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RESEARCH ARTICLE

THE RATIONAL VALUED CHARACTERS OF THE GROUP ($Q_{2m} \times C_5$) WHEN M= 2P (SUCH THAT P IS A PRIME NUMBER, P$\neq$ 2)

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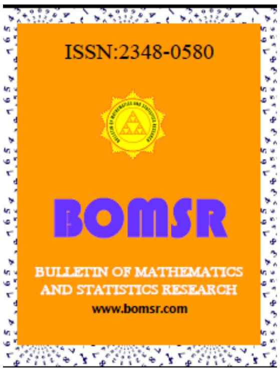

ABSTRACT

The purpose of this work is to find the rational valued characters table of the group ($Q_{2m} \times C_5$),when m= 2p,p is prime number,which is denoted by $\equiv^*$ (Q_{4P}×C_5), where Q_{2m} is denoted to Quaternion group of order 4m , and C_5 is the cyclic group of order 5. Moreover we have found the general form of the rational valued characters table of the group (Q_{4p}×C_5).

1.INTRODUCTION

Let x,y∈ G and G be a finite group,then x and y are said to be ***ƨ--conjugate*** if the cyclic subgroups they generate are conjugate in G. This process defines an equivalence relation on G; its classes are called ***Γ--classes***.

A finitely generated abelian group *cf(G,Z)* of a rank equal to the number of ***Γ--classes.*** Is forned by the Z-valued class functions on the group G,which is constant on the ***Γ--classes*** If *cf(G,Z)* intersects with the group of all generalized characters of *G,where R(G)* is a normal subgroup of *cf(G,Z)* denoted by $\overline{R}(G)$, then, *cf(G,Z)*/ $\overline{R}(G)$ is a finite abelian factor group denoted by *K(G).* If $\chi_i$is an irreducible character of the group G and σ is any element in Galios group *Gal*(Q(χ_i)/Q).The n each element in $\overline{R}(G)$ can be written as $v_1\vartheta_1+ v_2\vartheta_2+\ldots+ v_r\vartheta_r$, where r is the number of ***ƨ--classes***, $v_1, v_2,\ldots,v_r$∈Z and $\theta_i = \sum_{\sigma\in Gal(Q(\chi_i)/Q)} \sigma(\chi_i)$, Let $\equiv^*(G)$ denotes the r×r matrix which the rows corresponds to the ϑ_i 's and the columns correspond to the ***ƨ-classes*** of G. to find the cyclic decomposition of *K(G),*We can use the theory of invariant factors to obtain the direct sum of the cyclic Z-module of orders the distinct invariant factors of $\equiv^*(G)$ depending on the matrix expressing $\overline{R}(G)$ basis in terms of the $cf(G,Z)$ basis is $\equiv^*(G)$.

In 1982, M. S. Kirdar [2] studied the $K(C_n)$. In 1995, N. R. Mahmood [3] studied the factor group $K(Q_{2m})$.

The aim of this paper is to find $\equiv^*$ $(Q_{4P}\times C_5)$ and determine general (16×16) matrix from of the rational valued characters table of the group ($Q_{4p}\times C_5$).

2.Preliminariec

The Generalized Quaternion Group Q_{2m} (3.1) [3]

In general, the generalized quaternion group of order 4m it can be written as :

$Q_{2m} = \{ x^k y^h, 0\leq k \leq 2m-1, h=0,1\}$

Which has the following properties

$$\{ x^{2m} = y^4 =1, x^m=y^2, y x^r y^{-1}= x^{-r}= x^{2m-r}\}$$

The Characters Table of the Quaternion Group Q_{2m} when m = 2p, and p is prime number (3.2) [3]

There are two types of irreducible characters. One of them is the character of the linear representations R_1, R_2, R_3 and R_4 which are denoted by ψ_1, ψ_2, ψ_3 and ψ_4 respectively as in the following table:

	χ^k	$\chi^k y$
ψ_1	1	1
ψ_2	1	-1
ψ_3	$(-1)^k$	$(-1)^k$
ψ_4	$(-1)^k$	$(-1)^{k+1}$

Table (1)

where $0 \leq k \leq 2m-1$.

The other characters of irreducible representations T_h of degree 2 are denoted by χ_h such that:

$\chi_h (x^k) = \omega^{hk} + \omega^{-hk}$

$\quad = e^{\pi ihk/m} + e^{-\pi ihk/m} = 2\cos(\pi hk/m)$

We are denote to $(\omega^{hk}+\omega^{-hk})$ by V_{hk} ,thus $V_{hk}=V_{2m-hk}$, $V_m=-2$, $V_{2m}=2$, also we will write $V_{J(hk)}$ such that $J(hk) =\min\{hk \pmod{2m}, 2m-hk \pmod{2m}\}$ in the character table of the quaternion group Q_{2m} when m is an even number, such that:

$V_{J(hk)}= 2\cos(\pi J(hk)/m)$, $\chi_h (x^k y) = 0$

where $0 \leq k \leq 2m-1$, $1 \leq h \leq m-1$ and $\omega =e^{2\pi i/2m}= e^{\pi i/m}$.

So, there are $m+3$ irreducible characters of Q_{2m} . Then the general form of the characters table of Q_{2m} when m= 2p ,p is prime number ,$p\neq 2$ is given in the table(2)

CLa	[I]	$[X^2]$	$[x^4]$	⋯	$[x^{m-2}]$	$[x^m]$	[x]	$[x^3]$	⋯	$[x^{m-1}]$	[y]	[xy]
CLa||	1	2	2	⋯	2	1	2	2	⋯	2	m	m
Ψ_1	1	1	1	⋯	1	1	1	1	⋯	1	1	1
Ψ_4	1	1	1	⋯	1	1	-1	-1	⋯	-1	-1	1
χ_2	2	$V_{J(4)}$	$V_{J(8)}$	⋯	$V_{J(2m-4)}$	2	v_2	$V_{J(6)}$	⋯	$V_{J(2m-2)}$	0	0
⋮	⋮	⋮	⋮	⋱	⋮	⋮	⋮	⋮	⋱	⋮	⋮	⋮

χ_{m-2}	2	$V_{J(2m-4)}$	$V_{J(4m-8)}$	$\cdots$	$V_{((m-2)(m-2)}$	2	$V_{J(m-2)}$	$V_{J(3m-6)}$	$\cdots$	$V_{((m-2)(m-1)}$	0	0
χ_1	2	v_2	$V_{J(4)}$	$\cdots$	$V_{J(m-4)}$	-2	V_1	$V_{J(3)}$	$\cdots$	$V_{J(m-1)}$	0	0
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\ddots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\ddots$	$\vdots$	$\vdots$	$\vdots$
χ_{m-1}	2	$V_{J(2m-2)}$	$V_{J(4m-4)}$	$\cdots$	$V_{((m-1)(m-2)}$	-2	$V_{J(m-1)}$	$V_{J(3m-3)}$	$\cdots$	$V_{((m-1)(m-1)}$	0	0
Ψ_2	1	1	1	$\cdots$	1	1	1	1	$\cdots$	1	-1	-1
Ψ_3	1	1	1	$\cdots$	1	1	-1	-1	$\cdots$	-1	1	-1

Table (2)

Theorem(3.3)[1]:

Let $T_1 : G_1 \rightarrow GL(n,F)$ and $T_2 : G_2 \rightarrow GL(m,F)$ be two irreducible representations of the groups G_1 and G_2 with characters χ_1 and χ_2 respectively then : $T_1 \otimes T_2$ is irreducible representation of the group $G_1 \times G_2$ with the character $\chi_1 \cdot \chi_2$.

.The Group $Q_{2m}\times C_5$ (3.4)

Let Q_{2m} is the quaternion group of order 4m , and C_5 is the cyclic group of order 5 , then the group ($Q_{2m}\times C_5$) is the direct product group of order 20 m therefore the irreducible representations of the group($Q_{2m}\times C_5$) is a tensor products of each an irreducible representation of $Q_{2m}$and an irreducible representation of the groupC_5 .The group C_5 has five irreducible representations; their characters δ_1, δ_2,δ_3,$\delta_4$and$\delta_5$are given in the table(3)

$\equiv C_5$ =

CL_α	[1]	[r]	[r^2]	[r^3]	[r^4]
$\mid CL_\alpha \mid$	1	1	1	1	1
δ_1	1	1	1	1	1
δ_2	1	α	α^2	α^3	α^4
δ_3	1	α^2	α^4	α	α^3
δ_4	1	α^3	α	α^4	α^2
δ_5	1	α^4	α^3	α^2	α

Where $\alpha= e^{2\pi i/5}=\cos 2\pi/5+ i \sin 2\pi / 5$

According to proposition (3.3), each irreducible character χ_i ofQ_{2m} defines five characters χ_{i1}, χ_{i2}, χ_{i3}, χ_{i4} and χ_{i5} such that $\chi_{i1}= \chi_i\delta_1$, , $\chi_{i2} = \chi_i\delta_2$, χ_{i3} = , $\chi_i\delta_3$, $\chi_{i4} = \chi_i\delta_4$, $\chi_{i5} = \chi_i\delta_5$Then≡($Q_{2m}\times C_5$) =≡ (Q_{2m}) $\otimes$ ≡(C_5).

