**MATERIA :** F.T.E APLICACIÓN DE ELECTRÓNICA DIGITAL

**TP:** REVISIÓN DE CONCEPTOS: LÓGICA BÁSICA, TABLA DE VERDAD, REDUCCIÓN Y LÓGICA NAND Y NOR

**RECOMENDACIONES: LEER PRIMERO:**

En caso de no posser computadora, notebook transcribir el contenido y sacar una foto en una resolución media que permita ser enviado como archivo adjunto al un email.

Por favor comentar al final del trabajo si posee computadora y o notebook para continuar las actividades con software de simulación.

Se deberán crear un email con extensión gmail.

Colocar los apellido, nombre, división y comisión en el Tp al terminar y enviar prolijo por correo electrónico indicando en el asunto del correo “Actividad de repaso” y en el cuerpo del mensaje nombre y apellido del alumno..

Ante cualquier consulta realizarlo por el email que se encuentra a continuacion:

**Comisión 1:** lfo296925@gmail.com

**Comisión 2:** ceciliajarne@yahoo.com.ar

**BIBLIOGRAFIA:** FUNDAMENTOS DE SISTEMAS DIGITALES

 AUTOR: FLOYD THOMAS

 EDITORIAL: PEARSON

ENUNCIADO:

1- Determinar en cada circuito: ecuación característica, tabla de verdad y las ecuaciones canónica de los unos y ceros.







**2-** Dadas las siguientes ecuación características determinar su circuito equivalente y su tabla de verdad

**2-**A **Q=ABC+ABC+ABC**

**2-**B **Q=ABCD+ABCD+ABCD+ACBD**

**2-**C  **Q=ABCD+ABCD**

**3-**Aplicando la lógica de reducción por medio de boole primero y luego reducirlo por karnaugh el punto 1 y2.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **D** | **C** | **B** | **A** | **Q** |  | **D** | **C** | **B** | **A** | **Q** |  | **D** | **C** | **B** | **A** | **Q** |
| 0 | 0 | 0 | 0 | **0** |  | 0 | 0 | 0 | 0 | **1** |  | 0 | 0 | 0 | 0 | **0** |
| 0 | 0 | 0 | 1 | **0** |  | 0 | 0 | 0 | 1 | **1** |  | 0 | 0 | 0 | 1 | **0** |
| 0 | 0 | 1 | 0 | **1** |  | 0 | 0 | 1 | 0 | **1** |  | 0 | 0 | 1 | 0 | **0** |
| 0 | 0 | 1 | 1 | **1** |  | 0 | 0 | 1 | 1 | **1** |  | 0 | 0 | 1 | 1 | **1** |
| 0 | 1 | 0 | 0 | **1** |  | 0 | 1 | 0 | 0 | **0** |  | 0 | 1 | 0 | 0 | **1** |
| 0 | 1 | 0 | 1 | **1** |  | 0 | 1 | 0 | 1 | **0** |  | 0 | 1 | 0 | 1 | **1** |
| 0 | 1 | 1 | 0 | **0** |  | 0 | 1 | 1 | 0 | **0** |  | 0 | 1 | 1 | 0 | **1** |
| 0 | 1 | 1 | 1 | **0** |  | 0 | 1 | 1 | 1 | **1** |  | 0 | 1 | 1 | 1 | **1** |
| 1 | 0 | 0 | 0 | **0** |  | 1 | 0 | 0 | 0 | **1** |  | 1 | 0 | 0 | 0 | **0** |
| 1 | 0 | 0 | 1 | **1** |  | 1 | 0 | 0 | 1 | **1** |  | 1 | 0 | 0 | 1 | **0** |
| 1 | 0 | 1 | 0 | **1** |  | 1 | 0 | 1 | 0 | **1** |  | 1 | 0 | 1 | 0 | **0** |
| 1 | 0 | 1 | 1 | **1** |  | 1 | 0 | 1 | 1 | **1** |  | 1 | 0 | 1 | 1 | **0** |
| 1 | 1 | 0 | 0 | **0** |  | 1 | 1 | 0 | 0 | **0** |  | 1 | 1 | 0 | 0 | **0** |
| 1 | 1 | 0 | 1 | **0** |  | 1 | 1 | 0 | 1 | **1** |  | 1 | 1 | 0 | 1 | **1** |
| 1 | 1 | 1 | 0 | **0** |  | 1 | 1 | 1 | 0 | **1** |  | 1 | 1 | 1 | 0 | **1** |
| 1 | 1 | 1 | 1 | **0** |  | 1 | 1 | 1 | 1 | **1** |  | 1 | 1 | 1 | 1 | **1** |

**4-**Aplicando logica al punto 2 la transformación a lógica nand y nor. Expresar la ecuación final y el circuito característico correspondiente luego de la transformación.

