DEPARTMENT OF PHYSICS

COURSE CURRICULUM & MARKING SCHEME

B.Sc. PART – II & III
ELECTRONICS

SESSION : 2022-23

ESTD: 1958

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE,
DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)

NAAC Accredited Grade A$^+$, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)

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DEPARTMENT OF PHYSICS (ELECTRONICS)

GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG

Proposed syllabus for B.Sc. Electronics by the members of Board of Studies for the Session 2022-23

Under Graduate Programme in Electronics

The syllabus with the paper combinations is as under

B.Sc.II:

Paper I: COMMUNICATION ELECTRONICS	Paper II: 8085 MICROPROCESSOR AND MICROCONTROLLER
ELECTRONICS PRACTICALS LAB	

B.Sc.III:

Paper I: Industrial Electronics	Paper II: Advanced Microprocessors & Interfacing
ELECTRONICS PRACTICALS LAB	

The syllabus for B.Sc. ELECTRONICS is hereby approved for the session 2022-23.

Name and Signatures

	Departmental members
V.C. Nominee	1. H.O.D/ Dr. Jagjeet Kaur Saluja......26/7/22
Subject Expert 26/7/2022	2. Dr.R.S.Singh.........................
Subject Expert....26/7/22	3. Dr. Anita Shukla.........................
Alumni (member).........................	4. Mrs. Siteshwari Chandrakar.........
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra.........
Specialist from Industry.........................	6. Dr. Kusumanjali Deshmukh......26/7/22
	7. Dr. Swagota Besa

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Syllabus and Marking Scheme for B.Sc. Electronics Second Year

Session 2022-2023

Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I	COMMUNICATION ELECTRONICS	50	17
II	MICROPROCESSOR ANDMICROCONTROLLER	50	17
III	Lab course/ Practical	50	17
	Total	150	51

02 Theory papers   -   100

01 Practical   -   50

Total Marks   -   **150**

Name and Signatures

V.C. Nominee	**Departmental members**
	1.H.O.D/ Dr. Jagjeet Kaur Saluja.............
Subject Expert	2. Dr.R.S.Singh.............
Subject Expert...........................	3. Dr. Anita Shukla.............
Alumni (member)...........................	4. Mrs. Siteshwari Chandrakar.............
Prof. from other Dept. Of Sc. Faculty	5. Dr. Abhishek Kumar Misra.............
Specialist from Industry...........................	6. Dr. Kusumanjali Deshmukh.............
	7. Dr. Swagota Besa

Min.Marks :17   Max. Marks 50

UNIT-1

Electronic communication: Introduction to communication means and modes. Need for modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI).Electromagnetic communication spectrum, band designations and usage. Channels and base-band signals Concept of Noise, signal-to-noise (S\N) ratio.

UNIT-2

Analog Modulation: Amplitude Modulation, modulation index and frequency spectrum. Generation of AM (Emitter Modulation), Amplitude Demodulation (diode detector) Concept of Single side band generation and detection. Frequency Modulation (FM) and Phase Modulation (PM), modulation index and frequency spectrum, equivalence between FM and PM Generation of FM using VCO, FM detector(slope detector). Qualitative idea of Superheterodyne receiver.

Analog Pulse Modulation: Channel capacity, Sampling theorem, Basic Principles-PAM, PWM, PPM modulation and detection technique for PAM only, Multiplexing.

UNIT-3

Digital Pulse Modulation: Need for digital transmission, Pulse Code Modulation. Digital Carrier Modulation Techniques, Sampling.Quantization and Encoding.Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK). Phase Shift Keying (PSK and Binary Phase Shift Keying (BPSK).

Optical Communication: Introduction of Optical Fibre, Block Diagram of optical communication system.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja......26/7.........
Subject Expert ....26/7.12012....................	2. Dr.R.S.Singh......................................
Subject Expert...26/71.22.........................	3. Dr. Anita Shukla.......................................
Alumni (member)...	4. Mrs. Siteshwari Chandrakar.................
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra......................
Specialist from Industry...........................	6. Dr. Kusumanjali Deshmukh....27/22............

3 7. Dr. Swagota Besa

UNIT-4

Introduction to Communication and Navigation systems: Satellite Communication, Introduction, need, Geo-synchronous satelliteorbits. Geostationary satellite, Advantages of geostationary satellites. Satellite visibility Transponder (C-Band), Path Loss, Ground Station, simplified Block Diagram of Earth Stations, Uplink and Downlink.

UNIT -5

Mobile TelephonySystem-Basic concept of mobile communication, Frequency Band used in mobile Communication, concept of cell sectoring and cell spiting. SIM number, IMEI No. need for data encryption, architecture (Block diagram) of mobile Communication Network, idea of GSM. CDMA. TDMA and FDMA technologies, mobile communication generations 2G, 3G and 4G with their characteristics and limitations.

