Table-8: B.Sc., SEMESTER – II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation course - 3* Environmental Sci	50	0	50	2	2
4	*Foundation course – 4A* ICT – 1 (Information & Communication Technol)	50	0	50	2	2
5	DSC* 1 B (Group Sub- 1)	100	25	75	4	3
6	DSC 1 B Lab Practical	50	0	50	2	2
7	DSC 2 B (Group Sub- 2)	100	25	75	4	3
8	DSC 2 B Lab Practical	50	0	50	2	2
9	DSC 3 B (Group Sub- 3)	100	25	75	4	3
10	DSC 3 B Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc. Table-9: B.Sc., SEMESTER – III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course - 5* Entrepreneurship	50	0	50	2	2
4	*Foundation course -2B* Communication & Soft Skills -2	50	0	50	2	2
5	DSC 1 C (Group Sub- 1)	100	25	75	4	3
6	DSC 1 C Practical	50	0	50	2	2
7	DSC 2 C (Group Sub- 2)	100	25	75	4	3
8	DSC 2 C Practical	50	0	50	2	2
9	DSC 3 C (Group Sub- 3)	100	25	75	4	3
10	DSC 3 C Practical	50	0	50	2	2
	Total	750	-	-	30	25

Table-10: B.Sc., SEMESTER – IV

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits
1	*Foundation Course – 2C** Communication & Soft Skills -3	50	0	50	2	2
2	*Foundation Course – 6** Analytical Skills	50	0	50	2	2
3	*Foundation Course - 7* ** CE (Citizenship Education)	50	0	50	2	2
4	*Foundation course – 4B* ICT – 2 (Information & Communication Technol)	50	0	50	2	2
5	DSC 1 D (Group Sub- 1)	100	25	75	4	3
6	DSC 1 D Lab Practical	50	0	50	2	2
7	DSC 2 D (Group Sub- 2)	100	25	75	4	3
8	DSC 2 D Lab Practical	50	0	50	2	2
9	DSC 3 D (Group Sub- 3)	100	25	75	4	3
10	DSC 3 D Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

*To be taught by English Teachers (and partly by Maths/Stat Teachers)
** To be taught by Telugu Teachers

B.Sc- ELECTRONICS-SYLLABUS
SEMESTER: II
PAPER 2 -ELECTRONIC DEVICES&CIRCUITS (60 HOURS)(w. e .f. 2015-16)

Work load:60 hrs per semester **4 hrs/week**

UNIT- I (12 hrs)

JUNCTION DIODES:

PN junction diode - P-N junction theory-depletion region, barrier potential, working in forward& reverse bias condition, Junction capacitance, Diode current equation (no derivation), Effect of temperature on reverse saturation current, V-I Characteristics, Zener and Avalanche Break down, Zener diode - V-I characteristics, regulated power supply using Zener diode, Varactor Diode, Tunnel Diode - Principle, Working& Applications.

UNIT- II (16 hrs)

BIPOLAR JUNCTION TRANSISTORS (BJT):

PNP and NPN transistors, current components in BJT, BJT static characteristics (Input and Output), Early effect, CB,CE,CC Configurations (Cut-off, Active and saturation regions) Determination of h-parameters from the characteristics, Concept of amplification-voltage and current amplifier.The C.E amplifier-analysis and parameters, Transistor as a switch.

UNIT - III (12 hrs)

FIELD EFFECT TRANSISTORS& UJT:

FET - Construction - Working – Drain &Transfer characteristics -Parameters of FET - FET as an amplifier -MOSFET-Enhancement MOSFET-Depletion MOSFET-Construction& Working-Drain characteristics of MOSFET -Comparison of FET&BJT and JFET &MOSFET.

UJT Construction-working, V-I Characteristics.

UNIT - IV (8 hrs)

PHOTO ELECTRIC DEVICES:

Structure and operation, characteristics, spectral response and applications of LDR, Photo Voltaic cell, Photo diode, Photo transistor, LED and LCD.

UNIT - V (12 hrs)

POWER SUPPLIES

Rectifiers - Half wave, full wave and bridge rectifiers - Efficiency - Ripple factor – Regulation. Types of filter- Choke input (Inductor) filter –Shunt capacitor filter -L-Section and π section filters - Three terminal fixed voltage I.C regulators (78XX and 79XX) - Principle and working of switch mode power supplies (SMPS).

TEXTBOOKS

I. Electronic Devices and Circuits David A.Bell, Fifth edition. Oxford university press
2. A.P Malvino, "Principles of Electronics", TMH, 7th edition
3. T.F. Bogart, Beasley, "Electronic Devices and circuits", Pearson Education, 6th Edition
4. N.N. Bhargava, D.C Kulshreshta, and S.C Gupta ,"Basic Electronics and Linear Circuits" TMH
5. T.L.Floyd, "Electronic Devices and circuits", PHI, fifth edition
6. V.K. Metha, "Principle of Electronics", S CHAND Co. New edition
7. Godse A.P., Bakshi U.A (1st edition), Electronics Devices, Technical Publications rune.