Ejemplo de reducción por karnaugh

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DCBA |  | B´A´=00 | B´A=01 | BA=11 | BA´=10 |
|  | D´C´=00 |  | 1 | 1 |  |
|  | D´C =01 |  | 1 |  |  |
|  | DC =11 |  | 1 |  |  |
|  | DC´=10 |  | 1 |  |  |

**Q= B´A+D´C´B**

NOTA: La variable negada se representa : Ā =A´. Esta expresión se extiende a las demás variables.

**Material a utilizar para realizar la tarea para completar las tablas de verdad y los mapas de karnaugh**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **D** | **C** | **B** | **A** | **Q** |  | **D** | **C** | **B** | **A** | **Q** |  | **D** | **C** | **B** | **A** | **Q** |
| 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 |  |  | 0 | 0 | 0 | 0 |  |
| 0 | 0 | 0 | 1 |  |  | 0 | 0 | 0 | 1 |  |  | 0 | 0 | 0 | 1 |  |
| 0 | 0 | 1 | 0 |  |  | 0 | 0 | 1 | 0 |  |  | 0 | 0 | 1 | 0 |  |
| 0 | 0 | 1 | 1 |  |  | 0 | 0 | 1 | 1 |  |  | 0 | 0 | 1 | 1 |  |
| 0 | 1 | 0 | 0 |  |  | 0 | 1 | 0 | 0 |  |  | 0 | 1 | 0 | 0 |  |
| 0 | 1 | 0 | 1 |  |  | 0 | 1 | 0 | 1 |  |  | 0 | 1 | 0 | 1 |  |
| 0 | 1 | 1 | 0 |  |  | 0 | 1 | 1 | 0 |  |  | 0 | 1 | 1 | 0 |  |
| 0 | 1 | 1 | 1 |  |  | 0 | 1 | 1 | 1 |  |  | 0 | 1 | 1 | 1 |  |
| 1 | 0 | 0 | 0 |  |  | 1 | 0 | 0 | 0 |  |  | 1 | 0 | 0 | 0 |  |
| 1 | 0 | 0 | 1 |  |  | 1 | 0 | 0 | 1 |  |  | 1 | 0 | 0 | 1 |  |
| 1 | 0 | 1 | 0 |  |  | 1 | 0 | 1 | 0 |  |  | 1 | 0 | 1 | 0 |  |
| 1 | 0 | 1 | 1 |  |  | 1 | 0 | 1 | 1 |  |  | 1 | 0 | 1 | 1 |  |
| 1 | 1 | 0 | 0 |  |  | 1 | 1 | 0 | 0 |  |  | 1 | 1 | 0 | 0 |  |
| 1 | 1 | 0 | 1 |  |  | 1 | 1 | 0 | 1 |  |  | 1 | 1 | 0 | 1 |  |
| 1 | 1 | 1 | 0 |  |  | 1 | 1 | 1 | 0 |  |  | 1 | 1 | 1 | 0 |  |
| 1 | 1 | 1 | 1 |  |  | 1 | 1 | 1 | 1 |  |  | 1 | 1 | 1 | 1 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **C** | **B** | **A** | **Q** |
| 0 | 0 | 0 |  |
| 0 | 0 | 1 |  |
| 0 | 1 | 0 |  |
| 0 | 1 | 1 |  |
| 1 | 0 | 0 |  |
| 1 | 0 | 1 |  |
| 1 | 1 | 0 |  |
| 1 | 1 | 1 |  |

**MAPAS DE KARNAUHT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DCBA** |  | **B´A´=00** | **B´A=01** | **BA=11** | **BA´=10** |
|  | **D´C´=00** |  |  |  |  |
|  | **D´C =01** |  |  |  |  |
|  | **DC =11** |  |  |  |  |
|  | **DC´=10** |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DCBA** |  | **B´A´=00** | **B´A=01** | **BA=11** | **BA´=10** |
|  | **D´C´=00** |  |  |  |  |
|  | **D´C =01** |  |  |  |  |
|  | **DC =11** |  |  |  |  |
|  | **DC´=10** |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DCBA** |  | **B´A´=00** | **B´A=01** | **BA=11** | **BA´=10** |
|  | **D´C´=00** |  |  |  |  |
|  | **D´C =01** |  |  |  |  |
|  | **DC =11** |  |  |  |  |
|  | **DC´=10** |  |  |  |  |