REFERENCE BOOKS:

1. Electronic Communications, D. Roody and J. Coolen, Pearson Education India.
2. Advanced Electronic Communication Systems- Tomasi, 6 Edition, Prentice Hall.
3. Modern Digital and Analog Commuication Systems, B.P. Lathi, 4 Edition, 2011, Oxford University Press
4. Electronic Communication systems, G. Kennedy, 3 Edition. 1999, Tata McGraw Hill.
5. Optical Communication systems-Frenzel, 3rd edition, Mc Graw Hill
6. Communication Systems, S. Haykin, 2006, Wiley India
7. Electronic Communication system, Blake. Cengage, 5 Edition.
8. Wireless communications, Andrea Goldsmith, 2015. Cambridge University Press

Course Outcomes:

After the completion of the course, Students will be able to

1. The different modulation and demodulation techniques used in analog and digital communication.
2. Explain the basics of satellite communication.
3. Understand GSM, CDMA, TDMA and FDMA concepts.
4. Study of evolution of mobile communication generations 2G, 3G and 4G with their characteristics and limitations.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja...............
Subject Expert	2. Dr.R.S.Singh..................................
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Prof. from other Dept. Of Sc. Faculty	5. Dr. Abhishek Kumar Misra...................
Specialist from Industry.....................	6. Dr. Kusumanjali Deshmukh................

7. Dr. Swagata Besa

4

Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper for UG Classes is to be divided into three Sections - A, B & C.

2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)

3. Section B shall contain short answer type questions with the limit of 150 words.

4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.

5. The scheme of marks should be as follows :

Question Type	MM 33 (Marks x No. of Questions)	MM 34 (Marks x No. of Questions)	MM 50 (Marks x No. of Questions)	MM 75 (Marks x No. of Questions)
A (Very short Answer)	8x1 = 08	1x9 = 09	1x10 = 10	1x10 = 10
B (Short Answer)	2x5 = 10	2x5 = 10	3x5 = 15	5x5 = 25
C (Long Answer)	3x5= 15	3x5=15	5x5 = 25	8x5= 40

6. The internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	1.H.O.D/ Dr. Jagjeet Kaur Saluja........26/7/22....
Subject Expert...........................	2. Dr.R.S.Singh...........................
Alumni (member)...........................	3. Dr. Anita Shukla...........................
Prof. from other Dept. Of Sc. Faculty	4. Mrs. Siteshwari Chandrakar...........................
Specialist from Industry...........................	5. Dr. Abhishek Kumar Misra...........................
	6. Dr. Kusumanjali Deshmukh...........................

7. Dr. Swagata Besra

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स्नातक कक्षाओं के लिए प्रश्न पत्र का प्रारूप तथा अंक विभाजन

1. स्नातक कक्षाओं के लिए प्रत्येक प्रश्न पत्र तीन खण्डों अ, ब, स में विभाजित होगा।

2. खण्ड अ में अतिलघूत्तरी प्रश्न (एक या दो वाक्यों में उत्तर) या वस्तुनिष्ठ प्रश्न होंगे। (बहुविकल्पीय प्रश्न नहीं होंगे। 'रिक्त स्थानों की पूर्ति करें' जैसे प्रश्न भी नहीं होंगे।)

3. खण्ड ब में लघूत्तरी प्रश्न होंगे जिनका उत्तर १५० शब्दों में देना होगा।

4. खण्ड स में दीर्घ उत्तरी/निबंधात्मक प्रश्न होंगे। विद्यार्थियों को अधिकतम ३५० शब्दों में सटीक उत्तर लिखना होगा।

5. प्रश्नपत्र का प्रारूप एवं अंक विभाजन निम्नानुसार होगा :

प्रश्न का प्रकार	पूर्णांक 33 (अंक ग प्रश्नों की संख्या)	पूर्णांक 34(अंकग प्रश्नों की संख्या)	पूर्णांक ५०(अंकग प्रश्नों की संख्या)	पूर्णांक ७५(अंकग प्रश्नों की संख्या)
अतिलघूत्तरी प्रश्न	८ग१ त्र ०८	९ग१ त्र ०९	९ग१० त्र १०	९ग१० त्र १०
लघूत्तरी प्रश्न	२ग५ त्र १०	२ग५ त्र १०	३ग५ त्र १५	५ग५ त्र २५
दीर्घ उत्तरी प्रश्न	३ग५त्र १५	३ग५त्र १५	५ग५ त्र २५	८ग५त्र ४०

6. मूल्यांकन परीक्षा आयोजित होगी। इस परीक्षा में प्रत्येक प्रश्नपत्र के प्राप्तांक का १०ः वार्षिक परीक्षा के प्रत्येक प्रश्नपत्र में प्राप्त अंको के १०ः के साथ जोड़ा जाएगा।

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert 26/7/2022	1.H.O.D/ Dr. Jagjeet Kaur Saluja... 26/7/20..
Subject Expert.... 26/7/22	2. Dr.R.S.Singh.................
Alumni (member)................	3. Dr. Anita Shukla..............
Prof. from other Dept. Of Sc. Faculty 26/7/22	4. Mrs. Siteshwari Chandrakar..........
Specialist from Industry..........	5. Dr. Abhishek Kumar Misra......
	6. Dr. Kusumanjali Deshmukh... 26/7/22

7. Dr. Swagata Bera

GOVT.V.Y.T. PG AUTO. COLLEGE, DURG
SYLLABUS FOR(2022-2023)
B.Sc. – II (Electronics)
PAPER – II MICROPROCESSOR ANDMICROCONTROLLER

Min. Marks:17   **Max. Marks: 50**

UNIT-1

Microprocessor Organization: Input/Output Devices, Data storage (Idea of RAM and ROM). Computer memory: Memory Organization and addressing, Memory Interfacing, Memory Map.