REFERENCE BOOKS

I. Sedha R.S., A TextBook of Applied Electronics, S. Chand & Company Ltd.
2. Jacob Millman and Christos C. Halkias (2008) Integrated Electronics, Tara Mcgraw-Hill
3. Robert L. Boylestad, Louis Nashelsky (10th edition). Electron Devices and Circuit Theory, Dorling Kindersley (India Pvt. Ltd.)
4. Unified Electronics (Circuit analysis and electronic devices) by Agarwal-Arora.

ELECTRONICS LAB - 2
(ELECTRONIC DEVICES&CIRCUITS LAB)

Work load: 30 hrs per semester **2 hrs/week**

(Any six experiments should be done)

1. V-I Characteristics of Junction Diode.
2. V-I Characteristics of Zener Diode.
3. Regulated Power Supply using Zener Diode.
4. IC Regulated Power Supply
5. BJT input and output Characteristics (CE Configuration) and determination of h-parameters.
6. Characteristics of UJT.
7. Characteristics of JFET
8. LDR characteristics
9. Characteristics of L and π section filters using full wave rectifier.

LAB MANUAL

1. Zbar, Malvino and Miller, Basic Electronics, A Text Lab Manual, Tata McGraw Hill.
2. Sugaraj Samuel R., Horsley Solomon, B.E.S. Practicals.

B.Sc- ELECTRONICS-SYLLABUS
SEMESTER: III
PAPER3 -DIGITAL ELECTRONICS (60 HOURS) (w. e .f. 2016-17)

Work load: 60 hrs per semester **4 hrs/week**

UNIT - I (12 hrs)

NUMBER SYSTEMS AND CODES

Decimal, Binary, Octal, Hexa Decimal numbers, conversion from one to another-codes, BCD, excess 3, gray codes conversion from one to another - Error detection codes.

UNIT- II (l2 hrs)

BOOLEAN ALGEBRA AND THEOREMS

Basic & Universal logic gates - Boolean Identities - Boolean theorems De Morgan's Theorem - sum of products, products of sums expressions, simplification by Karnaugh Map method, simplification based on basic Boolean theorems - don't care conditions.

UNIT- III (12 hrs)

COMBINATIONAL DIGITAL CIRCUITS

Arithmetic Building blocks, Half & Full Adders and Half & Full Subtractions, BCD adders - multiplexers, De-multiplexers, encoders, decoders - Characteristics for Digital ICs -RTL, DTL, TTL, ECL CMOS (NAND & NOR Gates).

UNIT- IV (l2hrs)

SEQUENTIAL DIGITAL CIRCUITS

Flip-flops, RS, Clocked SR, JK, D, T, Master-Slave Flip flop -Conversion of Flip flops - shift registers - ripple counters - synchronous counters and asynchronous counters (4-bit counter).

UNIT- V (12 hrs)

MEMORY DEVICES

ROM Organization - PROM Organization – PLA (Programmable Logic Array) - PAL (Programmable Array Logic) - Realization of functions using PROM.

TEXTBOOKS

l. G.K.Kharate-Digital electronics-Oxford university press
2. R.P. Jain, "Modem digital Electronics", 3rd Edition, TMH, 2003.
3.Puri, V.K., Digital Electronics, Tata McGraw Hill
4.Marris mano M., Computer System Architecture, 2nd Edition, Prentice Hall, 1998
5.Malvino and Leach, Digital Principles and applications, McGraw Hill, 1996, IV Edition

REFERENCE BOOKS

1.Millman 1. Micro Electronics, McGraw Hill International Book Company, New Delhi 1990 Edition.
2.Morris Mano M., "Digital Logic and Computer Design" PHI, 2005.
3.Godse A.P., Digital Electronics, Technical Publications.
4.Unified Electronics (Digital Electronics and Microprocessors) by Agarwal- Agarwal

ELECTRONICS LAB - 3

(DIGITAL ELECTRONICS LAB)

Work load: 30 hrs per semester **2 hrs/week**

(Any six experiments should be done)

1. Verification of I C (basic) logic Gates
2. Universality of NAND & NOR Gates.
3. Verification of Boolean laws using NAND Gates (Associative, Commutative & Distributive Laws)
4. Study of RS, D, T and JK Flip-Flops with IC's
5. Half and Full Adders using Simple & NAND Gates.
6. 4-bit binary parallel adder and Subtractor IC 7483 using PSPICE simulation
7. Study of7490 BCD Counter - MOD Counters using PSPICE simulation.
8. BCD to Seven segment decoder 7447/7448 using PSPICE simulation.

LAB MANUAL

1. Zbar, Malvino and Miller,Basic Electronics, A Text Lab Manual, Tata McGraw Hill.
2. R.Sugaraj Samuel & Horsley Solomon, B.E.S. Practical.

