On equating the constant term, we get

$b+d=7$

Substituting $b=5$, we get

$5+d=7$

$d=7-5$

$d=2$

Therefore, quotient $q(x)=ax+b$

$=2x+5$

Remainder $r(x)=cx+d$

$=11x+2$

Hence, the quotient and remainder are $\boxed{q(x)=2x+5}$ and $\boxed{r(x)=11x+2}$.

(iv) Given,

$f(x)=15x^3-20x^2+13x-12$

$g(x)=2-2x+x^2$

Here, Degree $(f(x))=3$ and

Degree $(g(x))=2$

Therefore, quotient $q(x)$ is of degree $3-2=1$ and

Remainder $r(x)$ is of degree less than 2

Let $q(x)=ax+b$ and

$r(x)=cx+d$

Using division algorithm, we have

$f(x)=g(x)\times q(x)+r(x)$

$15x^3-20x^2+13x-12=(x^2-2x+2)(ax+b)+cx+d$

$15x^3-20x^2+13x-12=ax^3-2ax^2+2ax+bx^2-2bx+2b+cx+d$

$15x^3-20x^2+13x-12=ax^3-2ax^2+bx^2+2ax-2bx+cx+2b+d$

$15x^3-20x^2+13x-12=ax^3-x^2(2a-b)+x(2a-2b+c)+2b+d$

Equating the co-efficients of various powers of x on both sides, we get

On equating the co-efficient of x^3

$ax^3=15x^3$

$a\cancel{x^3}=15\cancel{x^3}$

$a=15$

On equating the co-efficient of x^2

$2a-b=20$

Substituting $a=15$, we get

$2\times15-b=20$

$30-b=20$

$-b=20-30$

$\cancel{-}b=\cancel{-}10$

On equating the co-efficient of x

$2a-2b+c=13$

Substituting $a=15$ and $b=10$, we get

$$2\times15-2\times10+c=13$$
$$30-20+c=13$$
$$10+c=13$$
$$c=13-10$$

$c=3$

On equating constant term

$2b+d=-12$

Substituting $b=10$, we get

$2\times10+d=-12$

$20+d=-12$

$d=-12-20$

$d=-32$

Therefore, quotient $q(x)=ax+b$

$=15x+10$

Remainder $r(x)=3x-32$

$=3x-32$

Hence, the quotient and remainder are $\boxed{q(x)=15x+10}$ and $\boxed{r(x)=3x-32}$.

*********** END **********