8085 Microprocessor Architecture: Main features of 8085, Block Diagram, Pin OutDiagram of 8085, Data and Address busses, Registers, ALU, Stack Memory, Program Counter.

UNIT-2

8085 Programming: Instructions, Classification, Instruction Set (Data Transfer Including Stack, Arithmetic, Logical, Branch and Control Instruction). Subroutines, Delay Loop, Timing and Control Circuitry,Timing States, Instruction Cycle,Timing Diagram of MOV and MVI, Hardware and Software Interrupts.

UNIT-3

8051 Microcontroller: Introduction and Block Diagram of 8051 microcontroller, Architecture , Overview of 8051 Family, 8051 Assembly Language Programming, Program Counter and ROM Memory Map, Data Types and Directives, Flag Bits and Program Status Word(PSW), Register, JUMP, LOOP and CALL Instructions.

UNIT 4

8051 I/O Port Programming: Introduction of I/O Port Programming, Pin Out Diagram of 8051 Microcontroller, I/O Port Pins Descriptions and their Functions, I/O Port Programming in 8051 (Using Assembly Language), I/O Programming Bit Manipulation.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja....... 26/7/22
Subject Expert 26/7/1.0.22	2. Dr.R.S.Singh.................................... 26/7/22
Subject Expert.... 26/7/22	3. Dr. Anita Shukla................................
Alumni (member)...........................	4. Mrs. Siteshwari Chandrakar............
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra..............
Specialist from Industry.....................	6. Dr. Kusumanjali Deshmukh.......... 7.22
	7.Dr. Swagota Besu

7

8051 Programming: 8051 Addressing Modes and Accessing Memory Locations using various addressing Modes, Assembly Language Instructions using each Addressing Modes, Arithmetic and Logic Instructions.

UNIT 5

8051 Programming in C: For time delay and I/O operations and Manipulation for Arithmetic and Logic Operations for ASCII and BCD Conversions.

Introduction to embedded system: Embedded System and General purpose Computer Systems, Architecture of Embedded System, Classifications , Applications and , Purpose of Embedded System.

REFERENCE BOOKS:

1. Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Gaoankar, Prentice Hall.

2. Embedded Systems: Architecture, Programming & Design, Raj Kamal, 2008, TataMcGraw Hill.

3. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi,J.G. Mazidi, and R.D. McKinlay. 2 Ed., 2007, Pearson Education India.

4. Microprocessor and Microcontrolers, N. Senthal Kumar, 2010, Oxtord University Press.

5. 8051 microcontrollers, Satish Shah, 2010, Oxtord University Press.

6. Embedded Systems: Design & applications, S.E Barrett, 2008, Pearson Education India

7. Introducuon to embedded system, k. V. Shibu, I edition, 2009, McGraw Hill.

Course Outcomes:

After the completion of the course, Students will be able to

1. Develop an assembly language program in 8085 microprocessor using the internal organization for the given specification.

2. Describe the architecture and functional block of 8051 microcontroller.

3. Develop an embedded C and assembly language program in 8051 microcontroller using the internal functional blocks for the given specification.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja................. 26/2/22
Subject Expert ....26/7/2022......	2. Dr.R.S.Singh.................................
Subject Expert.....26/7/22............................	3. Dr. Anita Shukla............................
Alumni (member)...	4. Mrs. Siteshwari Chandrakar.................
Prof. from other Dept. Of Sc. Faculty 26/12/22	5. Dr. Abhishek Kumar Misra...................
Specialist from Industry............................	6. Dr. Kusumanjali Deshmukh.................
	7. Dr - Swagoda Besa

Question Paper Format and Distribution of Marks for Under Graduate Examination

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6. The internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

Name and Signatures

V.C. Nominee ....

Subject Expert ....

Subject Expert...

Alumni (member)..

Prof. from other Dept. Of Sc. Faculty ....

Specialist from Industry....................................

Departmental members

1. H.O.D/ Dr. Jagjeet Kaur Saluja..........26/7/22

2. Dr.R.S.Singh................................

3. Dr. Anita Shukla............................

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6. Dr. Kusumanjali Deshmukh...................

स्नातक कक्षाओं के लिए प्रश्न पत्र का प्रारूप तथा अंक विभाजन

7. स्नातक कक्षाओं के लिए प्रत्येक प्रश्न पत्र तीन खण्डों अ, ब, स में विभाजित होगा।

8. खण्ड अ में अतिलघूत्तरी प्रश्न (एक या दो वाक्यों में उत्तर) या वस्तुनिष्ठ प्रश्न होंगे। (बहुविकल्पीय प्रश्न नहीं होंगे। 'रिक्त स्थानों की पूर्ति करें' जैसे प्रश्न भी नहीं होंगे।)

9. खण्ड ब में लघूत्तरी प्रश्न होंगे जिनका उत्तर १५० शब्दों में देना होगा।

10. खण्ड स में दीर्घ उत्तरी/निबंधात्मक प्रश्न होंगे। विद्यार्थियों को अधिकतम ३५० शब्दों में सटीक उत्तर लिखना होगा।

11. प्रश्नपत्र का प्रारूप एवं अंक विभाजन निम्नानुसार होगा :