Example (3.5)

To find characters table $Q_{28}\times C_5$ by Theorem (3.3) we have the characters table Q_{28} as Table (4) , where $v_i = 2 \cos (\pi i / 14)$, $v_{2m} = 2$, $v_m = -2$, $v_7 = 2 \cos(7\pi / 14)$ =

$2 \cos(\pi / 2)= 0$,

CL_β	[1]	$[x^2]$	$[x^4]$	$[x^6]$	$[x^8]$	$[x^{10}]$	$[x^{12}]$	$[x^{14}]$	$[x]$	$[x^3]$	$[x^5]$	$[x^7]$	$[x^9]$	$[x^{11}]$	$[x^{13}]$	$[y]$	$[xy]$
$\lvert CL_\beta \rvert$	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	14	14
Ψ_1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ψ_4	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1	-1	-1	-1	1
χ_2	2	V_4	V_8	V_{12}	V_{12}	V_8	V_4	2	V_2	V_6	V_{10}	-2	V_{10}	V_6	V_2	0	0
χ_4	2	V_8	V_{12}	V_4	V_4	V_{12}	V_8	2	V_4	V_{12}	V_8	2	V_8	V_{12}	V_4	0	0
χ_6	2	V_{12}	V_4	V_8	V_8	V_4	V_{12}	2	V_6	V_{10}	V_2	-2	V_2	V_{10}	V_6	0	0
χ_8	2	V_{12}	V_4	V_8	V_8	V_4	V_{12}	2	V_8	V_4	V_{12}	2	V_{12}	V_4	V_8	0	0
χ_{10}	2	V_8	V_{12}	V_4	V_4	V_{12}	V_8	2	V_{10}	V_2	V_6	-2	V_6	V_2	V_{10}	0	0
χ_{12}	2	V_4	V_8	V_{12}	V_{12}	V_8	V_4	2	V_{12}	V_8	V_4	2	V_4	V_8	V_{12}	0	0
χ_1	2	V_2	V_4	V_6	V_8	V_{10}	V_{12}	-2	V_1	V_3	V_5	0	V_9	V_{11}	V_{13}	0	0
χ_3	2	V_6	V_{12}	V_{10}	V_4	V_2	V_8	-2	V_3	V_9	V_{13}	0	V_1	V_5	V_{11}	0	0
χ_5	2	V_{10}	V_8	V_2	V_{12}	V_6	V_4	-2	V_5	V_{13}	V_3	0	V_{11}	V_1	V_9	0	0
χ_7	2	-2	2	-2	2	-2	2	-2	0	0	0	0	0	0	0	0	0
χ_9	2	V_{10}	V_8	V_2	V_{12}	V_6	V_4	-2	V_9	V_1	V_{11}	0	V_3	V_{13}	V_5	0	0
χ_{11}	2	V_6	V_{12}	V_{10}	V_4	V_2	V_8	-2	V_{11}	V_5	V_1	0	V_{13}	V_9	V_3	0	0
χ_{13}	2	V_2	V_4	V_6	V_8	V_{10}	V_{12}	-2	V_{13}	V_{11}	V_9	0	V_5	V_3	V_1	0	0
Ψ_2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-1	-1
Ψ_3	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1	-1	-1	1	-1

Table(4)

And the characters table C_5 as table (3), and from(3.3) the characters table $Q_{28}\times C_5$ can be written as follows :

≡($Q_{28}\times C_5$) =≡ (Q_{28}) $\otimes$ ≡ (C_5) ,

Then ≡($Q_{28}\times C_5$) is given in the table (5) .

where $v_i = 2\cos(\pi i / 14)$, $v_{2m} = 2$, $v_m = -2$, $v_7 = 2\cos(\pi/2) = 0$.

4. The main results

Proposition(4.1)[2]

The rational valued characters $\theta_i = \sum_{\sigma\in Gal(Q(\chi_i)/Q)} \sigma(\chi_i)$ form basis for $\overline{R}(G)$, wher χ_i are the irreducible characters of *G* , and the numbers of θ_i are equal to the number of all distinct *Γ-classes* of *G*.

Proposition(4.2)[2]

The rational valued characters table of the cyclic group C_{p^s} of rank *s+1* where *p* is a prime number which is denoted by ($\equiv^*(C_{p^s})$), is given as follows:

Γ-classes	$[r]$	$[r^P]$	$[r^{P^2}]$	…	$[r^{P^{s-3}}]$	$[r^{P^{s-2}}]$	$[r^{P^{s-1}}]$	[I]
θ_1	1	1	1	…	1	1	1	1
θ_2	-1	p-1	p-1	…	p-1	p-1	p-1	p-1
θ_3	0	-p	p(p-1)	…	p(p-1)	p(p-1)	p(p-1)	p(p-1)
⋮	⋮	⋮	⋮	⋱	⋮	⋮	⋮	⋮
θ_{s-1}	0	0	0	…	$-p^{s-3}$	$p^{s-3}(p-1)$	$p^{s-3}(p-1)$	$p^{s-3}(p-1)$
θ_s	0	0	0	…	0	$-p^{s-2}$	$p^{s-2}(p-1)$	$p^{s-2}(p-1)$
θ_{s+1}	0	0	0	…	0	0	$-p^{s-1}$	$p^{s-1}(p-1)$

Table(5)

where its rank *s+1* represents the number of all distinct Γ-classes

The rational character table of the quaternion group Q_{2m} when m=2p , p is prime number ,p ≠2(4.3) [3]

The rational characters table of Q_{2m} when m = 2p , p is prime number , p≠2 is given in the following table (after change order the rows and the columns) $\equiv^*(Q_{4p})$ =

1	1	1	1	1	1	1	1
-1	1	-1	-1	1	1	1	1
-1	-1	1	1	1	1	1	1
1	-1	-1	-1	1	1	1	1
0	0	0	0	-2	2	-2	2
0	0	1	-2	-1	-1	p-1	p-1
0	0	-1	2	-1	-1	p-1	p-1
0	0	0	0	2	2	2p-2	2p-2

Table(6)

Example(4.4)

To construct the rational valued characterstable of($Q_{28}\times C_5$) when havetodothefollowing :

From Example(3.5) we have the characterstable of$Q_{28}\times C_5$

By the definition of$Q_{28}\times C_5$:

$\equiv(Q_{28}\times C_5) = \equiv(Q_{28}) \otimes \equiv(C_5)$

To calculate the rational valued characterstable of the group

$(Q_{28}\times C_5) \;\; = \equiv^*(Q_{28}\times C_5)$

$\theta_{11} = \Psi_{11}, \theta_{12} = \Psi_{12} + \Psi_{13} + \Psi_{14} + \Psi_{15}$

$\theta_{21} = \Psi_{41}, \theta_{22} = \Psi_{42} + \Psi_{43} + \Psi_{44} + \Psi_{45}$

$\theta_{71} = \Psi_{21}, \theta_{72} = \Psi_{22} + \Psi_{23} + \Psi_{24} + \Psi_{25}$

$\theta_{81} = \Psi_{31}, \theta_{82} = \Psi_{32} + \Psi_{33} + \Psi_{34} + \Psi_{35}$

$\theta_{51} = \chi_{71}, \theta_{52} = \chi_{72} + \chi_{73} + \chi_{74} + \chi_{75}$

The elements ofGal(ϕ_{1i}) / $Q$are :

$\{\sigma_{1i}, \sigma_{2i}, \sigma_{3i}, \sigma_{4i}, \sigma_{5i}, \sigma_{6i}, \sigma_{8i}, \sigma_{9i}, \sigma_{10i}, \sigma_{11i}, \sigma_{12i}, \sigma_{13i}\}$

$\sigma_{1i}(\phi_{1i}) = \phi_{1i}, \sigma_{2i}(\phi_{1i}) = \phi_{2i}, \sigma_{3i}(\phi_{1i}) = \phi_{3i}, \sigma_{4i}(\phi_{1i}) = \phi_{4i}, \sigma_{5i}(\phi_{1i}) = \phi_{5i}$

$\sigma_{6i}(\phi_{1i}) = \phi_{6i}, \sigma_{8i}(\phi_{1i}) = \phi 8i, \sigma_{9i}(\phi_{1i}) = \phi_{9i}, \sigma_{10i}(\phi_{1i}) = \phi_{10i}, \sigma_{11i}(\phi_{1i})$

$= \phi_{11i}, \sigma_{12i}(\phi_{1i}) = \phi_{12}, \sigma_{13i}(\phi_{1i}) = \phi_{13i}$,

and i=1 ,2,3 ,4,5

By proposition (4. 1)

1- (I) if i =1

$\theta_{61} = \sigma_{(1,1)}(\varphi_{11}) + \sigma_{(3,1)}(\varphi_{11}) + \sigma_{(5,1)}(\varphi_{11}) + \sigma_{(9,1)}(\varphi_{11}) + \sigma_{(11,1)}(\varphi_{11}) + \sigma_{(13,1)}(\varphi_{11})$

$= \varphi_{(1,1)} + \varphi_{(3,1)} + \varphi_{(5,1)} + \varphi_{(9,1)} + \varphi_{(11,1)} + \varphi_{(13,1)}$

