
16. Write an assembly Language program to swap the content of accumulator.

17. Write an assembly Language program to Toggle port 1 continuously using 55H
18. Explain the role of RS232 in 8051 serial Communication.
19. Draw interfacing diagram of ADC with 8051 Microcontroller.

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