प्रश्न का प्रकार	पूर्णांक 33 (अंक ग प्रश्नों की संख्या)	पूर्णांक 34(अंकग प्रश्नों की संख्या)	पूर्णांक ५०(अंकग प्रश्नों की संख्या)	पूर्णांक ७५(अंकग प्रश्नों की संख्या)
अतिलघूत्तरी प्रश्न	८ग१ त्र ०८	१ग१ त्र ०१	१ग१० त्र १०	१ग१० त्र १०
लघूत्तरी प्रश्न	२ग५ त्र १०	२ग५ त्र १०	३ग५ त्र १५	५ग५ त्र २५
दीर्घ उत्तरी प्रश्न	३ग५त्र १५	३ग५त्र १५	५ग५ त्र २५	८ग५त्र ४०

12. मूल्यांकन परीक्षा आयोजित होगी। इस परीक्षा में प्रत्येक प्रश्नपत्र के प्राप्तांक का ९०ः वार्षिक परीक्षा के प्रत्येक प्रश्नपत्र में प्राप्त अंको के १०ः के साथ जोड़ा जाएगा।

Name and Signatures

V.C. Nominee	Departmental members
Subject Expert 26/7/22	1.H.O.D/ Dr. Jagjeet Kaur Saluja....26/3/22
Subject Expert.... 26/7/22	2. Dr.R.S.Singh.........................
Alumni (member).........................	3. Dr. Anita Shukla.........................
Prof. from other Dept. Of Sc. Faculty 26/7/22	4. Mrs. Siteshwari Chandrakar.........................
Specialist from Industry.........................	5. Dr. Abhishek Kumar Misra.........................
	6. Dr. Kusumanjali Deshmukh.........................
	7. Dr. Swagata Besa

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GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)

SYLLABUS FOR 2022-2023

PRACTICAL

B.Sc. –II Electronics

Min.Marks : 17   **Max. Marks 50**

A student is required to do at least 13 experiment in an academic year. The scheme of practical examination will be as follows-

    (i) One experiment   3 HOURS
    (ii) Marks

Experiment	30
Viva-voce	10
Sessional	<u>10</u>
Total	<u>50</u>

List of Experiments:

1. Verification of Truth table of basic logic gates.

2. Verification of De Morgan's theorem.

3. Study of half adders and full adders using IC's

4. Study of RS flip-flops.

5. Study of D and T type flip fop.

6. Study of JK master slave flips flop.

7. Study of Simple power supply.

8. Study of regulated power supply using zener diode.

9. Study of IC regulated power supply.

10. Study of LC oscillator.

Name and Signatures

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Subject Expert..	2. Dr.R.S.Singh..............................
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	6. Dr. Kusumanjali Deshmukh..................

11 7. Dr. Swagota Bera

11. Study of Transistor phase shift oscillates.

12. Frequency and phase measurement with CRO.

13. Study of frequency by Wien Bridge.

14. Study of IC OP-AMP application, viz. adder, subtractor.

15. Study of IC OP-AMP application, viz. integrator, differentiator.

16. Study of OP Amp: Inverting and non-Inverting amplifiers of different gains.

17. Study of stable multivibrator using 555 timer.

18. Study of bistable multivibrator using 555 timer.

19. Study of 8083 based function generator.

20. Study of A/D Converter

21. Study of D/A Converter.

Note:

1. Out of above mentioned twenty one experiments at least thirteen experiments should be done, use of bread board and soldering is expected for at least four experiment.

2. Other experiments of equal standard may also be set.

Name and Signatures

	Departmental members
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Subject Expert................................	3. Dr. Anita Shukla................................
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Prof. from other Dept. Of Sc. Faculty	5. Dr. Abhishek Kumar Misra................
Specialist from Industry..........................	6. Dr. Kusumanjali Deshmukh................
	7. Dr. Swagota Beza.

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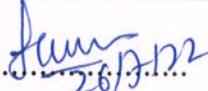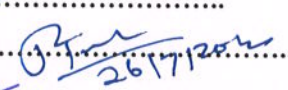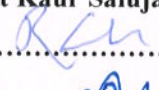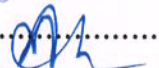
Syllabus and Marking Scheme for B.Sc. THIRD YEAR
Session 2022-23

Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I	Industrial Electronics	50	17
II	Advanced Microprocessors & Interfacing	50	17
III	Lab course/ Practical	50	17
	Total	150	51

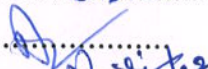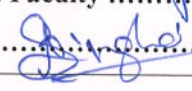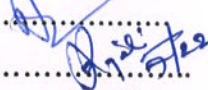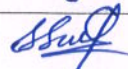02 Theory papers   -   100

01 Practical   -   50

Total Marks   -   150

Name and Signatures

V.C. Nominee	Departmental members
Subject Expert	1.H.O.D/ Dr. Jagjeet Kaur Saluja............
Subject Expert...	2. Dr.R.S.Singh...
Alumni (member)...	3. Dr. Anita Shukla...
Prof. from other Dept. Of Sc. Faculty	4. Mrs. Siteshwari Chandrakar...........................
Specialist from Industry...........................	5. Dr. Abhishek Kumar Misra...........................
	6. Dr. Kusumanjali Deshmukh...........................
	7. Dr. Swagota Besa

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Min. Marks :17   **Max.Marks-50**

UNIT-1

Thyristors: Principles and operations of SCR, Voltage amplifier gate characteristics of SCR, Characteristics of two transistor models, Thyristor construction, Rectifier circuit using SCR, GTO, Operation and characteristics of DIAC, TRIAC, Silicon Controlled Switch, Silicon Unilateral Switch, Silicon Bilateral Switch, and Light activated SCR. Turn ON/OFF Mechanism: Basics of turn on and turn off methods.