$\theta_{61}([I,I]) = \theta_{61}([I,r]) =$ 2+2+2+2+2+2=12

$\theta_{61}([x^2,I]) = \theta_{61}([x^2,r]) = (V_2+V_6++V_{10})+(V_{10}+V_6+V_2)$=1+1=2

$\theta_{61}([x^4,I]) = \theta_{61}([x^4,r]) = (V_4+V_{12}++V_8)+(V_8+V_{12}+V_4)$=(-1)+(-1)= -2

$\theta_{61}([x^{14},I]) = \theta_{61}([x^{14},r])$= (-2)+ (-2)+ (-2)+ (-2)+ (-2)+ (-2)+ (-2)= -12

$\theta_{61}([x,I]) = \theta_{61}([x,r]) = V_1+V_3+V_5+V_9+V_{11}+V_{13}$= 0

$\theta_{61}([x^7,I]) = \theta_{61}([x^7,r])$ = 0+0+0+0+0+0 = 0

$\theta_{61}([y,I]) = \theta_{61}([y,r])$= 0+0+0+0+0+0 = 0

$\theta_{61}([xy,I]) = \theta_{61}([xy,r])$=0+0+0+0+0+0 = 0

$\theta_{4i} = \varphi_{2i} + \varphi_{6i} + \varphi_{10i}$

$\theta_{41} = \varphi_{(2,1)} + \varphi_{(6,1)} + \varphi_{(10,1)}$

$\theta_{41}([I,I]) = \theta_{41}([I,r])$= 2+2+2= 6

$\theta_{41}([x^2,I]) = \theta_{41}([x^2,r]) = V_4+V_{12}+V_8$= -1

$\theta_{41}([x^4,I]) = ([x^4,r]) = V_8+V_4+V_{12}$= -1

$\theta_{41}([x^{14},I]) = \theta_{41}([x^{14},r])$ =2+2+2= 6

$\theta_{41}([x,I]) = \theta_{41}([x,r]) = V_2+V_6+V_{10}$= 1

$\theta_{41}([x^7,I]) = \theta_{41}([x^7,r])$ =(-2)+(-2)+(-2)= -6

$\theta_{41}([y,I]) = \theta_{41}([y,r])$= 0+0+0= 0

$\theta_{41}([xy,I]) = \theta_{41}([xy,r])$=0+0+0=0

$\theta_{3i} = \varphi_{4i} + \varphi_{8i} + \varphi_{12i}$

$\theta_{(3,1)} = \varphi_{(4,1)} + \varphi_{(8,1)} + \varphi_{(12,1)}$

$\theta_{31}([I,I]) = \theta_{31}([I,r])$= = 2+2+2= 6

$\theta_{31}([x^2,I]) = \theta_{31}([x^2,r]) = V_8+V_{12}+V_4$= -1

$\theta_{31}([x^4,I]) == \theta_{31}([x^4,r]) = V_{12}+V_4+V_8$= -1

$\theta_{31}([x^{14},I]) = \theta_{31}([x^{14},r])$ = 2+2+2= 6

$\theta_{31}([x,I]) = \theta_{31}([x,r]) = V_8+V_4+V_{12}$=-1

$\theta_{31}([x^7,I]) = \theta_{31}([x^7,r])$ =2+2+2= 6

$\theta_{31}([y,I]) = \theta_{31}([y,r])$= 0+0+0= 0

$\theta_{31}([xy,I]) == \theta_{31}([xy,r])$ =0+0+0=0

2- (II) if i =2,3 ,4,5

$\theta_{62} = \sigma_{(1,2)}(\varphi_{12}) + \sigma_{(1,3)}(\varphi_{13}) + \sigma_{(1,4)}(\varphi_{14}) + \sigma_{(1,5)}(\varphi_{15}) + \sigma_{(3,2)}(\varphi_{12}) + \sigma_{(3,3)}(\varphi_{13}) + \sigma_{(3,4)}(\varphi_{14})$

$+\sigma_{(3,5)}(\varphi_{15}) + \sigma_{(5,2)}(\varphi_{12}) + \sigma_{(5,3)}(\varphi_{13}) + \sigma_{(5,4)}(\varphi_{14}) + \sigma_{(5,5)}(\varphi_{15}) + \sigma_{(9,2)}(\varphi_{12}) + \sigma_{(9,3)}(\varphi_{13}) + \sigma_{94}(\varphi_{14})$

$+\sigma_{95}(\varphi_{15})+\ \sigma_{(11,2)}(\varphi_{12})\ +\ \sigma_{(11,3)}(\varphi_{13})\ +\sigma_{(11,4)}(\varphi_{14})\ +\sigma_{(11,5)}(\varphi_{15})\ +\sigma_{(13,2)}(\varphi_{12})\ +\ \sigma_{(13,3)}(\varphi_{13})\ +\sigma_{(13,4)}(\varphi_{14})$
$+\sigma_{(13,5)}(\varphi_{15})$

$\theta_{62}([I,I])$=2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2+2=48

$\theta_{62}([I,r])$=($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)
+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+ ($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+ ($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)
= 12 α+12α^2+12α^3+12α^4=12($\alpha+\alpha^2+\alpha^3+\alpha^4$)=12(-1)= -12

$\theta_{62}([x^2,I])$ = ($V_2+V_2+V_2+V_2$)+ ($V_6+V_6+V_6+V_6$)+ ($V_{10}+V_{10}+V_{10}+V_{10}$)+
($V_{10}+V_{10}+V_{10}+V_{10}$)+ ($V_6+V_6+V_6+V_6$)+ ($V_2+V_2+V_2+V_2$)
= 8V_2+8V_{10}+8V_6=8 ($V_2+V_6+V_{10}$)=8(1)=8

$\theta_{62}([x^2,r])$=($\alpha V_2+\alpha^2V_2+\alpha^3V_2+\alpha^4V_2$)+($\alpha V_6+\alpha^2V_6+\alpha^3V_6+\alpha^4V_6$)+($\alpha V_{10}+\alpha^2V_{10}+\alpha^3V_{10}+\alpha^4V_{10}$)+(
$\alpha V_{10}+\alpha^2V_{10}+\alpha^3V_{10}+\alpha^4V_{10}$)+
($\alpha V_6+\alpha^2V_6+\alpha^3V_6+\alpha^4V_6$)+($\alpha V_2+\alpha^2V_2+\alpha^3V_2+\alpha^4V_2$)=2$V_2$($\alpha+\alpha^2+\alpha^3+\alpha^4$)+ 2$V_6$($\alpha+\alpha^2+\alpha^3+\alpha^4$)+
2V_{10}($\alpha+\alpha^2+\alpha^3+\alpha^4$)= (-2)$V_2$+(-2)$V_6$+(-2)$V_{10}$= (-2) ($V_2+V_6+V_{10}$) = (-2) (1) = -2

$\theta_{62}([x^4,I])$= ($V_4+V_4+V_4+V_4$)+ ($V_{12}+V_{12}+V_{12}+V_{12}$)+ ($V_8+V_8+V_8+V_8$)+
($V_8+V_8+V_8+V_8$)+ ($V_{12}+V_{12}+V_{12}+V_{12}$)+ ($V_4+V_4+V_4+V_4$)=
8V_8+8V_{12}+8V_4=8 ($V_8+V_{12}+V_4$)=8(-1)= -8

$\theta_{62}([x^4,r])$=($\alpha V_4+\alpha^2V_4+\alpha^3V_4+\alpha^4V_4$)+($\alpha V_{12}+\alpha^2V_{12}+\alpha^3V_{12}+\alpha^4V_{12}$)+
($\alpha V_8+\alpha^2V_8+\alpha^3V_8+\alpha^4V_8$)+($\alpha V_8+\alpha^2V_8+\alpha^3V_8+\alpha^4V_8$)+($\alpha V_{12}+\alpha^2V_{12}+\alpha^3V_{12}+\alpha^4V_{12}$)+($\alpha V_4+\alpha^2V_4+$
$\alpha^3V_4+\alpha^4V_4$)=2V_4($\alpha+\alpha^2+\alpha^3+\alpha^4$)+2$V_{12}$($\alpha+\alpha^2+\alpha^3+\alpha^4$)+ 2$V_8$($\alpha+\alpha^2+\alpha^3+\alpha^4$) = (-2)$V_4$+(-2)$V_8$+(-2)$V_{12}$=
(-2)($V_4+V_8+V_{12}$) = (-2) (-1) = 2

$\theta_{62}([x^{14},I])$= (-2)+ (-2) = -48

$\theta_{62}([x^{14},r])$= (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)+ (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)+ (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)+ (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)+ (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)+ (-2 α)+ (-2α^2)+ (-2α^3)+ (-2α^4)= (-12 α)+ (-12α^2)+ (-12α^3)+ (-12α^4)= (-12) ($\alpha+\alpha^2+\alpha^3+\alpha^4$)= (-12) (-1)= 12

$\theta_{62}([x,I])$=($V_1+V_1+V_1+V_1$)+ ($V_3+V_3+V_3+V_3$)+ ($V_5+V_5+V_5+V_5$)+
($V_9+V_9+V_9+V_9$)+ ($V_{11}+V_{11}+V_{11}+V_{11}$)+ ($V_{13}+V_{13}+V_{13}+V_{13}$)=
(4V_1+4V_3+4V_5+4 V_9+4V_{11}+4V_{13})=4($V_1+V_3+V_5+V_9+V_{11}+V_{13}$)=4(0)= 0

