RAYALASEEMA UNIVERSITY, KURNOOL
ANDHRA PRADESH

B.Sc., Electronics Syllabus
w.e.f. 2020-21
(CBCS)

B.O.S OF ELECTRONICS

RAYALASEEMA UNIVERSITY, KURNOOL
SYLLABUS

I B.Sc., DEGREE – SEMESTER – II
Part – II – Electronics
Paper – II – Digital Electronics
(CBCS)   w.e.f. 2020-21

Total Lectures: 60 Hours   04 Hours /week

UNIT- I: **12 Hours**
NUMBER SYSTEM AND CODES:
Decimal, Binary, Octal. Hexadecimal, Codes: BCD, Gray and Excess-3 codes- code conversions- Complements (1's, 2's,), Addition – Subtraction using complement methods

UNIT: II: **12 Hours**
BOOLEAN ALGEBRA AND THEOREMS:
Boolean Theorems, De Morgan's Theorems. Positive and negative logic, Logic gates: OR, AND, NOT -Truth tables.(Diode-Resistor) . Multi level NAND & NOR gates. Standard representation of logic functions (SOP and POS). Minimization Techniques (Karnaugh Map Method: 2,3 variables).

UNIT: III: **12Hours**
COMBINATIONAL LOGIC CIRCUITS:
Adders-Half & full adder, Parallel binary adder, Subtractor-Half and full subtractors, Multiplexers (4:1)) and De multiplexers (1:4), Encoder (8-line-to-3- line) and Decoder (3-line-to-8-line). IC-LOGIC FAMILIES: TTL logic, CMOS Logic families (NAND&NOR Gates).

UNIT –IV: **12 Hours**
SEQUENTIAL LOGIC CIRCUITS:
Flip Flops: S-R FF , SR-T FF, D-T FF, J-K FF, Master-Slave FFs, Excitation tables, **Registers**:-Serial In Serial Out and Parallel In and Parallel Out, **Counters:** Asynchronous-Mod-8,Mod-10,Synchronous-4-bit &Ring counter.

UNIT-V: **12 Hours**
MEMORY DEVICES
General Memory Operations, ROM, RAM (Static and Dynamic), PROM, EPROM, EEPROM, EAROM. Semiconductor Memories: Bipolar and MOS.

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Text Books:

1. M. Morris Mano, Digital Design 3rd Edition, PHI, New Delhi.
2. Ronald J. Tocci. ìDigital Systems-Principles and Applications î 6/e. PHI. New Delhi. 1999.(UNITS I to IV)
3. G.K.Kharate-Digital electronics-oxford university press
4. S.Salivahana & S. Arivazhagan-Digital circuits and design
5. Fundamentals of Digital Circuits by Anand Kumar

Reference books:

1. Digital Principles and Applications- Malvino & Leach- TMH
2. Digital Fundamentals . F.Loyd & Jain- Pearson Education
3. Modern Digital Electronics- R.P Jain-TMH
4. Fundamentals of Digital Circuits- Anand Kumar- PHI
5. Digital Systems . Rajkamal- Pearson Education
6. Digital Electronic Principles and Integrated Circuits- Maini- Willey India
7. Digital Electronics- Gothman-
8. Digital Electronics .J.W. Bignel & Robert Donova- Thomson Publishers (Indian 5th Ed)

Outcomes:-
- ✓ Develop a digital logic and apply it to solve real life problems.
- ✓ Analyze, design and implement combinational logic circuits.
- ✓ Classify different semiconductor memories.
- ✓ Analyze, design and implement sequential logic circuits.
- ✓ Simulate and implement combinational and sequential logic circuits using VHDL

RAYALASEEMA UNIVERSITY, KURNOOL
B.SC.,FIRST YEAR DEGREE, SEMESTER – II
ELECTRONICS PRACTICAL – II
Digital Electronics lab
LIST OF EXPERIMENTS
(With effect from 2020-21)

Work Load : 30 Hrs.   **2 Hrs. /Week**

1. Verification of IC-logic gates (AND,OR,NOT,NAND,NOR & XOR)

2. Realization of basic gates using discrete components (resistor, diodes & transistor)

3. Realization of basic gates using NAND & NOR gates (Universal gates).

4. Construction of Half and Full adders and verifying their truth tables.

5. Verify Half subtractor and full subtractor using gates.

6. Verify the truth table Multiplexer and gates using Universal gates (NAND & NOR gates)

7. Verify Half adder and full adder demultiplexer.

8. Verify the truth table Encoder and decoder.
9. Verify the truth table of RS , JK, T-F/F using NAND gates

10. BCD to Seven Segment Decoder using IC -7447/7448.

Note: Minimum of 6 experiments to be done and recorded.

Lab experiments are to be done on breadboard and simulation software and output values are to be compared and justified for variation.

Scheme of valuation for Practical Examination

External Practical Examination	50 Marks
• Formula and explanation of symbols, Tabular forms With circuit diagram (wherever necessary)	10 Marks
• Observations	10 Marks
• Calculation and graph	10 Marks
• Result	5 Marks
• Viva-voce	05 Marks
• Practical Record	10 Marks