1. Используя таблицу истинности, установить эквивалентность функций в формуле:

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2. Используя основные законы и соотношения алгебры логики,

необходимо установить справедливость следующей формулы.

Составим таблицу истинности для левой части формулы:

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Составим таблицу истинности для правой части формулы:

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3. Определить к каким классам (константы нуля, константы

единицы, самодвойственных функций, монотонных функций, линейных функций, симметрических функций) относится функция следующего вида.

Составим таблицу истинности

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4. Необходимо для данной ФАЛ f (x1, x2, x3, x4) найти ее ДСНФ,

КСНФ, ПСНФ, ЭСНФ, ИСНФ, принимающей значение 1 на следующих

наборах: 0, 1, 4, 5, 7, 9

Составим таблицу истинности:

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5. Используя метод неопределенных коэффициентов, необходимо

найти МДНФ функции f (x 1, x2, x 3), принимающей значение 1 на наборах: 0, 1, 2, 3, 4

Составим таблицу истинности:

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Для проверки составим таблицу истинности:

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6. Используя метод Квайна, необходимо найти МДНФ функции

f (x1, x2, x3, x4), принимающей значение 1 на наборах: 0, 2, 3, 5, 7, 8, 10, 11, 15.

Составим таблицу истинности:

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Составим таблицу и найдем минимальное покрытие:

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Для проверки составим таблицу истинности:

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7. Используя метод Квайна-Мак-Класки, необходимо найти

МДНФ функции f(x 1 ,x 2 ,x 3 ,x 4 ), принимающей значение 1 на наборах : 2, 3, 5, 6, 7, 8, 10, 12, 14

Составим таблицу истинности:

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Составим таблицу и найдем минимальное покрытие:

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Для проверки составим таблицу истинности:

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8. Используя метод диаграмм Вейча, необходимо найти МДНФ функции

f (x1, x2, x3, x4), принимающей значение 1 на наборах: 0, 4, 5, 7, 8, 10, 11, 13, 15.

Составим таблицу истинности:

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Составим диаграмму Вейча:

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Получаем:

Выполним проверку:

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9. Доопределить функцию f (x1, x2, x3, x4).

Составим таблицу истинности:

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Найдем минимальный вид используя метод диаграмм Вейча :

Составим диаграмму Вейча:

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Оптимальное доопрделение функций соответствующее минимальному

покрытию может быть найдено по методу Квайна:

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Составим таблицу истинности:

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10. Найти производную третьего порядка f (x1, x2, x3).

Составим таблицу истинности:

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Найдем минимальный вид используя метод диаграмм Вейча:

Составим диаграмму Вейча:

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