

[B19 CS 1202]

**I B. Tech II Semester (R19) Regular Examinations**  
**DIGITAL LOGIC DESIGN**  
 (Common to CSE & IT)  
**MODEL QUESTION PAPER**

**TIME: 3 Hrs.**

**Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT**

All questions carry equal marks

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|                   |     |  | CO | KL | M  |
|-------------------|-----|--|----|----|----|
| <b>UNIT - I</b>   |     |  |    |    |    |
| 1.                | a). | i. Convert $(1032.2)_4$ to decimal.<br>ii. Perform the subtraction using 2's complement $100-110000$   | C1 | K2 | 8  |
|                   | b). | Reduce the Boolean Functions to minimum number of literals<br>(i) $ABC+A^1B^1C+A^1BC+ABC^1+A^1B^1C^1$ to five literals<br>(ii) $(A+C+D)(A+C+D^1)(A+C^1+D)(A+B^1)$ to fr literals | C1 | K2 | 7  |
| <b>OR</b>         |     |  |    |    |    |
| 2.                | a). | Convert the function to another canonical form. $F(x,y,z)=\pi(0,3,6,7)$  | C1 | K2 | 8  |
|                   | b). | Implement the Boolean function $F=xy+x^1y^1+y^1z$ with<br>(i) AND ,OR and NOT gates<br>(ii) OR,NOT gates<br>(iii) AND, NOT gates   | C1 | K2 | 7  |
| <b>UNIT - II</b>  |     |  |    |    |    |
| 3.                | a). | Simplify the Boolean Function using K-Map.<br>$F(A,B,C,D)=ACE+A^1CD^1E+A^1C^1DE$<br>$D(A,B,C,D)=DE^1+A^1D^1E+AD^1E^1$  | C2 | K3 | 8  |
|                   | b). | Design and explain Binary Adder/ Subtractor.   | C2 | K3 | 7  |
| <b>OR</b>         |     |  |    |    |    |
| 4.                | a). | Simplify the Boolean Function to product of sums. $F(A,B,C,D)=\pi(0,1,2,3,4,10,11)$  | C2 | K2 | 8  |
|                   | b). | Design and explain Decimal Adder.  | C2 | K2 | 7  |
| <b>UNIT - III</b> |     |  |    |    |    |
| 5.                | a). | Design and explain abt JK Flip flop.   | C3 | K3 | 8  |
|                   | b). | Explain abt State Reduction and Assignment with example.   | C3 | K3 | 7  |
| <b>OR</b>         |     |  |    |    |    |
| 6.                |     | Explain abt design procedure of sequential circuits with an example  | C3 | K4 | 15 |
| <b>UNIT - IV</b>  |     |  |    |    |    |
| 7.                | a). | Design and explain abt Shift Register.   | C4 | K3 | 8  |
|                   | b). | Design and explain abt BCD Ripple cnter .  | C4 | K3 | 7  |
| <b>OR</b>         |     |  |    |    |    |
| 8.                | a). | Design and explain abt Universal Shift Register.   | C4 | K3 | 8  |
|                   | b). | Design and explain abt Synchrons Binary cnter.   | C4 | K3 | 7  |
| <b>UNIT - V</b>   |     |  |    |    |    |
| 9.                | a). | Explain abt Memory decoding of RAM.  | C5 | K3 | 8  |
|                   | b). | Explain abt ROM Variants   | C5 | K3 | 7  |
| <b>OR</b>         |     |  |    |    |    |
| 10.               | a). | Explain PLA and PAL  | C5 | K3 | 8  |
|                   | b). | Explain abt Hamming code with an example   | C5 | K3 | 7  |