UNIT-2

Applications of SCR: Multiple connections of SCR, Series operation, Triggering of series connected SCR, Parallel operation, Triggering of parallel connected SCR, SCR di/dt calculation, Snubber circuit, dv/dt calculation across SCR, Types of converters, Full wave controlled rectifier with resistive load, FWCR with inductive load, FWCR with freewheeling diode .

UNIT-3

Inverters: Types of inverters, Single phase bridge inverter, Mc Murray impulse communication inverter, Single phase half bridge voltage source inverter, Single phase full bridge voltage inverter, Step down choppers, Step up choppers, Chopper classification.

Other Applications: Induction heating, Resistance welding, Over voltage protection, Zero voltage switch, SMPS,UPS, DC circuit breaker, Battery charger, AC static switch, DC static switch, Time delay, Fan regulator using TRIAC .

UNIT-4

PCB Fundamentals: PCB Advantages, components of PCB, Electronic components, IC's, Surface Mount Devices (SMD). Classification of PCB - single, double, multilayer and flexible boards, Manufacturing of PCB, PCB standards.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	1.H.O.D/ Dr. Jagjeet Kaur Saluja...............
Subject Expert...............................	2. Dr.R.S.Singh...............................
Alumni (member)...............................	3. Dr. Anita Shukla...............................
Prof. from other Dept. Of Sc. Faculty	4. Mrs. Siteshwari Chandrakar...............
Specialist from Industry...............................	5. Dr. Abhishek Kumar Misra...............
	6. Dr. Kusumanjali Deshmukh...............
	7. Dr. Swagota Besra

Schematic & Layout Design: Schematic diagram, General, Mechanical and Electrical design considerations, Placing and Mounting of c omponents, Conductor spacing, routing guidelines, heat sinks and package density, Net list, creating components for library, Tracks, Pads, Vias, power plane, grounding, Lead cutting and Soldering Techniques, Testing and quality controls.PCB Technology Trends, Environmental concerns in PCB industry.

UNIT-5

Analog/Digital Multimeter: Analog multimeter, AC and DC measurment, conversion of analog output to digital form (A/D), Dual ramp A/D converter, digital measuring system, multimeter block diagram, voltage, current and resistance measurments. Frequency counter: Elements of electronic counter, decade counting assembly temperature compensated prystal oscillator, universal counter, measurement modes; frequency measurement, period measurement, time interval measurement, measurement errors: gating errors, time base error, trigger level error.

REFERENCE BOOKS:

1. Ramamourthy " Thyristor and their applications" East-West Publishers, 2nd Edition

2. Shamir K Datta " Power Electronics and Controllers" PHI, 3rd Edition

3. Power Electronics: Devices, Circuits and Industrial Applications.

4. V.R. Moorthy Oxford University Press; First Edition edition.

5. Printed circuit Board – Design & Technology by Walter C. Bosshart, Tata McGraw Hill.

6. Printed Circuit Board –Design, Fabrication, Assembly & Testing by R.S.Khandpur, TATA McGraw Hill Publisher

7. Electronics Instrumentation H.S.Kalsi McGraw Hill Education; 3 edition (1 July 2017)

8. Modern Electronic Instrumentation and Measurement Techniques Albert Helfrick and William D Cooper Prentice Hall India Learning Private Limited

9. Electronic Instrumentation and Measurements David A. Bell Oxford University Press India; Third edition (12 April 2013).

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja................
Subject Expert	2. Dr.R.S.Singh................................
Subject Expert................................	3. Dr. Anita Shukla................................
Alumni (member)................................	4. Mrs. Siteshwari Chandrakar................
Prof. from other Dept. Of Sc. Faculty	5. Dr. Abhishek Kumar Misra................
Specialist from Industry........................	6. Dr. Kusumanjali Deshmukh................
	7. Dr. Swagota Beza

Course Outcomes:

After the completion of the course, Students will be able to

1. Student will be able to understand basic knowledge of Thyristor family.

2. Student will be able to understand phase control operation of different power electronic devices.

3. Student will be able to understand the controlled rectifications.

4. Student will be able to understand mechanism of inverters and choppers.

5. Student will be able to understand various types of PCBs and schematic design.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja........26/7.........
Subject Expert	2. Dr.R.S.Singh.......................................
Subject Expert.....................26/7/22	3. Dr. Anita Shukla...................................
Alumni (member)...................................	4. Mrs. Siteshwari Chandrakar.......................
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra........................
Specialist from Industry...........................	6. Dr. Kusumanjali Deshmukh.......................

7-Dr. Swagata Besra

16

Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper for UG Classes is to be divided into three Sections - A, B & C.

2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)

3. Section B shall contain short answer type questions with the limit of 150 words.

4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.

5. The scheme of marks should be as follows :

Question Type	MM 33 (Marks x No. of Questions)	MM 34 (Marks x No. of Questions)	MM 50 (Marks x No. of Questions)	MM 75 (Marks x No. of Questions)
A (Very short Answer)	8x1 = 08	1x9 = 09	1x10 = 10	1x10 = 10
B (Short Answer)	2x5 = 10	2x5 = 10	3x5 = 15	5x5 = 25
C (Long Answer)	3x5= 15	3x5= 15	5x5 = 25	8x5= 40

6. The internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

Name and Signatures

V.C. Nominee ....