$\theta_{32}([x^4,r])$= ($\alpha V_{12}+\alpha^2V_{12}+\alpha^3V_{12}+\alpha^4V_{12}$)+ ($\alpha V_4+\alpha^2V_4+\alpha^3V_4+\alpha^4V_4$)+
($\alpha V_8+\alpha^2V_8+\alpha^3V_8+\alpha^4V_8$)= ($\alpha+\alpha^2+\alpha^3+\alpha^4$)($V_{12}+V_4+V_8$)= (-1)(-1)= 1

$\theta_{32}([x^{14},I])$= (2+2+2+2)+ (2+2+2+2)+ (2+2+2+2)= 8+8+8= 24

$\theta_{32}([x^{14},r])$=($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+ ($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)
=2($\alpha+\alpha^2+\alpha^3+\alpha^4$)+2 ($\alpha+\alpha^2+\alpha^3+\alpha^4$)+2 ($\alpha+\alpha^2+\alpha^3+\alpha^4$)=6($\alpha+\alpha^2+\alpha^3+\alpha^4$)
=6(-1)= -6

$\theta_{32}([x,I])$=($V_2+V_2+V_2+V_2$)+ ($V_6+V_6+V_6+V_6$)+ ($V_{10}+V_{10}+V_{10}+V_{10}$)
= 4V_2+4V_6+4V_{10}=4($V_2+V_6+V_{10}$)=4(-1)=- 4

$\theta_{32}([x,r])$=($\alpha V_2+\alpha^2V_2+\alpha^3V_2+\alpha^4V_2$)+ ($\alpha V_6+\alpha^2V_6+\alpha^3V_6+\alpha^4V_6$)+
($\alpha V_{10}+\alpha^2V_{10}+\alpha^3V_{10}+\alpha^4V_{10}$)= ($\alpha+\alpha^2+\alpha^3+\alpha^4$)($V_2+V_6+V_{10}$)= (-1)(1)= -1

$\theta_{32}([x^7,I])$= (2+2+2+2)+ (2+2+2+2)+ (2+2+2+2)= 8+8+8= 24

$\theta_{32}([x^7,r])$ =($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)+($2\alpha+2\alpha^2+2\alpha^3+2\alpha^4$)
=2($\alpha+\alpha^2+\alpha^3+\alpha^4$)+2 ($\alpha+\alpha^2+\alpha^3+\alpha^4$)+2 ($\alpha+\alpha^2+\alpha^3+\alpha^4$)=6($\alpha+\alpha^2+\alpha^3+\alpha^4$)
=6(-1)= -6

$\theta_{32}([y,I])$=$\theta_{32}([y,r])$= 0

$\theta_{32}([xy,r])$ =$\theta_{32}([xy,r])$= 0

There are sixteen Γ- classesin≡*$(Q_{28} \times C_5)$

[I, I] ={[I, I]},

$[I, r]$ ={[I, r],[I, r^2],[I, r^3],[I, r^4]},

$[x^2, I]$={$[x^2, \mathrm{I}]$,$[x^6, \mathrm{I}]$,$[x^{10}, \mathrm{I}]$},

$[x^2, \mathrm{r}]$={

$[x^2, \mathrm{r}]$,$[x^2, r^2]$,$[x^2, r^3]$,$[x^2, r^4]$,$[x^6, \mathrm{r}]$,$[x^6, r^2]$,$[x^6, r^3]$,$[x^6, r^4]$,$[x^{10}, \mathrm{r}]$,$[x^{10}, r^2]$,

$[x^{10}, r^3]$,$[x^{10}, r^4]$},

$[x^4, I]$={$[x^4, \mathrm{I}]$,$[x^8, \mathrm{I}]$,$[x^{12}, \mathrm{I}]$},

$[x^4, \mathrm{r}]$= { $[x^4, \mathrm{r}]$,$[x^4, r^2]$,$[x^4, r^3]$,$[x^4, r^4]$,

$[x^8, \mathrm{r}]$,$[x^8, r^2]$,$[x^8, r^3]$,$[x^8, r^4]$,$[x^{12}, \mathrm{r}]$,$[x^{12}, r^2]$,$[x^{12}, r^3]$,$[x^{12}, r^4]$},

$[x^{14}, I]$={$[x^{14}, \mathrm{I}]$},

$[x^{14}, r]$= {$[x^{14}, \mathrm{r}]$,$[x^{14}, r^2]$,$[x^{14}, r^3]$,$[x^{14}, r^4]$},

$[x, I]$={$[x, \mathrm{I}]$,$[x^3, \mathrm{I}]$,$[x^5, \mathrm{I}]$,$[x^9, \mathrm{I}]$,$[x^{11}, \mathrm{I}]$,$[x^{13}, \mathrm{I}]$},

$[x, r]$={$[x, r]$,$[x, r^2]$,$[x, r^3]$, $[x, r^4]$,{ $[x^3, \mathrm{r}]$,$[x^3, r^2]$,$[x^3, r^3]$,$[x^3, r^4]$,

$[x^5, \mathrm{r}]$,$[x^5, r^2]$,$[x^5, r^3]$,$[x^5, r^4]$,$[x^9, \mathrm{r}]$,$[x^9, r^2]$,$[x^9, r^3]$,$[x^9, r^4]$,,

$[x^{11}, \mathrm{r}]$,$[x^{11}, r^2]$,$[x^{11}, r^3]$,$[x^{11}, r^4]$,$[x^{13}, \mathrm{r}]$,$[x^{13}, r^2]$,$[x^{13}, r^3]$,$[x^{13}, r^4]$},

$[x^7, I]$={$[x^7, \mathrm{I}]$},

$[x^7, r]$= {$[x^7, \mathrm{r}]$,$[x^7, r^2]$,$[x^7, r^3]$,$[x^7, r^4]$},

$[y, I]$={$[y, \mathrm{I}]$, $[xy, \mathrm{I}]$

$[y, r]$={$[y, r]$,$[y, r^3]$, $[y, r^4]$,{$[xy, r]$,$[xy, r^2]$,$[xy, r^3]$, $[xy, r^4]$}

can write therationalcharacterstableof(($Q_{28} \times C_5$))as table(8) .

Γ- classes	[I, I]	[I, r]	$[x^2, \mathrm{I}]$	$[x^2, \mathrm{r}]$	$[x^4, \mathrm{I}]$	$[x^4, \mathrm{r}]$	$[x^{14}, \mathrm{I}]$	$[x^{14}, \mathrm{r}]$	$[x, \mathrm{I}]$	$[x, r]$	$[x^7, \mathrm{I}]$	$[x^7, \mathrm{r}]$	$[y, I]$	$[y, r]$	$[xy, \mathrm{I}]$	$[xy, r]$
|CLa|	1	1	2	2	2	2	1	1	2	2	2	2	14	14	14	14
θ_{11}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
θ_{12}	4	-1	4	-1	4	-1	4	-1	4	-1	4	-1	4	-1	4	-1
θ_{21}	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1	-1	1	1
θ_{22}	4	-1	4	-1	4	-1	4	-1	-4	1	-4	1	-4	1	4	-1
θ_{31}	6	6	-1	-1	-1	-1	6	6	-1	-1	6	6	0	0	0	0
θ_{32}	24	-6	-4	1	-4	1	24	-6	-4	-1	24	-6	0	0	0	0
θ_{41}	6	6	-1	-1	-1	-1	6	6	1	1	-6	-6	0	0	0	0
θ_{42}	24	-6	-4	1	-4	1	24	-6	4	-1	-24	6	0	0	0	0
θ_{51}	2	2	-2	-2	2	2	-2	-2	0	0	0	0	0	0	0	0
θ_{52}	8	-2	-8	2	8	-2	-8	2	0	0	0	0	0	0	0	0
θ_{61}	12	12	2	2	-2	-2	-12	-12	0	0	0	0	0	0	0	0
θ_{62}	48	-12	8	-2	-8	2	-48	12	0	0	0	0	0	0	0	0
θ_{71}	1	1	1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1
θ_{72}	4	-1	4	-1	4	-1	4	-1	4	-1	4	-1	-4	1	-4	1
θ_{81}	1	1	1	1	1	1	1	1	-1	-1	-1	-1	1	1	-1	-1
θ_{82}	4	-1	4	-1	4	-1	4	-1	-4	1	-4	1	4	-1	-4	1

Table(8)

Theorem (4.5)

Ifmisan evennumber then:

$$\equiv^{*}(Q_{2m}\times C_5) = \equiv^{*}(Q_{2m})\otimes\equiv^{*}(C_5)$$

where $\equiv^{*}(Q_{2m}\times C_5)$ is the rational valued characters table of the group $Q_{2m}\times C_5$. **Proof:-**

Let φ_i be irreducible character of Q_{2m}, $\acute{\varphi}_J$ is an irreducible character of C_5

i=1,2,3,...,m+3, j= 1,2

Fromthe definition(3.4) of $(Q_{2m}\times C_5)$ and theorem(3.3)

