# 17. COMPUTER APPLICATION
## (Common for B.A./B.Com.I/B.Sc.)

|  | | Science | Comm./Arts. |
|---|---|---|---|
| Paper I | Data Base Management System | 50 | 65 |
| Paper II | Structured Programming and Computer Graphics | 50 | 65 |
|  | Practical Programming Laboratory | 50 | 70 |
|  | On-the-Job training ( 4 Weeks) | | |

The duration of these papers will be 3 hours.

### Paper I : Data Base Management System

Categorization of DBMS Systems. Network. Hierarchical and relational databases. Application of DBMS systems.

Relational data bases management system. Why to use them and where. Data Description Language. Data Manipulation Language and Data Control Language.

Introduction to DBASE, DBASE commands. Development of an application under DBASE using forms, screens and PRG files.

Security considerations in database management systems. Performance improvement in databases.

Relational databases-advanced concepts. Introduction to oracle/ ingres on a similar RDBMS on a multiuser environment.

Structured quarry language. Form fesign on a advanced RDBMS. Report generator. Querry by example and Report by form. Accessing RDBMS using programming languages.

System management. User management. Security considerations.

### Practical.

Design of a database for a business application. design of data entry forms and report layouts for this database. Creation of pro-grams to access and manipulate database.

Development of a business application in RDBMS.

### Paper-II : Structured Programming and Computer Graphics

Introduction. Need of structured programming. Methods of documentation. Methods of analyzing a program requirements. Data flow diagrams. Entity relationship. Flow charts.

Various categories of programming language (3GL, 4GL, etc.) introduction to C and COBOL. Program development in C using

Dy. Registrar (
University of Raj
JAIPUR

structured programming concepts.

Why Graphics. Various types of graphics programs. Drafting packages. DTP packages. Microsoft Windows. Various documentation cum DTP packages e.g. Wordeperfect, Microsoft Word etc.

Introduction to a pagemaker/Ventura or a similar package, preparation of documents using DTP package, Formatting Various fonts and characters set. Various type of printers used in DTP. Introduction commercial DTP system available in market. Indian language fonts. Creation of Indian language fonts.
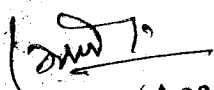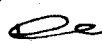
Practical

Development of a business application using C.

Preparation of a document and publishing it using a DTP System.

Creation of fonts.

Managing a Microsoft Window session. Creating groups and program items under Window. Turning Windows for a computer system.

Dy. Registrar (Acad.)
University of Rajasthan
JAIPUR

# 18. ELECTRONICS

**Scheme :**

Min. Pass Marks 36      Max. Marks : 100

| | | |
|---|---|---|
| Paper-I | 3 hrs.duration | Max. Marks : 33 |
| Paper-II | 3 hrs.duration | Max. Marks : 33 |
| Paper-III | 3 hrs.duration | Max. Marks : 34 |
| Practical Min.-18 | 5 hrs. duration | Max. Marks : 50 |

## Paper-I- Amplifier Circuits

Max. Marks-33          Time : 3 Hours

Five questions are to be set taking one from each unit (each question will have an internal choice). Student will attempt all the five questions. 40% weightage will be given to problems and numericals.
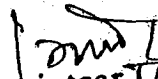
## Unit-1

Q-point, Stability of Q point, Various Transistor biasing circuits, Thermal bias stability. An amplifier with feedback gain, Stabilization. Reduction of non linear distortion by negative feed back. Effect of feedback on input and output impedances.

## Unit-2

Frequency response of linear amplifiers and noise distortion, current and voltage, series and parallel feed back. Examples of positive and negative feedback, Emitter follower, Differential amplifiers with balanced, unbalanced, single input and double input (DC and AC analysis), common mode rejection ratio.

## Unit-3

Operational amplifiers, Differential amplifier, operational amplifiers as an integrator, differentiator, inverting amplifier, adder and subtractor amplifier, voltage comparator and logarithmic amplifier, Ideal and practical operational amplifier for offsets, input offset current and voltage, power supply using 741 operational amplifier, uses of operational amplifier as oscillator.

Dy. Registrar (Acad.)
University of Rajasthan
JAIPUR

91

*University of Rajasthan*

## Unit-4

Class A, B and C operating conditions for power amplifiers, condition of maximum power transfer, special features of transistors used for power amplification. Need of impedence matching in power amplifier, shunt feed power amplifier, Efficiency, Distortion, power dissipation and power amplification, phase inverters of push-pull amplifier, Class A, AB and B push-pull amplifier using transistors.

## Unit-5

Problems in amplifier circuit elements at high frequency, Equivalent circuit, wide band amplifiers, High and low frequency compensation, pulse response and testing of an amplifier. Tuned amplifiers (single and double tuned) and their uses as I.F. amplification in radio and TV receivers (No mathematical derivations, only qualitative description)

### Paper-II- Rectifiers and Oscillators

**Max. Marks 33**       **Time : 3 Hours**

Five questions are to be set taking one from each unit (each question will have internal choice). Student will attempt all the five questions. 40% weightage will be given to problems and numericals.

