

THIAGARAJAR POLYTECHNIC COLLEGE, SALEM

(Autonomous)

Reg. No.

October/November 2018 Examinations

DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING

Electronic Devices and Circuits

Year/Sem: II / III (ODD-II)

Max. Marks : 75

Time : 3 hr.

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 Define semiconductor and its types.
- 2 Define rectifier and its types.
- 3 What are the needs of transistor biasing?
- 4 Define feedback and its types.
- 5 Define barkhausen criterion.
- 6 Draw the symbol of UJT.
- 7 Mention the application of SCR.
- 8 What is opto electronic device?

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 Define zener break down and its application.
- 10 Explain the operation of capacitor filter.
- 11 Draw the diagram of fixed bias circuit.
- 12 How is oscillators classified?
- 13 What are the applications of FET?
- 14 Explain the characteristics of SCR with diagram.
- 15 Explain how MOSFET act as a switch.
- 16 Describe about the solar cell.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

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|----|---|--|----|
| 17 | A | Explain the working of PN junction diode with its VI characteristics. | 10 |
| | | (OR) | |
| | B | With a neat sketch explain the working of full wave rectifier. | 10 |
| 18 | A | Draw and Explain the CE configuration of a transistor with input and output impedance characteristics. | 10 |
| | | (OR) | |
| | B | Explain in detail about RC coupled amplifier. | 10 |
| 19 | A | Draw the circuit of colpitts oscillator and explain its operation. | 10 |
| | | (OR) | |
| | B | Draw and explain the operation of common source amplifier. | 10 |
| 20 | A | With the diagram explain the working principle of SCR. | 10 |
| | | (OR) | |
| | B | With the diagram explain the construction details of N channel enhancement MOSFET. | 10 |
| 21 | A | Explain the operation of an astable multivibrator using transistors. Draw the output waveforms. | 10 |
| | | (OR) | |
| | B | Explain the working of (i) positive clipper (ii) negative clamper and (iii) LED | 10 |

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Electrical Circuits and Instrumentation

Year/Sem: II / III (ODD-II)

Max. Marks : 75

Time : 3 hr.

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 State ohm's law.
- 2 Find the equivalent resistance when two resistors are connected in series.
- 3 What is the condition for resonance?
- 4 Mention the various losses in a transformer.
- 5 What are the applications of stepper motor?
- 6 Mention the types of basic forces required for the indicating instrument.
- 7 State the uses of CRO.
- 8 What is meant by transducer?

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 State Kirchhoff's voltage and current law.
- 10 Define bandwidth and Q factor.
- 11 Compare series and parallel resonance circuit.
- 12 Compare single phase and three phase supply.
- 13 What are the types of DC motor?
- 14 Draw the circuit of Wheatstone bridge.
- 15 Compare dual trace and dual beam CRO.
- 16 State the advantages of digital instruments over analog instruments.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

- | | | | |
|----|---|---|----|
| 17 | A | State and explain Thevenin's theorem with step by step procedure. | 10 |
| | | (OR) | |
| | B | State and explain Norton's theorem with step by step procedure. | 10 |
| 18 | A | Derive an expression for the impedance in RLC series circuit. | 10 |
| | | (OR) | |
| | B | What is meant by resonance? Derive an expression for resonant frequency. | 10 |
| 19 | A | Derive the EMF equation of a transformer. | 10 |
| | | (OR) | |
| | B | Explain the operation of capacitor start induction motor with a neat diagram. | 10 |
| 20 | A | Explain the operation of PMMC instrument with a neat diagram. | 10 |
| | | (OR) | |
| | B | Draw the block diagram of CRO and explain each block. | 10 |
| 21 | A | Explain the operation of LVDT with a neat diagram. | 10 |
| | | (OR) | |
| | B | Explain the principle of operation of digital frequency counter. | 10 |

PART-A**(5 x 2 = 10 Marks)****Note: (i) Answer any FIVE questions out of which question No.8 is compulsory.****(ii) All questions carry equal marks.**

- 1 State any two properties of an algorithm.
- 2 Define the term "Key word". How many key words are available in C?
- 3 What is operator? What are the operators available in C?
- 4 What is the use of continue and break statement?
- 5 State the use of any four math functions available in "C".
- 6 What are the two operators associated with pointer manipulation? State the use of each operator.
- 7 Write down the syntax for drawing a straight line.
- 8 Write a C Program to count the number of characters in a given string.

PART-B**(5 x 3 = 15 Marks)****Note: (i) Answer any FIVE questions out of which question No. 16 is compulsory.****(ii) All questions carry equal marks.**

- 9 Write down the structure of C Program.
- 10 Define the terms: Precedence and Associativity.
- 11 Explain the difference between while and do-while statements with an example.
- 12 Define the term "Array". How you will initialize an one dimensional integer array?
- 13 Define the terms : (i) Pointer (ii) Structure (iii) Union
- 14 Define the term Recursion. Give an example.
- 15 Write a program to swap the values of two variables.
- 16 How you will access the address of a variable? Write down the statements to print the address of a variable.

PART-C**(5 x 10 = 50 Marks)****Note: (i) Answer all the questions choosing either sub-division (A) or sub-division (B) of each question.****(ii) All divisions carry equal marks.**

- 17 A With a neat diagram, explain about the C program execution process. 10
[OR]
B Differentiate about the following : (i) Constant with Variables (ii) String Constant with Character Constant (iii) Overflow and Underflow of data (iv) High Level language programming with Low level language Programming (v) Declaring a variable and Defining a variable 10
- 18 A Explain the structure of "switch" Statement. What are the rules to be followed when using switch statement? Write a C Program to accept a single digit number (i.e., from 0 to 9) and print the above number in words using switch statement. (For example , if input is 4, then the output should be " FOUR") 10
[OR]
B Explain the structure of the following statements with an example: (i) else -if - ladder and (ii) nested if statement (iii) for loop. 10
- 19 A Write a C Program to read a one dimensional array of N elements and find the sum and average of the above array. 10
[OR]
B How the user defined functions are classified? Explain with example. 10
- 20 A Explain (i) Arrays of structures and (ii) Arrays within structures with example. 10
[OR]
B What is dynamic memory allocation? Explain the functions used for dynamic memory allocation. 10
- 21 A Write a C Program to find the (i) factorial of the value N using Recursion (ii) sum of integers. 10
[OR]
B Write a program to find the equivalent resistance of three resistors connected in series and parallel. 10