$\equiv(Q_{2m}\times C_5) = \equiv(Q_{2m})\ \otimes\equiv(C_5)$

each element in $(Q_{2m}\times C_5$

is u $\epsilon(Q_{2m}\times C_5)$, u =(q ,c)

qϵQ_{2m} andc ϵC_5, c = r^{i} ,i =0,.....,4

q=$x^{s}y^{k}$, 0 ≤s≤2m-1, k=0,1

since

$\equiv C_5$=

CL_α	[I]	[r]	[r^2]	[r^3]	[r^4]
$\|CL_\alpha\|$	1	1	1	1	1
$\acute{\varphi}_1$	1	1	1	1	1
$\acute{\varphi}_2$	1	α	α^2	α^3	α^4
$\acute{\varphi}_3$	1	α^2	α^4	α	α^3
$\acute{\varphi}_4$	1	α^3	α	α^4	α^2
$\acute{\varphi}_5$	1	α^4	α^3	α^2	α

Then, $\acute{\varphi}_1$(I)=$\acute{\theta}_1$(r)=1

$\acute{\varphi}_1$(r)=$\acute{\varphi}_1(r^2)$=$\acute{\varphi}_1(r^3)$=,$\acute{\varphi}_1(r^4)$=$\acute{\theta}_1(r^i)$=1,i =1 ,.....,4

$\acute{\varphi}_2$(I)+$\acute{\varphi}_3$(I)+$\acute{\varphi}_4$(I)+$\acute{\varphi}_5$(I)=$\acute{\theta}_2$(I)= 1+1+1+1= 4

$\acute{\varphi}_2$(r)+$\acute{\varphi}_3$(r)+$\acute{\varphi}_4$(r)+$\acute{\varphi}_5$(r)=$\acute{\theta}_2$(r)= $\alpha+\alpha^2+\alpha^3+\alpha^4$= -1

Where $\alpha+\alpha^2+\alpha^3+\alpha^4$= -1

And from (theorem (4.1)) , each irreducible character of $(Q_{2m}\times C_5)$ is

$$\varphi_{ij}(u) = \varphi_{ij}(q,c) = \varphi_i(q)\,.\acute{\varphi}_j(c)$$

Then,

$$\varphi_{ij}(u) = \varphi_{ij}(q,c) = \varphi_i(q)\,.\varphi_j(c) = \begin{cases} \varphi_i(q) \text{ if } j=1 \text{ forall } c \\ 4\varphi_i(q) \text{ if } j=2,3,4,5 \text{ and } c=I \\ -\varphi_i(q) \text{ if } j=2,3,4,5 \text{ and } c\neq I \end{cases}$$

And by proposition (4.2)

$\equiv^{*}C_5$=

Γ- classes	[I]	[r]
$\acute{\theta}$	1	1
$\acute{\theta}$	4	−1

Then ,

$\acute{\theta}_1$(I)=$\acute{\theta}_1$(I)=1,$\acute{\theta}_2$(I)= 4 and $\acute{\theta}_2$(r)= -1

Fromproposition (4.1)

θij =$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_{ij}\right)$

where θij is thearational valuedcharacters table of$(Q_{2m} \times C_5)$ then,

θ_{ij}(u)= θij =$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_{ij}(u)\right) = \sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q).\acute{\varphi}_j(c)\right)$

(I) if j=1 , $\acute{\varphi}_j(c)$ =1

θ_{ij}(u)=$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q).\acute{\varphi}_j(c)\right) = \theta_i(q).1 = \theta_i(q).\acute{\theta}(I)$

where θi is therational valuedcharacters tableof Q_{2m}

(II) a– if j=2 ,3,4 , 5 and c= I

θij (u)=)=$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q).\acute{\varphi}_j(I)\right) = \sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q).\left[\sum_{\sigma\in C_5}\sigma\acute{\varphi}_j(I)\right]\right)$

=$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q)\right.$ [1+1+1+1]=θi(q) .4 = θi(q) .$\acute{\theta}_j$ (I)

b– if j=2 ,3,4 ,5 and c≠I

θij (u) ==$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q).\left[\sum_{\sigma\in C_5}\sigma\acute{\varphi}_j(c)\right]\right)$

=$\sum_{\sigma\ \epsilon \mathrm{Gal}\ (Q(\varphi \mathrm{ij}))/Q} \sigma\left(\varphi_i(q)\right. [\alpha+\alpha^2+\alpha^3+\alpha^4)]$

= −∑σ (φi (q) = ∑σ (φi (q) .–1 = θi (q) .$\acute{\theta}_j$ (c)

σ ϵ Gal (Q(φi (q)) / Q)

σ ϵ Gal (Q(φi (q)) / Q)

From(I) and(II) wehave θij = θi $\acute{\theta}_j$

Then $\equiv^*(Q_{2m} \times C_5) = \equiv^*(Q_{2m}) \otimes \equiv^*(C_5)$

The rational character table of the quaternion group$(Q_{2m} \times C_5)$ when m = 2p , p is prime number , p≠ 2 (4.6)

From Theorem (4.5) and form of $\equiv^*(Q_{4p})$= in then table (7) then the rational character table of the quaternion group$(Q_{2m} \times C_5)$ when m= 2p,p is prime number given in the general (16×16) matrix form$\equiv^*(P_{4m} \times C_5)$ as table(9).

1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
-1	1	-1	-1	1	1	1	1	-1	1	-1	-1	1	1	1	1
-1	-1	1	1	1	1	1	1	-1	-1	1	1	1	1	1	1
1	-1	-1	-1	1	1	1	1	1	-1	-1	-1	1	1	1	1
0	0	0	0	-2	2	-2	2	0	0	0	0	-2	2	-2	2
0	0	1	-2	-1	-1	p-1	p-1	0	0	1	-2	-1	-1	p-1	p-1
0	0	-1	2	-1	-1	p-1	p-1	0	0	-1	2	-1	-1	p-1	p-1
0	0	0	0	2	-2	2-2p	2p-2	0	0	0	0	2	-2	2-2p	2p-2
4	4	4	4	4	4	4	4	-1	-1	-1	-1	-1	-1	-1	-1
-4	4	-4	-4	4	4	4	4	1	-1	1	1	-1	-1	-1	-1
-4	-4	4	4	4	4	4	4	1	1	-1	-1	-1	-1	-1	-1
4	-4	-4	-4	4	4	4	4	-1	1	1	1	-1	-1	-1	-1
0	0	0	0	-8	8	-8	8	0	0	0	0	2	-2	2	-2
0	0	4	-8	-4	-4	4p-4	4p-4	0	0	-1	2	1	1	1-p	1-p
0	0	-4	8	-4	-4	4p-4	4p-4	0	0	1	-2	1	1	1-p	1-p
0	0	0	0	8	-8	8-8p	8p-8	0	0	0	0	-2	-2	2p-2	2-2p

CL_β	[I,I]	[I,r]	[I,r^2]	[I,r^3]	[I,r^4]	[x^2,I]	[x^2,r]	[x^2,r^2]	[x^2,r^3]	[x^2,r^4]	[x^4,I]	[x^4,r]	[x^4,r^2]	[x^4,r^3]	[x^4,r^4]	[x^6,I]	[x^6,r]	[x^6,r^2]	[x^6,r^3]	[x^6,r^4]	[x^8,I]	[x^8,r]	[x^8,r^2]	[x^8,r^3]	[x^8,r^4]
$\lvert CL_\beta \rvert$	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Ψ_{11}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ψ_{12}	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
Ψ_{13}	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
Ψ_{14}	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
Ψ_{15}	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
Ψ_{41}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ψ_{42}	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
Ψ_{43}	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
Ψ_{44}	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
Ψ_{45}	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
χ_{21}	2	2	2	2	2	v_4	v_4	v_4	v_4	v_4	v_8	v_8	v_8	v_8	v_8	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}
χ_{22}	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$
χ_{23}	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
χ_{24}	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
χ_{25}	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}
χ_{41}	2	2	2	2	2	v_8	v_8	v_8	v_8	v_8	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4
χ_{42}	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_4	αv_4	$\alpha^3 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_4	αv_4	$\alpha^3 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
χ_{43}	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_4	$\alpha^3 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_4	$\alpha^3 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
χ_{44}	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^3 v_4$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^3 v_4$
χ_{45}	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^3 v_4$	αv_4	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^3 v_4$	αv_4
χ_{61}	2	2	2	2	2	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_4	v_4	v_4	v_4	v_4	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8
χ_{62}	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
χ_{63}	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
χ_{64}	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^3 v_4$	$\alpha^2 v_4$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
χ_{65}	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8

