**Lesson Plan –ANALOGNAND DIGITAL ELECTRONICS (CS301ES)**

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| Faculty Name:SHYAM K | Year / Sem: II/I | Academic Year: 2021-22 |

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| **L. No** | **Name of the Topic** | **Reference Book** | **Delivery Method** |
| 1 | **Unit 1: Diodes and Aplications,** Introduction to subject | R1(3-10) | Chalk & Talk |
| 2 | Junction diode characterstics,open circuit PN junction | R1(3-10) | Chalk & Talk |
| 3 | Pn junction as rectifier,VI characterstics | R1(3-10) | Chalk & Talk |
| 4 | Effect of temperature,diode resistance | T2(5-9)  A1(29-30)  A1(33-34) | Chalk & Talk |
| 5 | Diffusion capacitance,diode swiching times |  |  |
| **T1** | Diodes and Aplications, Introduction to subject | **A1(29-38)** | **Chalk & Talk** |
| 6 | Breakdown diodes,Tunnel ,diodes,photo diodes | A1(36-37)  A1(5-8) | Chalk & Talk |
| 6 | LED,diode aplications-clipping circuits | T1(13-17)  T2(9-11) | Chalk & Talk |
| 7 | comparators | W1  T1(17-18) | Chalk & Talk PPT |
| **T2** | **Problem solving on 9’s complement, 10’s complement, 1’s complement, 2’s complement,7’s complement, 8’s complement, 15’s complement, 16’s complement** | **A1(15-21)** | **Chalk & Talk** |
| 8 | Half wave rectifier | A1(40-43) | Chalk & Talk |
| 9 | Full wave rectifier | A1(54-57) | Chalk & Talk  PPT |
| 10 | Rectifier with capacitor | T1(34)  W2 | Chalk & Talk |
| 11 | Basic theorems | T1(39-43) | Chalk & Talk |
| **Slip Test** | | | |
| **T3** | comparators | **A1(40-43)** | **Chalk & Talk** |
| **T4** | Half wave rectifier | **T1(43-47)** | **Chalk & Talk** |
| 16 | **Unit-II: BJTs Transistor characterstics** | T1(72-73) | Chalk & Talk |
| 17 | The junction transistor | T1(73-80) | Chalk & Talk |
| 18 | Transistor as an amplifier | T1(80-83)  W3 | Chalk & Talk PPT |
| 19 | CB &CE configurations | A1(181-184) | Chalk & Talk |
| **T5** |  | **T1(72-73)** | **Chalk & Talk** |
| 20 | CC configuration,comparision of transistor configurations | T1(100-101) | Chalk & Talk |
| 21 | The operating point,self bias or emitter bias, | R1(212-216) | Chalk & Talk |
| 22 | Bias compensation,thermal runaway and stability | T1(116)  T1(128-132) | Chalk & Talk |
| 23 | Transistor at low frequencies | T1(119-123)  W4 | NPTEL Video |
| **T6** |  | **R1(216-231)** | **Chalk & Talk** |
| 24 | CE amplifier response,Gain band width product | T1(161-164) | Chalk & Talk |
| 25 | Emitter follower | T1(119-123)  W4 | Chalk & Talk |
| 26 | RC coupled amplifier | T1(164-167) | Chalk & Talk |
| 27 | Two cascaded CE amplifier | T1(125-128)  R1(4.28) | Chalk & Talk |
| **T7** |  | **T1(125-128)** | **Chalk & Talk** |
| 28 | Multistage CE amplifiers | T1(167-175) | Chalk & Talk, Chart |
| 30 | **(Topic beyond the syllabus)** | A1(4\_88-4\_91)  A1(4\_57-4\_58) | Chalk & Talk |
| 31 | **Topic beyond the syllabus)** | A1(4\_48) | Chalk & Talk |
| **T8** |  | **T1(175-182)** | **Chalk & Talk** |
| **Slip Test** | | | |
| 32 | **Unit-III: FETs and Digital Circuits** FETs | T1(200-204) | Chalk & Talk |
| 33 | JFET,VI characterstics,MOSFET | A1(7\_7) | Chalk & Talk |
| **Assignment-I Issue date: Submission date:** | | | |
|  | **I Mid Examination** |  | |
| 34 | Low frequency CS and CD amplifiers | A1(7\_10, 7\_16-7\_17) | Chalk & Talk, Chart |
| 35 | CS and CD amplifiers | A1  (7\_24-7\_27) | Chalk & Talk |
| **T9** |  | **R1(435-436)** | **Chalk & Talk** |