B.Sc- ELECTRONICS-SYLLABUS
SEMESTER: IV
PAPER 4 -ANALOG & DIGITAL IC APPLICATIONS (60 HOURS) (w. e .f -2016-17)

Work load: 60 hrs per semester **4 hrs/week**

UNIT- I (12 hrs)

OPERATIONAL AMPLIFIERS

Basic differential amplifier-Op-Amp supply voltages - IC identification - Internal blocks of Op-Amp, Op-Amp parameters-offset voltages and currents-CMRR-Slew rate, Virtual ground, Op-Amp as a voltage amplifier - Inverting amplifier - non-inverting amplifier - Voltage follower.

IC 555 timer - pin functions - internal architecture

UNIT - II (12 hrs)

OP-AMP CIRCUITS

Summing amplifier - Differential amplifier - Op-amp frequency response - Comparator-Integrator - Differentiator - Triangular Wave generators - Square Wave generators - Active filter(Basics) – Lowpass filter - High pass filter - Band pass filter . IC 555 applications - Astable, Monostable and Schmitt trigger.

UNIT- III (12 hrs)

COMBINATIONAL &SEQUENTIAL CIRCUITS

Design of code converter: BCD to 7 segments, Binary/ BCD to Gray, Gray to Binary / BCD, Design of counters using state machine: asynchronous and synchronous counters, Modulo-n counter, presettable binary up/down counter. Design of Universal shift register.

UNIT - IV (12 hrs)

DATA CONVERTERS

Key Features, Advantages and applications of Digital to Analog Converters: Weighted resistive network and R-2R ladder type. Key Features, Advantages and Applications Specific selection of Analog to Digital Converters: Staircase, Ramp Type, Single Slope and dual slope, Successive approximation and Flash type.

UNIT - V (12 hrs)

DIGITAL SYSTEM INTERFACING AND APPLICATIONS

Digital system interfacing of LEDs and Multidigit Seven segment LED display Driver. Interface considerations for ADC / DAC with digital systems.

Applications of counters: Digital clock, Auto-parking system, Applications of shift registers: Time delay generator, parallel to serial converter, serial to parallel converter, UART and serial Key board encoder.

TEXT BOOKS

DIGITAL

1. G.K.Kharate - Digital electronics-Oxford university press
2. Floyd Thomas L Digital Fundamentals Pearson Education
3. Raj kamal Digital System Principles and Design Wheeler
4. Moriss Mano Digital Circuit Design PHP
5. Malvino Leach Digital Principles and Applications TMH
6. Strangio Digital Electronics TMH
7. Floyd, Jain Digital Fundamentals TMH
8. Anand Kumar A. Switching Theory and Logic design PHI
9. Unified electronics (Digital electronics and Microprocessors) by Agarwal- Agarwal
10. Unified electronics (Anolog circuits and communication) by Agarwal- Agarwal

ANALOG

1. Microelectronic circuits by Sedra&Smith-6th'edition-Oxford
2. Electronic Devices and Circuits David A.Bell, Fifth edition, Oxford university press
3. JocobMillman and Christos C.Halkias, Integrated Electronics, McGraw Hill.
4. D.RoyChoudary, Shail Jain, Linear integrated Circuits, New Age International Pvt. Ltd.,2000.
5. Operational Amplifiers and LinearI.Cs-by DavidA.Bell 3rdedition,Oxford university press.
6. Sedha, R.S. A TextBook of Applied Electronics, S. Chand & company Ltd.
7. Ramakant A. Gayakwad, OP-AMP and Linear ICs, 4th Edition, Prentice Hall/Pearson Education, L 994.
8. G.K.Mithal, Basic Electronic Devices and circuits, 2nd Edition, G.K.Publishers Pvt. Ltd.,

REFERENCE BOOKS:

1. Allen Mottershead, Electronic Devices and Circuits-an Introduction - Prentice Hall.
2. Mithal G.K., Electronic Devices and Circuits, Khanna Publishers.
3. Donald L.Schillling, Charles Belove, Discrete and Integrated Electronic Circuits, McGraw Hill.
4. Jacob Millman, Micro Electronics, McGraw Hill.

ELECTRONICS LAB - 4

ANALOG & DIGITAL IC APPLICATIONSLAB

Work load: 30 hrs per semester **2 hrs/week**

(Any six experiments should be done)

I. OP-AMP -Inverting and Non-inverting amplifiers.

2. OP-AMP - Sine Wave Generator (weinbridge oscillator)

3. Binary to Grey and Grey to binary code converter

4. Design of 4-bit priority encoder

5. OP-AMP - Square wave generator using PSPICE simulation

6. Schmitt Trigger using IC 555 timer using PSPICE simulation

7. Study of presettable binary up/down counter using PSPICE simulation.

8. Design and verification of 4-bit ripple counter. Using PSPICE simulation.

9. OP-AMP integrator and differentiator.

10. AstableMultivibrator –determination of frequency (using IC-555)

LAB MANUAL

1. Zbar, Malvino and Miller, Basic Electronics, A Text Lab Manual, Tata McGraw Hill.

2.Sugaraj Samuel R., Horsley Solomon, B.E.S. Practicals.