## Unit-1

Half wave, Full wave and bridge rectifiers, Definition of ripple factor. Efficiency, voltage regulation, smoothing filters, L-section and $\pi$ - section filters and their cascading, Filter efficiency, Metal rectifiers, common power supply, voltage regulation and V.R. tubes.

Dy. Registrar (Acad.)
University of Rajasthan
JAIPUR

(92)

## Unit-2

Zener diode, Electronically regulated power supply, voltage multipliers, Trouble in low and high voltage power supply.

Barkhausen Criterion for maintained oscillations, grid biasing and self sustained oscillations, Tuned grid, Tuned emitters oscillator (Mainly transistor type), crystal controlled oscillators, R-C phase shift oscillators, Designing, Considerations of Harteley and Wein bridge oscillators.

## Unit-3

Bistable multivibrator, Monostable and Bistable multivibrator (Collector coupled), Improvement of multivibrator response, synchronization Triggering in relaxation oscillators.
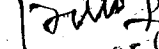
## Unit-4

Response of sinusoidal, Triangular and Rectangular waves to CR and LR circuits. Their uses as integrating and differentiating circuits.

Non linear wave shapping circuits, Clipping and clamping circuits, slicer, limiter circuits, Limiting and clipping amplifier, peaping circuits.

## Unit-5

Terminology used to describe sweep generator, Fundamental sweep voltage generator, Transistor constant current sweep generator.

Dy. Registrar (Acad.)
University of Rajasthan
JAIPUR

(93)

*University of Rajasthan*

## References

1. Electron tube circuits J. Seeley
2. Engineering Electronics- Ryder
3. Hand book of Electronics-Gupta & Kumar
4. Applied Electronics - G.K. Mithal
5. Electronics - V.P. Arora

### Paper-III- Digital Computer and Programming

**Max. Marks-34**                    **Time : 3 Hours**

Five questions are to be set taking one from each unit (each question will have an internal choice). Student will attempt all the five questions. 40% weightage will be given to problems and numericals.

### Unit-1

Variable resister network, Binary ladder, D/A Converter, A/D converter, simultaneous conversion, A/D converter-counter method, electromechanical A/D conversion, D/A and A/D conversion controls. Block diagram of a general purpose computer organization and control.

### Unit-2

Central Processing Unit, I/O units, Arithmetic-logic unit, Internal storage, Auxiliary storges like HDD, FDD, CD etc. Read only memory, Random Access Memory. Computer generations and classification.

## Unit-3

Alogrithm-Definition and properties of alogrithm, flow chart, symbols of flow chart, converting a flow chart into a high level language. Examples of simple alogrithms. Low level language viz. machine language, assembly language, high level language like BASIC.

## Unit-4

BASIC: BASIC character set, numeric constants and variables, arithmatic operators, expressions and functions, character string constrants and variables string operator, expressions and funetions. Terminal features, system commands and editing, PRINT, REM, INPUT/OUTPUT statements.

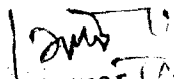Elementary BASIC programmes for numeric and string processing.

## Unit-5

Flow of control, unconditional and conditional branching, relational logic operators, two way and multi-way selection statements; nesting repetition statements.

Definite and indefinite loops, subscripted variables. Vectors and arrays, simple programme exercises. Function definition and invocation. Subroutine, modular programmes; entering and exiting subroutine. Files, random and sequential files. Simple programming exercises.

### Experiments for Practical work

**Note:**

A candidate has to perform at least sixteen experiments in all taking eight experiments from each section 'A' and 'B'.

Dy. Registrar (Acad.)
University of Rajasthan .
JAIPUR

(95)

*University of Rajasthan*

In practical examination the candidate will be required to perform two experiments: one from section 'A' and the other from section 'B' The distribution of marks will be as follows—

Time duration - 5.00 Hrs.  Expts.(two)-30 (15 for each expt) marks

Viva Voce - 10 marks

Practical record - 10 marks

Total- 50 marks

### Section-A

1. To study high pass frequency filter.
2. To study low pass frequency filter.
3. To study RC differentiating circuit.
4. To study RC integrating circuit.
5. To study bridge rectifier with L & π filter.
6. To study transistor biasing circuits.
7. Study of counters and shift registors.
8. To study bistable multivibrator (collector coupled).
9. To study Exclusive OR (XOR) gate and verify its truth table.
10. Solution of simple equations using analog computer.

### Section-B

1. To study analog to digital convertor circuit.
2. To study digital to analog convertor circuit.

Dy. Registrar (A    )
University of Rajasthan
JAIPUR

(96)

3. To study negative feed back amplifier.

4. To study triode value characteristics and calculate its parameters.

5. To study OP Amp as summing amplifier.

6. To study OP Amp as an invertor.

7. To study OP Amp as a non-invertor.

8. To study push-pull amplifier using transistor.

9. To study emitter follower and its frequency response.

❖ ❖ ❖