| 36 | Digital circuits:digital binary operations of a system | A1(7\_17, 7\_18) | Chalk & Talk, Chart |
| 37 | OR gate,AND gate,NOT gate | A1(7\_12, 7\_21) | Chalk & Talk, Chart |
| 38 | EXOR-gate, | A1(7\_8) | Chalk & Talk |
| 39 | Demorgan laws | A1(7\_39) | Chalk & Talk |
| **T10** |  | **A1(7\_17, 7\_18)** | **Chalk & Talk** |
| 40 | NAND AND NOR DTL gates | A1  (7\_27-7\_36) | Chalk & Talk |
| 41 | Modified DTL gates | A1  (7\_27-7\_36) | Chalk & Talk |
| 42 | HTL and TTL gates | T1(257-263) | Chalk & Talk |
| 43 | Oput stages,RTL and DCTL | R1(459-465) | Chalk & Talk |
| **T11** |  | **A1(7\_27, 7\_32)** | **Chalk & Talk** |
| 44 | CMOS | R1(465)  R1(469) | Chalk & Talk |
| 45 | Comparision of logic families | R1(491-494) | Chalk & Talk |
| **T12** |  | **R1(491-494)** | **Chalk & Talk** |
| **Slip Test** | | | |
| 48 | **(Gap identified beyond the syllabus)** | W5 | Guest Talk |
| 49 | **(Gap identified beyond the syllabus)** | W6 | Guest Talk |
| 50 | **Unit IV: Combinational Logic Circuits**  Basic theorems and properties of Boolean algebra | A1(8-2) | Chalk & Talk |
| 51 | Canonical and standard forms | A1(8-33) | Chalk & Talk |
| 52 | Digital logic gates | A1(8-24) | Chalk & Talk |
| 53 | The map method | A1(8-24) | Chalk & Talk |
| **T13** | **Explanation of state diagram with one example** | A1(8-7) | Chalk & Talk |
| **54** | Product of sums simplifications | A1(8-14) | Chalk & Talk |
| 55 | don’t care conditions,NAND and NOR implementation | A1(8-18) | Chalk & Talk |
| 56 | Exclusive-OR function | A1(8-78) | Chalk & Talk |
| 57 | Binary adder-subtractor | A1(8-40) | Chalk & Talk |
| **T14** | **Design FSM which detect the sequence 1111 by using JK flip flop** | **A1(8-86)** | **Chalk & Talk** |
| 58 | Decimal adder,binary multiplier | A1(8-40) | Seminars |
| 59 | Magnitude comparator,decoders | A1(8-53) | Chalk & Talk |
| 60 | Encoders,multiplexers | A1(8-53) | Student Seminars |
| **Slip Test** | | | |
| 61 | **Unit V: Sequncial logic circuits:**sequencila circuits | A1(9-6) | Chalk & Talk |
| **T15** |  | **A1(8-53)** | **Chalk & Talk** |
| 62 | Storage elements | A1(9-1) | Chalk & Talk |
| 63 | Lacthes and flipflops | A1(9-8) | Chalk & Talk |
| 64 | Analysis of clocked sequencial circuits | A1(9-11) | Chalk & Talk |
| 65 | State reduction and assignment,shift registers | A1(9-15) | Chalk & Talk |
|  | Ripple counters,synchronous counter |  |  |
|  | RAM AND ROM |  |  |
| **T16** | **Limitations and Capabilities of FSM and problem solving on partition method and merger method** | **A1(9-6)**  **A1(9-11)** | **Chalk & Talk** |
| 66 | Revision |  | Quiz |
| Slip Test | | | |
|  | **Assignment-II Issue date Submission date:** | | |
|  | **Mid-2 Examination** |  | |

**TEXT BOOKS**:

**T1:integrated electronics** Analog and digital circuits and systems,2/e,Jacob millman.

T2:Digital design,5/e,Morris Mano and Michel

**REFERENCE BOOKS:**

**R1:** Electronics Devices and Circuits ,Jimmy J Cathey

R2: Digital Principles,3/e,Roger L

**ADDITIONAL BOOKS:**

**A1: Digital** Electronics – A.P. Godse, U.A. Godse

**A2:** Analog and Digital principle.

**WEB REFERENCES:**

W1: nptel.ac.in/courses/106102062/16

W2: nptel.ac.in/courses/117105080/3

W3: nptel.ac.in/courses/117103064/21

W4: nptel.ac.in/courses/117106086/11

W5: <http://nptel.ac.in/courses/117105080/26>

W6: http://nptel.ac.in/courses/117105080/32

**(SHYAM K) (HOD)**