Table(5)

x^{10},I]	[x^{10},r]	[x^{10},r^2]	[x^{10},r^3]	[x^{10},r^4]	[x^{12},I]	[x^{12},r]	[x^{12},r^2]	[x^{12},r^3]	[x^{12},r^4]	[x^{14},I]	[x^{14},r]	[x^{14},r^2]	[x^{14},r^3]	[x^{14},r^4]	[x,I]	[x,r]	[x,r^2]	[x,r^3]	[x,r^4]
2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2	2	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$
v_8	v_8	v_8	v_8	v_8	v_4	v_4	v_4	v_4	v_4	2	2	2	2	2	v_2	v_2	v_2	v_2	v_2
v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$
v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$
v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$
v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2
v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_8	v_8	v_8	v_8	v_8	2	2	2	2	2	v_4	v_4	v_4	v_4	v_4
v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	2	2α	$2\alpha^2$	$2\alpha^2$	$2\alpha^4$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$
v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4
v_4	v_4	v_4	v_4	v_4	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	2	2	2	2	2	v_6	v_6	v_6	v_6	v_6
v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	2	2α	$2\alpha^2$	$2\alpha^2$	$2\alpha^4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$
v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^2$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$
v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	2	$2\alpha^2$	2α	$2\alpha^4$	$2\alpha^2$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$
v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	2	$2\alpha^4$	$2\alpha^2$	$2\alpha^2$	2α	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6

Table(5)

$[x^3,I]$	$[x^3,r]$	$[x^3,r^2]$	$[x^3,r^3]$	$[x^3,r^4]$	$[x^5,I]$	$[x^5,r]$	$[x^5,r^2]$	$[x^5,r^3]$	$[x^5,r^4]$	$[x^7,I]$	$[x^7,r]$	$[x^7,r^2]$	$[x^7,r^3]$	$[x^7,r^4]$	$[x^9,I]$	$[x^9,r]$	$[x^9,r^2]$	$[x^9,r^3]$	$[x^9,r^4]$
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$
-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$
v_6	v_6	v_6	v_6	v_6	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	-2	-2	-2	-2	-2	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}
v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$
v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$
v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$
v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}
v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_8	v_8	v_8	v_8	v_8	2	2	2	2	2	v_8	v_8	v_8	v_8	v_8
v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	2	2α	$2\alpha^2$	$2\alpha^2$	$2\alpha^4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8
v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_2	v_2	v_2	v_2	v_2	-2	-2	-2	-2	-2	v_2	v_2	v_2	v_2	v_2
v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	-2	-2α	$-2\alpha^2$	$-2\alpha^2$	$-2\alpha^4$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$
v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^2$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$
v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	-2	$-2\alpha^2$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$
v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	-2	$-2\alpha^4$	$-2\alpha^2$	$-2\alpha^2$	-2α	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2

Table(5)

$[x^{11},I]$	$[x^{11},r]$	$[x^{11},r^2]$	$[x^{11},r^3]$	$[x^{11},r^4]$	$[x^{13},I]$	$[x^{13},r]$	$[x^{13},r^2]$	$[x^{13},r^3]$	$[x^{13},r^4]$	$[y,I]$	$[y,r]$	$[y,r^2]$	$[y,r^3]$	$[y,r^4]$	$[xy,I]$	$[xy,r]$	$[[xy,r^2]$	$[xy,r^3]$	$[xy,r^4]$
2	2	2	2	2	2	2	2	2	2	14	14	14	14	14	14	14	14	14	14
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1
-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	1	α	α^2	α^3	α^4
-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	1	α^2	α^4	α	α^3
-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	1	α^3	α	α^4	α^2
-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	1	α^4	α^3	α^2	α
v_6	v_6	v_6	v_6	v_6	v_2	v_2	v_2	v_2	v_2	0	0	0	0	0	0	0	0	0	0
v_8	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	0	0	0	0	0	0	0	0	0	0
v_8	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_2	$\alpha^2 v_2$	$\alpha^4 v_{10}$	αv_2	$\alpha^3 v_2$	0	0	0	0	0	0	0	0	0	0
v_8	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	0	0	0	0	0	0	0	0	0	0
v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	0	0	0	0	0	0	0	0	0	0
v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_4	v_4	v_4	v_4	v_4	0	0	0	0	0	0	0	0	0	0
v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	0	0	0	0	0	0	0	0	0	0
v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	0	0	0	0	0	0	0	0	0	0
v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	0	0	0	0	0	0	0	0	0	0
v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	0	0	0	0	0	0	0	0	0	0
v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_6	v_6	v_6	v_6	v_6	0	0	0	0	0	0	0	0	0	0
v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	0	0	0	0	0	0	0	0	0	0
v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	0	0	0	0	0	0	0	0	0	0
v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	0	0	0	0	0	0	0	0	0	0
v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	0	0	0	0	0	0	0	0	0	0

Table(5)

$\chi_{(8,1)}$	2	2	2	2	2	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_4	v_4	v_4	v_4	v_4	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8	v_8
$\chi_{(8,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
$\chi_{(8,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
$\chi_{(8,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
$\chi_{(8,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8
$\chi_{(10,1)}$	2	2	2	2	2	v_8	v_8	v_8	v_8	v_8	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4	v_4
$\chi_{(10,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
$\chi_{(10,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
$\chi_{(10,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$
$\chi_{(10,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4
$\chi_{(12,1)}$	2	2	2	2	2	v_4	v_4	v_4	v_4	v_4	v_8	v_8	v_8	v_8	v_8	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}
$\chi_{(12,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$
$\chi_{(12,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
$\chi_{(12,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
$\chi_{(12,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}
$\chi_{(1,1)}$	**2**	**2**	**2**	**2**	**2**	v_2	v_2	v_2	v_2	v_2	v_4	v_4	v_4	v_4	v_4	v_6	v_6	v_6	v_6	v_6	v_8	v_8	v_8	v_8	v_8
$\chi_{(1,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
$\chi_{(1,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
$\chi_{(1,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
$\chi_{(1,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8
$\chi_{(3,1)}$	2	2	2	2	2	v_6	v_6	v_6	v_6	v_6	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_4	v_4	v_4	v_4	v_4
$\chi_{(3,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
$\chi_{(3,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
$\chi_{(3,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$
$\chi_{(3,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4
$\chi_{(5,1)}$	2	2	2	2	2	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_8	v_8	v_8	v_8	v_8	v_2	v_2	v_2	v_2	v_2	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}
$\chi_{(5,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$
$\chi_{(5,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
$\chi_{(5,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
$\chi_{(5,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}

Table(5)

v_4	v_4	v_4	v_4	v_4	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	2	2	2	2	2	v_8	v_8	v_8	v_8	v_8
v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8
v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_8	v_8	v_8	v_8	v_8	2	2	2	2	2	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}
v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$
v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^2 v_{10}$
v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$
v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	$\alpha^2 v_{10}$
v_8	v_8	v_8	v_8	v_8	v_4	v_4	v_4	v_4	v_4	2	2	2	2	2	v_{12}	v_{12}	v_{12}	v_{12}	$\alpha^2 v_{12}$
v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$
v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}
v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	**-2**	**-2**	**-2**	**-2**	**-2**	v_1	v_1	v_1	v_1	v_1
v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$
v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$
v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$
v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1
v_2	v_2	v_2	v_2	v_2	v_8	v_8	v_8	v_8	v_8	-2	-2	-2	-2	-2	v_3	v_3	v_3	v_3	v_3
v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$
v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$
v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$
v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3
v_6	v_6	v_6	v_6	v_6	v_4	v_4	v_4	v_4	v_4	-2	-2	-2	-2	-2	v_5	v_5	v_5	v_5	v_5
v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$
v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$
v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$
v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5

v_4	v_4	v_4	v_4	v_4	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	2	2	2	2	2	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}
v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$
v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}
v_2	v_2	v_2	v_2	v_2	v_6	v_6	v_6	v_6	v_6	-2	-2	-2	-2	-2	v_6	v_6	v_6	v_6	v_6
v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$
v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$
v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$
v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6
v_8	v_8	v_8	v_8	v_8	v_4	v_4	v_4	v_4	v_4	2	2	2	2	2	v_4	v_4	v_4	v_4	v_4
v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$
v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4
v_3	v_3	v_3	v_3	v_3	v_5	v_5	v_5	v_5	v_5	0	0	0	0	0	v_9	v_9	v_9	v_9	v_9
v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$	v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$	0	0	0	0	0	v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$
v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$	v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$	0	0	0	0	0	v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	αv_9	$\alpha^3 v_9$
v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$	v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$	0	0	0	0	0	v_9	$\alpha^3 v_9$	αv_9	$\alpha^4 v_9$	$\alpha^2 v_9$
v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3	v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5	0	0	0	0	0	v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	αv_9
v_9	v_9	v_9	v_9	v_9	v_{13}	v_{13}	v_{13}	v_{13}	v_{13}	0	0	0	0	0	v_1	v_1	v_1	v_1	v_1
v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$	v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$	0	0	0	0	0	v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$
v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	αv_9	$\alpha^3 v_9$	v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$	0	0	0	0	0	v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$
v_9	$\alpha^3 v_9$	αv_9	$\alpha^4 v_9$	$\alpha^2 v_9$	v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$	0	0	0	0	0	v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$
v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	αv_9	v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}	0	0	0	0	0	v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1
v_{13}	v_{13}	v_{13}	v_{13}	v_{13}	v_3	v_3	v_3	v_3	v_3	0	0	0	0	0	v_{11}	v_{11}	v_{11}	v_{11}	v_{11}
v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$	v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$	0	0	0	0	0	v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$
v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$	v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$	0	0	0	0	0	v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$
v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$	v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$	0	0	0	0	0	v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$
v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}	v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3	0	0	0	0	0	v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}