Subject Expert 26/7/20.22

Subject Expert... 26/7/22 ....

Alumni (member)...

Prof. from other Dept. Of Sc. Faculty 26/7/22

Specialist from Industry.............................

Departmental members

1. H.O.D/ Dr. Jagjeet Kaur Saluja.................

2. Dr.R.S.Singh.................................

3. Dr. Anita Shukla.............................

4. Mrs. Siteshwari Chandrakar...................

5. Dr. Abhishek Kumar Misra....................

6. Dr. Kusumanjali Deshmukh....................

7. Dr. Swagata Bera

स्नातक कक्षाओं के लिए प्रश्न पत्र का प्रारूप तथा अंक विभाजन

13. स्नातक कक्षाओं के लिए प्रत्येक प्रश्न पत्र तीन खण्डों अ, ब, स में विभाजित होगा।

14. खण्ड अ में अतिलघूत्तरी प्रश्न (एक या दो वाक्यों में उत्तर) या वस्तुनिष्ठ प्रश्न होंगे। (बहुविकल्पीय प्रश्न नहीं होंगे। 'रिक्त स्थानों की पूर्ति करें' जैसे प्रश्न भी नहीं होंगे।)

15. खण्ड ब में लघूत्तरी प्रश्न होंगे जिनका उत्तर १५० शब्दों में देना होगा।

16. खण्ड स में दीर्घ उत्तरी/निबंधात्मक प्रश्न होंगे। विद्यार्थियों को अधिकतम ३५० शब्दों में सटीक उत्तर लिखना होगा।

17. प्रश्नपत्र का प्रारूप एवं अंक विभाजन निम्नानुसार होगा :

प्रश्न का प्रकार	पूर्णांक 33 (अंक ग प्रश्नों की संख्या)	पूर्णांक 34(अंकग प्रश्नों की संख्या)	पूर्णांक ५०(अंकग प्रश्नों की संख्या)	पूर्णांक ७५(अंकग प्रश्नों की संख्या)
अतिलघूत्तरी प्रश्न	८ग१ त ०८	९ग१ त ०९	९ग१० त १०	९ग१० त १०
लघूत्तरी प्रश्न	२ग५ त १०	२ग५ त १०	३ग५ त १५	५ग५ त २५
दीर्घ उत्तरी प्रश्न	३ग५त १५	३ग५त १५	५ग५ त २५	८ग५त ४०

18. मूल्यांकन परीक्षा आयोजित होगी। इस परीक्षा में प्रत्येक प्रश्नपत्र के प्राप्तांक का ९०ः वार्षिक परीक्षा के प्रत्येक प्रश्नपत्र में प्राप्त अंको के ९०ः के साथ जोड़ा जाएगा।

Name and Signatures

V.C. Nominee	Departmental members
Subject Expert	1.H.O.D/ Dr. Jagjeet Kaur Saluja........ 26/7/22
Subject Expert.......... 26/7/22	2. Dr.R.S.Singh......................
Alumni (member).....................................	3. Dr. Anita Shukla........................
Prof. from other Dept. Of Sc. Faculty 26/7/22	4. Mrs. Siteshwari Chandrakar............
Specialist from Industry.......................	5. Dr. Abhishek Kumar Misra........
	6. Dr. Kusumanjali Deshmukh........

7. Dr. Swagota Besa

GOVT.V.Y.P.G.T.AUTO.COLLEGE, DURG (C.G)
SYLLABUS FOR: (2022-2023)
B.Sc-III (Electronics)
PAPER-II Advanced Microprocessors & Interfacing

Min.Marks :17   **Max.Marks-50**

UNIT I

Architecture of 8086: Differences Between 8085 and 8086, Overview of 8086 Microprocessor Family, Architecture and Pin Configuration of 8086, System Bus Structure: Basic 8086/8088 system bus architecture, Minimum Mode Configuration, Maximum Mode configuration; System Bus Timings, Bus Standards. 8087 Numeric Data Processor& 8089 I/O Processor: Architecture only (no Programming)

UNIT II

Instruction Set and Assembly Language Programming of 8086: Instruction Format; Addressing modes, Data Transfer Instruction, Arithmetic Instructions, Branching and Looping Instructions, NOP and Halt, Flag Manipulation Instructions, Logical, Shift and Rotate Instruction. Byte and String Manipulation: String Instructions; REP Prefix, Table Translation, Number Format conversions. Assembler Directives and Operators, Translation of Assembler Instructions. Programming of Microprocessor8086, Interrupts of Microprocessor 8086.

UNIT III

Interfacing – I (With 8086 only): Memory interfacing, Interrupt Priority Management System based on 8259A, Interfacing of 8254 (Programmable Interval Timer), Interfacing of 8257and 8251 with 8086.

UNIT IV

Interfacing – II (with 8086 only): Architecture and Interfacing of 8-bit ADC (0808/0809) and DAC (0800) with 8086 using PPI 8255. Interfacing of Stepper motor, 8279 (Keyboard & Display Driver) and LCD interface with 8086.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja................26.7.22
Subject Expert 26.7.2022	2. Dr.R.S.Singh...........................
Subject Expert....26.7.22.................	3. Dr. Anita Shukla...........................
Alumni (member).........................	4. Mrs. Siteshwari Chandrakar...........
Prof. from other Dept. Of Sc. Faculty 26.7.22	5. Dr. Abhishek Kumar Misra.............
Specialist from Industry.................	6. Dr. Kusumanjali Deshmukh.............

