

KERALA GOVT. POLYTECHNIC COLLEGE, KOZHIKODE
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

3RD SEMESTER (JUN.2022)
3031 Analog & Digital Circuits

IMPORTANT QUESTIONS

MODULE-1

1. Compare Class A, Class AB, Class B and Class C power Amplifiers with relevant diagrams (CO1 - M1.01)
2. Draw and explain Class B Push Pull amplifier and Class B Complementary and symmetry Push Pull amplifier (CO1 - M1.01)
3. Draw and explain Two stage RC coupled Amplifier and importance of coupling (CO1 - M1.01)
4. Draw and explain BASIC Amplifier circuit and frequency response curve with 3Db, point, Max. Gain, Band width (CO1 - M1.01)
5. Draw and explain block diagram of positive and negative feedback (CO1 - M1.02)
6. Draw and explain elements in an oscillator block diagram (CO1 - M1.02)
7. Compare Amplifiers and Oscillators and their applications (CO1 - M1.02)
8. State and explain Barkhausen's criterion and what are the condition for sustainable, damping oscillations, (CO1 - M1.02)
9. Draw and explain R-C Phase shift oscillator (CO1 - M1.03)
10. Draw and explain Crystal oscillator (CO1 - M1.03)
11. Draw and explain Astable Multivibrator (CO1 - M1.04)
12. Draw and explain Bistable Multivibrator (CO1 - M1.04)

MODULE-2

- 1 Draw and explain Virtual Ground (CO 2 – M2.01)
- 2 Draw and explain characteristic of Ideal and Practical Op-Amps with Block Diagram (CO 2 – M2.01)
- 3 Define and List Parameters of Op-Amp (CO 2 – M2.01)
- 4 Draw and explain Inverting and Non Inverting Amplifiers with derivations (CO 2 – M2.02)
- 5 Draw and explain Differentiator and Integrator using Op-Amp with derivation (CO 2 – M2.03)
- 6 Draw and explain Comparator and Summing amplifier using Op-Amp (CO 2 – M2.03)

7 Draw and explain Half and Full Wave precision Rectifier using Op-Amps (CO 2 – M2.04)

MODULE-3

1. Draw the table for Decimal, Binary and Hexa Decimal numbers up to 15 (CO3 – M3.01)

2. Convert the following Binary numbers into Decimal numbers

i)1101 ii)11011 iii)10111 iv)101.01 v)1100.0011

3. Convert the following Decimal numbers into Binary numbers (CO3 – M3.01)

i)43 ii)64 iii)4065 iv)131.5625 v)0.4375

4. Convert the following Hexa Decimal numbers into Decimal numbers (CO3 – M3.01)

i)B6C7 ii)64AC iii)A492 iv)ABC.DEF v)68.E

5. Convert the following Decimal numbers into Hexa Decimal numbers (CO3 – M3.01)

i)6500 ii)33.33 iii)4019 iv)52 v)2890

6. Convert the following Binary numbers into Hexa Decimal numbers (CO3 – M3.01)

i)1001 ii)1010 iii)111.001 iv)1011 v)1001.1001

7. Convert the following Hexa Decimal numbers into Binary numbers (CO3 – M3.01)

i) ABE ii) 123FE iii) 75F iv) 465.125 v) DE.C

8. Perform the following Addition, Subtraction, Multiplication and Division in Binary (CO3 – M3.01)

i) $1101.10 + 1001.01$ ii) $111.11 - 101.1$ iii) 0101.01×1101.11 iv) $110 \div 11$

9. What is 2's Complement explain with an example (CO3 – M3.01)

10. Draw and explain all basic logic gates and its truth table (CO3 – M3.02)

11. Write all Boolean algebra, Associative, Commutative laws and De-Morgan's Theorems (CO3 – M3.03)

12. Simplify the following expressions using Boolean expressions and De-Morgan's Theorems (CO3 – M3.03)

i) $(A+B).(A+ \text{NOT } B).(\text{NOT } A+C)$ ii) $A.B+A(B+C)+B(B+C)$ iii) $\text{NOT } ABCD$ (CO3 – M3.03)

13. What are the SOP, POS Minterm and Maxterm (CO3 – M3.04)

14. Simplify the following Boolean functions into minimal standard SOP using K-MAP (CO3 – M3.04)

i) $F(AB) = (AB) + (\text{NOT } A.B) + (A.\text{NOT } B)$

ii) $F(ABC) = \sum m(0, 2, 4, 5, 6, 7)$

iii) $F(ABCD) = \sum (0, 2, 4, 5, 6, 8, 9, 12, 13, 14)$

MODULE-4

- 1. Draw and explain Half Adder and Half subtraction circuit with its truth table (CO4 – M4.01)**
- 2. Draw and explain Full adder and Full subtraction circuit with its truth table (CO4 – M4.01)**
- 3. Draw and explain Logic Diagram of 4X1 Multiplexer circuit with its truth table (CO4 – M4.01)**
- 4. Draw and explain Logic Diagram of 1 to 4 De- Multiplexer circuit with its truth table (CO4 – M4.01)**
- 5. Draw and explain D Flip Flop, SR Flip Flop with their truth table and Symbols (CO4 – M4.02)**
- 6. Draw and explain JK Flip Flop, T Flip Flop with their truth table and Symbols (CO4 – M4.02)**
- 7. Draw and explain 4 bit Shift register of SISO, SIPO, PISO and PIPO using negative edge triggered D flip flop and Applications (CO4 – M4.03)**
- 8. What are the Difference between Asynchronous and Synchronous Counters (CO4 – M4.03)**
- 9. Draw and explain Mode 8 Asynchronous up counter using negative edge triggered J-K flip flop (CO 4– M4.03)**
- 10. Draw and explain Mode 6 ripple counter using negative edge triggered J-K flip flop (CO 4– M4.03)**
- 11. Draw and explain Mode 7 ripple counter using negative edge triggered J-K flip flop (CO 4– M4.03)**
- 12. Draw and explain Binary weighted R-2R Ladder type DAC (CO 4– M4.04)**
- 13. Draw and explain Ramp type ADC (CO 4– M4.04)**

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