v_4	v_4	v_4	v_4	v_4	v_8	v_8	v_8	v_8	v_8	0	0	0	0	0	0	0	0	0	0
v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	0	0	0	0	0	0	0	0	0	0
v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	0	0	0	0	0	0	0	0	0	0
v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	0	0	0	0	0	0	0	0	0	0
v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	0	0	0	0	0	0	0	0	0	0
v_2	v_2	v_2	v_2	v_2	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	0	0	0	0	0	0	0	0	0	0
v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	0	0	0	0	0	0	0	0	0	0
v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	0	0	0	0	0	0	0	0	0	0
v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	0	0	0	0	0	0	0	0	0	0
v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	0	0	0	0	0	0	0		0	0
v_8	v_8	v_8	v_8	v_8	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	0	0	0	0	0	0	0	0	0	0
v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	0	0	0	0	0	0	0	0	0	0
v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	0	0	0	0	0	0	0	0	0	0
v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	0	0	0	0	0	0	0	0	0	0
v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	0	0	0	0	0	0	0	0	0	0
v_{11}	v_{11}	v_{11}	v_{11}	v_{11}	v_{13}	v_{13}	v_{13}	v_{13}	v_{13}	0	0	0	0	0	0	0	0	0	0
v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$	v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$	0	0	0	0	0	0	0	0	0	0
v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$	v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$	0	0	0	0	0	0	0	0	0	0
v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$	v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$	0	0	0	0	0	0	0	0	0	0
v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}	v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}	0	0	0	0	0	0	0	0	0	0
v_5	v_5	v_5	v_5	v_5	v_{11}	v_{11}	v_{11}	v_{11}	v_{11}	0	0	0	0	0	0	0	0	0	0
v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$	v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$	0	0	0	0	0	0	0	0	0	0
v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$	v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$	0	0	0	0	0	0	0	0	0	0
v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$	v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$	0	0	0	0	0	0	0	0	0	0
v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5	v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}	0	0	0	0	0	0	0	0	0	0
v_1	v_1	v_1	v_1	v_1	v_9	v_9	v_9	v_9	v_9	0	0	0	0	0	0	0	0	0	0
v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$	v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$	0	0	0	0	0	0	0	0	0	0
v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$	v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	αv_9	$\alpha^3 v_9$	0	0	0	0	0	0	0	0	0	0
v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$	v_9	$\alpha^3 v_9$	αv_9	$\alpha^4 v_9$	$\alpha^2 v_9$	0	0	0	0	0	0	0	0	0	0
v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1	v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	αv_9	0	0	0	0	0	0	0	0	0	0

Table 5

$\chi_{(7,1)}$	2	2	2	2	2	-2	-2	-2	-2	-2	2	2	2	2	2	-2	-2	-2	-2	-2	2	2	2	2	2
$\chi_{(7,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$
$\chi_{(7,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$
$\chi_{(7,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$
$\chi_{(7,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α
$\chi_{(9,1)}$	2	2	2	2	2	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_8	v_8	v_8	v_8	v_8	v_2	v_2	v_2	v_2	v_2	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}
$\chi_{(9,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$
$\chi_{(9,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$
$\chi_{(9,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$
$\chi_{(9,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}
$\chi_{(11,1)}$	2	2	2	2	2	v_6	v_6	v_6	v_6	v_6	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_4	v_4	v_4	v_4	v_4
$\chi_{(11,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$
$\chi_{(11,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$
$\chi_{(11,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$
$\chi_{(11,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4
$\chi_{(13,1)}$	2	2	2	2	2	v_2	v_2	v_2	v_2	v_2	v_4	v_4	v_4	v_4	v_4	v_6	v_6	v_6	v_6	v_6	v_8	v_8	v_8	v_8	v_8
$\chi_{(13,2)}$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$
$\chi_{(13,3)}$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$
$\chi_{(13,4)}$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	v_2	$\alpha^3 v_2$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$
$\chi_{(13,5)}$	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8
$\Psi_{(2,1)}$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
$\Psi_{(2,2)}$	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
$\Psi_{(2,3)}$	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
$\Psi_{(2,4)}$	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
$\Psi_{(2,5)}$	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
$\Psi_{(3,1)}$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
$\Psi_{(3,2)}$	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
$\Psi_{(3,3)}$	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
$\Psi_{(3,4)}$	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
$\Psi_{(3,5)}$	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α

-2	-2	-2	-2	-2	2	2	2	2	2	-2	-2	-2	-2	-2	0	0	0	0	0
-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	2	2α	$2\alpha^2$	$2\alpha^3$	$2\alpha^4$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	0	0	0	0	0
-2	$-2\alpha^2$	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^3$	2	$2\alpha^2$	$2\alpha^4$	2α	$2\alpha^3$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	0	0	0	0	0
-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	2	$2\alpha^3$	2α	$2\alpha^4$	$2\alpha^2$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	0	0	0	0	0
-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	2	$2\alpha^4$	$2\alpha^3$	$2\alpha^2$	2α	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	0	0	0	0	0
v_6	v_6	v_6	v_6	v_6	v_4	v_4	v_4	v_4	v_4	-2	-2	-2	-2	-2	v_9	v_9	v_9	v_9	v_9
v_6	αv_6	$\alpha^2 v_6$	$\alpha^3 v_6$	$\alpha^4 v_6$	v_4	αv_4	$\alpha^2 v_4$	$\alpha^3 v_4$	$\alpha^4 v_4$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$
v_6	$\alpha^2 v_6$	$\alpha^4 v_6$	αv_6	$\alpha^3 v_6$	v_4	$\alpha^2 v_4$	$\alpha^4 v_4$	αv_4	$\alpha^3 v_4$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	$\alpha^2 v_9$	$\alpha^3 v_9$
v_6	$\alpha^3 v_6$	αv_6	$\alpha^4 v_6$	$\alpha^2 v_6$	v_4	$\alpha^3 v_4$	αv_4	$\alpha^4 v_4$	$\alpha^2 v_4$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_9	$\alpha^3 v_9$	$\alpha^2 v_9$	$\alpha^4 v_9$	$\alpha^2 v_9$
v_6	$\alpha^4 v_6$	$\alpha^3 v_6$	$\alpha^2 v_6$	αv_6	v_4	$\alpha^4 v_4$	$\alpha^3 v_4$	$\alpha^2 v_4$	αv_4	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	$\alpha^2 v_9$
v_2	v_2	v_2	v_2	v_2	v_8	v_8	v_8	v_8	v_8	-2	-2	-2	-2	-2	v_{11}	v_{11}	v_{11}	v_{11}	v_{11}
v_2	αv_2	$\alpha^2 v_2$	$\alpha^3 v_2$	$\alpha^4 v_2$	v_8	αv_8	$\alpha^2 v_8$	$\alpha^3 v_8$	$\alpha^4 v_8$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$
v_2	$\alpha^2 v_2$	$\alpha^4 v_2$	αv_2	$\alpha^3 v_2$	v_8	$\alpha^2 v_8$	$\alpha^4 v_8$	αv_8	$\alpha^3 v_8$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$
v_2	$\alpha^3 v_{10}$	αv_2	$\alpha^4 v_2$	$\alpha^2 v_2$	v_8	$\alpha^3 v_8$	αv_8	$\alpha^4 v_8$	$\alpha^2 v_8$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$
v_2	$\alpha^4 v_2$	$\alpha^3 v_2$	$\alpha^2 v_2$	αv_2	v_8	$\alpha^4 v_8$	$\alpha^3 v_8$	$\alpha^2 v_8$	αv_8	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}
v_{10}	v_{10}	v_{10}	v_{10}	v_{10}	v_{12}	v_{12}	v_{12}	v_{12}	v_{12}	-2	-2	-2	-2	-2	v_{13}	v_{13}	v_{13}	v_{13}	v_{13}
v_{10}	αv_{10}	$\alpha^2 v_{10}$	$\alpha^3 v_{10}$	$\alpha^4 v_{10}$	v_{12}	αv_{12}	$\alpha^2 v_{12}$	$\alpha^3 v_{12}$	$\alpha^4 v_{12}$	-2	-2α	$-2\alpha^2$	$-2\alpha^3$	$-2\alpha^4$	v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$
v_{10}	$\alpha^2 v_{10}$	$\alpha^4 v_{10}$	αv_{10}	$\alpha^3 v_{10}$	v_{12}	$\alpha^2 v_{12}$	$\alpha^4 v_{12}$	αv_{12}	$\alpha^3 v_{12}$	-2	$-2\alpha^2$	$-2\alpha^4$	-2α	$-2\alpha^3$	v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$
v_{10}	$\alpha^3 v_{10}$	αv_{10}	$\alpha^4 v_{10}$	$\alpha^2 v_{10}$	v_{12}	$\alpha^3 v_{12}$	αv_{12}	$\alpha^4 v_{12}$	$\alpha^2 v_{12}$	-2	$-2\alpha^3$	-2α	$-2\alpha^4$	$-2\alpha^2$	v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$
v_{10}	$\alpha^4 v_{10}$	$\alpha^3 v_{10}$	$\alpha^2 v_{10}$	αv_{10}	v_{12}	$\alpha^4 v_{12}$	$\alpha^3 v_{12}$	$\alpha^2 v_{12}$	αv_{12}	-2	$-2\alpha^4$	$-2\alpha^3$	$-2\alpha^2$	-2α	v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_1	v_1	v_1	v_1	v_1	v_{11}	v_{11}	v_{11}	v_{11}	v_{11}	0	0	0	0	0	v_3	v_3	v_3	v_3	v_3
v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$	v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$	0	0	0	0	0	v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$
v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$	v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$	0	0	0	0	0	v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$
v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$	v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$	0	0	0	0	0	v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$
v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1	v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}	0	0	0	0	0	v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3
v_5	v_5	v_5	v_5	v_5	v_1	v_1	v_1	v_1	v_1	0	0	0	0	0	v_{13}	v_{13}	v_{13}	v_{13}	v_{13}
v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$	v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$	0	0	0	0	0	v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$
v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$	v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$	0	0	0	0	0	v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$
v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$	v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$	0	0	0	0	0	v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$
v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5	v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1	0	0	0	0	0	v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}
v_{11}	v_{11}	v_{11}	v_{11}	v_{11}	v_9	v_9	v_9	v_9	v_9	0	0	0	0	0	v_5	v_5	v_5	v_5	v_5
v_{11}	αv_{11}	$\alpha^2 v_{11}$	$\alpha^3 v_{11}$	$\alpha^4 v_{11}$	v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$	0	0	0	0	0	v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$
v_{11}	$\alpha^2 v_{11}$	$\alpha^4 v_{11}$	αv_{11}	$\alpha^3 v_{11}$	v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	αv_9	$\alpha^3 v_9$	0	0	0	0	0	v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$
v_{11}	$\alpha^3 v_{11}$	αv_{11}	$\alpha^4 v_{11}$	$\alpha^2 v_{11}$	v_9	$\alpha^3 v_9$	αv_9	$\alpha^4 v_9$	$\alpha^2 v_9$	0	0	0	0	0	v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$
v_{11}	$\alpha^4 v_{11}$	$\alpha^3 v_{11}$	$\alpha^2 v_{11}$	αv_{11}	v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	αv_9	0	0	0	0	0	v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4
1	α^2	α^4	α^2	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$
-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$