7.Dr. Swagata Bera

UNIT V

Architecture of 32 Bit Microprocessors: Intel 80386Architecture, Special 80386 Registers, Memory Management, Interrupts and Exceptions, Management of T asks–Real, Protected and Virtual 8086 mode, Architectural Differences Between 80486 and 80386 Microprocessor.

REFERENCE BOOKS:

1. Microprocessor – By B. Ram
2. Microprocessor - By Vibhute
3. The Internal Microprocessor Architecture (8086- up to Pentium IV-By Barry R. Bray.
4. Advanced Microprocessors and Peripherals- by K.M. Bhurchandi and A. K. Ray

Course Outcomes:

1. Gain knowledge about architecture of advance microprocessors.
2. Demonstrate the ability to program the 8086 microprocessor.
3. Interface the 8086 microprocessor to the outside world.
4. Understand multiprocessor systems and learn about co-processors.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja. 26/7/22
Subject Expert 26/7/2022	2. Dr.R.S.Singh......................................
Subject Expert...... 26/7/22	3. Dr. Anita Shukla.................................
Alumni (member).......................................	4. Mrs. Siteshwari Chandrakar..................
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra..................
Specialist from Industry............................	6. Dr. Kusumanjali Deshmukh.................

7 .Dr. Swagota Berra

Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper for UG Classes is to be divided into three Sections - A, B & C.

2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)

3. Section B shall contain short answer type questions with the limit of 150 words.

4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.

5. The scheme of marks should be as follows :

Question Type	MM 33 (Marks x No. of Questions)	MM 34 (Marks x No. of Questions)	MM 50 (Marks x No. of Questions)	MM 75 (Marks x No. of Questions)
A (Very short Answer)	8x1 = 08	1x9 = 09	1x10 = 10	1x10 = 10
B (Short Answer)	2x5 = 10	2x5 = 10	3x5 = 15	5x5 = 25
C (Long Answer)	3x5= 15	3x5= 15	5x5 = 25	8x5= 40

6. The internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja.............26/2/22
Subject Expert ....26/7/2022.....	2. Dr.R.S.Singh...................................
Subject Expert...26/7/22........................	3. Dr. Anita Shukla...............................
Alumni (member).................................	4. Mrs. Siteshwari Chandrakar...................
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra.....................
Specialist from Industry...........................	6. Dr. Kusumanjali Deshmukh.......7/22

7. Dr. Swagata Bera

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स्नातक कक्षाओं के लिए प्रश्न पत्र का प्रारूप तथा अंक विभाजन

19. स्नातक कक्षाओं के लिए प्रत्येक प्रश्न पत्र तीन खण्डों अ, ब, स में विभाजित होगा।

20. खण्ड अ में अतिलघूत्तरी प्रश्न (एक या दो वाक्यों में उत्तर) या वस्तुनिष्ठ प्रश्न होंगे। (बहुविकल्पीय प्रश्न नहीं होंगे। 'रिक्त स्थानों की पूर्ति करों' जैसे प्रश्न भी नहीं होंगे।)

21. खण्ड ब में लघूत्तरी प्रश्न होंगे जिनका उत्तर १५० शब्दों में देना होगा।

22. खण्ड स में दीर्घ उत्तरी/निबंधात्मक प्रश्न होंगे। विद्यार्थियों को अधिकतम ३५० शब्दों में सटीक उत्तर लिखना होगा।

23. प्रश्नपत्र का प्रारूप एवं अंक विभाजन निम्नानुसार होगा :

प्रश्न का प्रकार	पूर्णांक 33 (अंक ग प्रश्नों की संख्या)	पूर्णांक 34(अंकग प्रश्नों की संख्या)	पूर्णांक ५०(अंकग प्रश्नों की संख्या)	पूर्णांक ७५(अंकग प्रश्नों की संख्या)
अतिलघूत्तरी प्रश्न	८ग१ त ०८	९ग१ त ०९	९ग१० त १०	९ग१० त १०
लघूत्तरी प्रश्न	२ग५ त १०	२ग५ त १०	३ग५ त १५	५ग५ त २५
दीर्घ उत्तरी प्रश्न	३ग५त १५	३ग५त १५	५ग५ त २५	८ग५त ४०

24. मूल्यांकन परीक्षा आयोजित होगी। इस परीक्षा में प्रत्येक प्रश्नपत्र के प्राप्तांक का १०ः वार्षिक परीक्षा के प्रत्येक प्रश्नपत्र में प्राप्त अंको के ९०ः के साथ जोड़ा जाएगा।

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja .....26/9/22.....
Subject Expert 26/7/2022	2. Dr.R.S.Singh...............................
Subject Expert......26/7/22........	3. Dr. Anita Shukla........................
Alumni (member)............................	4. Mrs. Siteshwari Chandrakar........
Prof. from other Dept. Of Sc. Faculty ......26/7/22....	5. Dr. Abhishek Kumar Misra......
Specialist from Industry...................	6. Dr. Kusumanjali Deshmukh......26/7..
	7. Dr. Swagata Beza