Table 5

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
v_{13}	v_{13}	v_{13}	v_{13}	v_{13}	v_5	v_5	v_5	v_5	v_5	0	0	0	0	0	0	0	0	0	0
v_{13}	αv_{13}	$\alpha^2 v_{13}$	$\alpha^3 v_{13}$	$\alpha^4 v_{13}$	v_5	αv_5	$\alpha^2 v_5$	$\alpha^3 v_5$	$\alpha^4 v_5$	0	0	0	0	0	0	0	0	0	0
v_{13}	$\alpha^2 v_{13}$	$\alpha^4 v_{13}$	αv_{13}	$\alpha^3 v_{13}$	v_5	$\alpha^2 v_5$	$\alpha^4 v_5$	αv_5	$\alpha^3 v_5$	0	0	0	0	0	0	0	0	0	0
v_{13}	$\alpha^3 v_{13}$	αv_{13}	$\alpha^4 v_{13}$	$\alpha^2 v_{13}$	v_5	$\alpha^3 v_5$	αv_5	$\alpha^4 v_5$	$\alpha^2 v_5$	0	0	0	0	0	0	0	0	0	0
v_{13}	$\alpha^4 v_{13}$	$\alpha^3 v_{13}$	$\alpha^2 v_{13}$	αv_{13}	v_5	$\alpha^4 v_5$	$\alpha^3 v_5$	$\alpha^2 v_5$	αv_5	0	0	0	0	0	0	0	0	0	0
v_9	v_9	v_9	v_9	v_9	v_3	v_3	v_3	v_3	v_3	0	0	0	0	0	0	0	0	0	0
v_9	αv_9	$\alpha^2 v_9$	$\alpha^3 v_9$	$\alpha^4 v_9$	v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$	0	0	0	0	0	0	0	0	0	0
v_9	$\alpha^2 v_9$	$\alpha^4 v_9$	αv_9	$\alpha^3 v_9$	v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$	0	0	0	0	0	0	0	0	0	0
v_9	$\alpha^3 v_9$	αv_9	$\alpha^4 v_9$	$\alpha^2 v_9$	v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$	0	0	0	0	0	0	0	0	0	0
v_9	$\alpha^4 v_9$	$\alpha^3 v_9$	$\alpha^2 v_9$	αv_9	v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3	0	0	0	0	0	0	0	0	0	0
v_3	v_3	v_3	v_3	v_3	v_1	v_1	v_1	v_1	v_1	0	0	0	0	0	0	0	0	0	0
v_3	αv_3	$\alpha^2 v_3$	$\alpha^3 v_3$	$\alpha^4 v_3$	v_1	αv_1	$\alpha^2 v_1$	$\alpha^3 v_1$	$\alpha^4 v_1$	0	0	0	0	0	0	0	0	0	0
v_3	$\alpha^2 v_3$	$\alpha^4 v_3$	αv_3	$\alpha^3 v_3$	v_1	$\alpha^2 v_1$	$\alpha^4 v_1$	αv_1	$\alpha^3 v_1$	0	0	0	0	0	0	0	0	0	0
v_3	$\alpha^3 v_3$	αv_3	$\alpha^4 v_3$	$\alpha^2 v_3$	v_1	$\alpha^3 v_1$	αv_1	$\alpha^4 v_1$	$\alpha^2 v_1$	0	0	0	0	0	0	0	0	0	0
v_3	$\alpha^4 v_3$	$\alpha^3 v_3$	$\alpha^2 v_3$	αv_3	v_1	$\alpha^4 v_1$	$\alpha^3 v_1$	$\alpha^2 v_1$	αv_1	0	0	0	0	0	0	$-\alpha^3$	0	0	0
1	1	1	1	1	1	1	1	1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
1	α	α^2	α^3	α^4	1	α	α^2	α^3	α^4	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
1	α^2	α^4	α	α^3	1	α^2	α^4	α	α^3	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$
1	α^3	α	α^4	α^2	1	α^3	α	α^4	α^2	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
1	α^4	α^3	α^2	α	1	α^4	α^3	α^2	α	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	1	1	1	1	-1	-1	-1	-1	-1
-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$	1	α	α^2	α^3	α^4	-1	$-\alpha$	$-\alpha^2$	$-\alpha^3$	$-\alpha^4$
-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	$-\alpha^3$	1	α^2	α^4	α	α^3	-1	$-\alpha^2$	$-\alpha^4$	$-\alpha$	
-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$	1	α^3	α	α^4	α^2	-1	$-\alpha^3$	$-\alpha$	$-\alpha^4$	$-\alpha^2$
-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$	1	α^4	α^3	α^2	α	-1	$-\alpha^4$	$-\alpha^3$	$-\alpha^2$	$-\alpha$

By using Theorem (4.5) the rational valued characters table of $Q_{28} \times C_5$,Since p=7, it is same t0 the table Example(4.3),(after change order the rows and the columns) as Table(10).

CL_β	$[y,I]$	$[xy,I]$	$[x,I]$	$[x^7,I]$	$[x^2,I]$	$[x^4,I]$	$[x^{14},I]$	$[I,I]$	$[y,r]$	$[xy,r]$	$[x,r]$	$[x^7,r]$	$[x^2,r]$	$[x^4,r]$	$[x^{14},r]$	$[I,r]$
$\|CL_\beta\|$	14	14	2	2	2	2	1	1	14	14	2	2	2	2	1	1
θ_{11}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
θ_{12}	4	4	4	4	4	4	4	4	-1	-1	-1	- 1	- 1	-1	-1	-1
θ_{21}	-1	1	-1	-1	1	1	1	1	-1	1	-1	-1	1	1	1	1
θ_{22}	-4	4	-4	-4	4	4	4	4	1	-1	1	1	-1	-1	-1	-1
θ_{31}	0	0	-1	6	-1	-1	6	6	0	0	-1	6	-1	-1	6	6
θ_{32}	0	0	-4	24	-4	-4	24	24	0	0	1	- 6	1	1	-6	-6
θ_{41}	0	0	1	-6	-1	-1	6	6	0	0	1	-6	-1	-1	6	6
θ_{42}	0	0	4	-24	-4	-4	24	24	0	0	-1	6	1	1	-6	-6
θ_{51}	0	0	0	0	-2	2	-2	2	0	0	0	0	-2	2	-2	2
θ_{52}	0	0	0	0	-8	8	-8	8	0	0	0	0	2	-2	2	-2
θ_{61}	0	0	0	0	2	-2	-12	12	0	0	0	0	2	-2	-12	12
θ_{62}	0	0	0	0	8	-8	-48	48	0	0	0	0	-2	2	12	-12
θ_{71}	-1	-1	1	1	1	1	1	1	-1	-1	1	1	1	1	1	1
θ_{72}	-4	-4	4	4	4	4	4	4	1	1	-1	- 1	-1	-1	-1	-1
θ_{81}	1	-1	-1	-1	1	1	1	1	1	-1	-1	-1	1	1	1	1
θ_{82}	4	-4	-4	-4	4	4	4	4	-1	1	1	1	-1	-1	-1	-1

Table(10)

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