22

GOVT.V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)

SYLLABUS FOR (2022-2023)

Practical & Project

B.Sc. - III Electronics

Min.Marks :17   **Max. Marks 50**

A student is required to do at least 12 experiments and project work in an academic year. The scheme of practical examination will be as follows-

(i) One experiment and working and demonstration of project works-

Marks	
Experiment	20
Viva-voce	5
Sessional	10
Project work&viva	15(10+5)
Total	**50**

List of Experiments:

1. Study of SCR characteristics.

2. Study of Diac and Triac characteristics.

3. Study of UJT characteristics.

4. Study of UJT as a relaxation oscillator.

5. Study of AM generation and detection.

6. Radio receiver measurements.

7. Study of low pass, band pass and high pass filters.

8. Study of FM using voltage controlled oscillator.

9. Study of Choppers.

10. Study of pulse code modulation.

11. Study of electronic regulation of D.C&A.C motors.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja.......
Subject Expert	2. Dr.R.S.Singh..........
Subject Expert..........................	3. Dr. Anita Shukla.........
Alumni (member)...........................	4. Mrs. Siteshwari Chandrakar.......
Prof. from other Dept. Of Sc. Faculty	5. Dr. Abhishek Kumar Misra......
Specialist from Industry................	6. Dr. Kusumanjali Deshmukh.......

7- Dr. Sw agota Besa

12. Study of the decade counter as MOD-3and MOD-4 and verify the truth table.

13. Study of the decade counter as MOD-8 and MOD-9 and verify the truth table.

14. Study of seven segment Display.

15. Study of Binary Counter.

16. Addition of two binary numbers with microprocessor (8085).

17. Subtraction of two binary numbers with microprocessor (8085).

18. Multiplication of two binary numbers with microprocessor (8085).

19. Division of two binary numbers with microprocessor (8085).

20. Data transfer from memory to register and vice versa using 8085 microprocessor.

Note:

1. Out of above mentioned twenty experiments at least twelve experiments should be done, use of bread board and soldering is expected for at least four experiments.

2. Other experiments of equal standard may also be set.

*In case any change or modifications prescribed by Central Board of Studies or Higher Education Department, Govt. of Chhattisgarh with respect to content or distribution of marks for Undergraduate syllabus , it will be implemented accordingly.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja.............26/12/22
Subject Expert ....26/7/2022.........	2. Dr.R.S.Singh............................
Subject Expert...........26/7/2.2...................	3. Dr. Anita Shukla........................
Alumni (member)..................................	4. Mrs. Siteshwari Chandrakar..............
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra..............
Specialist from Industry.................	6. Dr. Kusumanjali Deshmukh.........26/12/22

7. Dr. Swagota Bera

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Programme Outcomes (PO) of the B.Sc. Part-I, Part-II and Part-III Electronics

PO creates an educational environment to train the students to meet the challenges of modern Electronics & Communication industry through state of the art technical knowledge and present challenges. Following are the expected programme outcomes.

- Analyze, plan and apply the acquired knowledge in basic sciences and mathematics in solving Electronics and Communication Engineering problems with technical, economic, environmental and social contexts.
- Design, build and test analog & digital electronic systems for given specifications.
- Architect modern communication systems to meet stated requirements.
- Work in a team using technical knowhow, common tools and environments to achieve project objectives.
- Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.
- In addition the course caters to the requirements of providing complete exposure to NET/SET syllabus for Electronics farmed by the U.G.C.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	1.H.O.D/ Dr. Jagjeet Kaur Saluja............26/9/22......
Subject Expert.....26/7/22..........................	2. Dr.R.S.Singh..........................
Alumni (member)..........................	3. Dr. Anita Shukla..........................
Prof. from other Dept. Of Sc. Faculty 26/7/22	4. Mrs. Siteshwari Chandrakar..........................
Specialist from Industry..........................	5. Dr. Abhishek Kumar Misra..........................
	6. Dr. Kusumanjali Deshmukh.....26/9/22

7. Dr. Swagata Besra

Programme Specific Outcomes (PSO)

PSO enables the students

- To understand basic facts and concepts in Electronics while retaining the exciting aspects of Electronics so as to develop interest in the study of Electronics as a discipline.
- To develop the ability to apply the electronic circuits.
- To get benefited with the present state of art of the electronic based circuit and serve society with its applications.
- To develop the capability to work hands-on on the electronic circuits that is becoming vital for the mankind for the purpose of work regulation
- To be familiarized with the emerging areas of Electronics and their applications in various spheres of Electronic sciences.
- To appraise the capability of students to make its relevance in future studies.
- To develop skills in the building and studying the circuits along with the software implementation.
- To be exposed to get compete with present scenario of the industrial automation.

Name and Signatures

	Departmental members
V.C. Nominee	1.H.O.D/ Dr. Jagjeet Kaur Saluja........26/7/2022
Subject Expert 26/7/22	2. Dr.R.S.Singh.........................
Subject Expert......26/7/22..........	3. Dr. Anita Shukla.....................
Alumni (member)............................	4. Mrs. Siteshwari Chandrakar.............
Prof. from other Dept. Of Sc. Faculty 26/7/22	5. Dr. Abhishek Kumar Misra.............
Specialist from Industry..................	6. Dr. Kusumanjali Deshmukh......26/7/22

7. Dr. Swagata Besa