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, . . .

“ ” 128 –
(7.092.401; 7.092.402)

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2005 .

621.317.799

2005 .

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0,3 ... 3,4

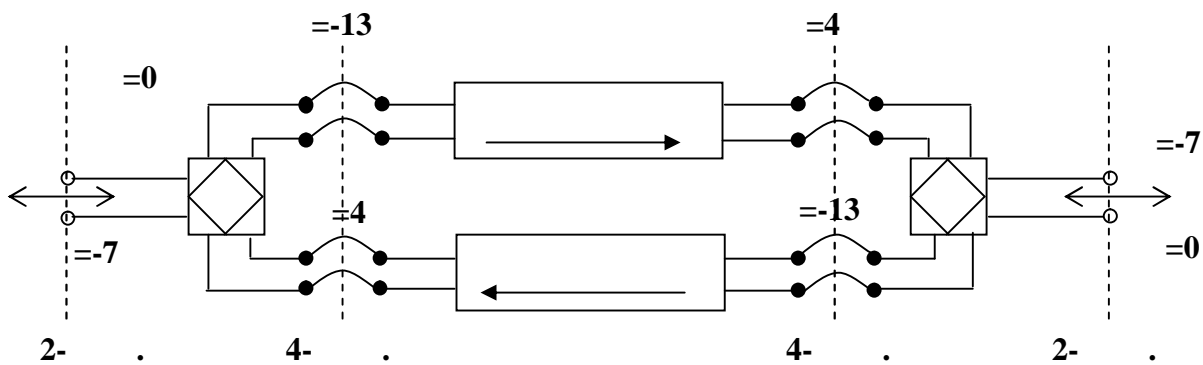
(-)

2.1

2-

4-

(. 2.1.)



. 2.1

(2-

$$4- \quad)$$

$$2- \quad - \quad .$$

$$f.$$

r ,

$f.$

$$r = \sum - \sum s .$$

$$r = - , \tag{2.1}$$

2- 4- . 2.1.
2-

:

$$r = - = 0 - (-7) = 7 ,$$

- 4-

$$r = - = -13 - 4 = -17 , .$$

,

4-

,

4-

17 .

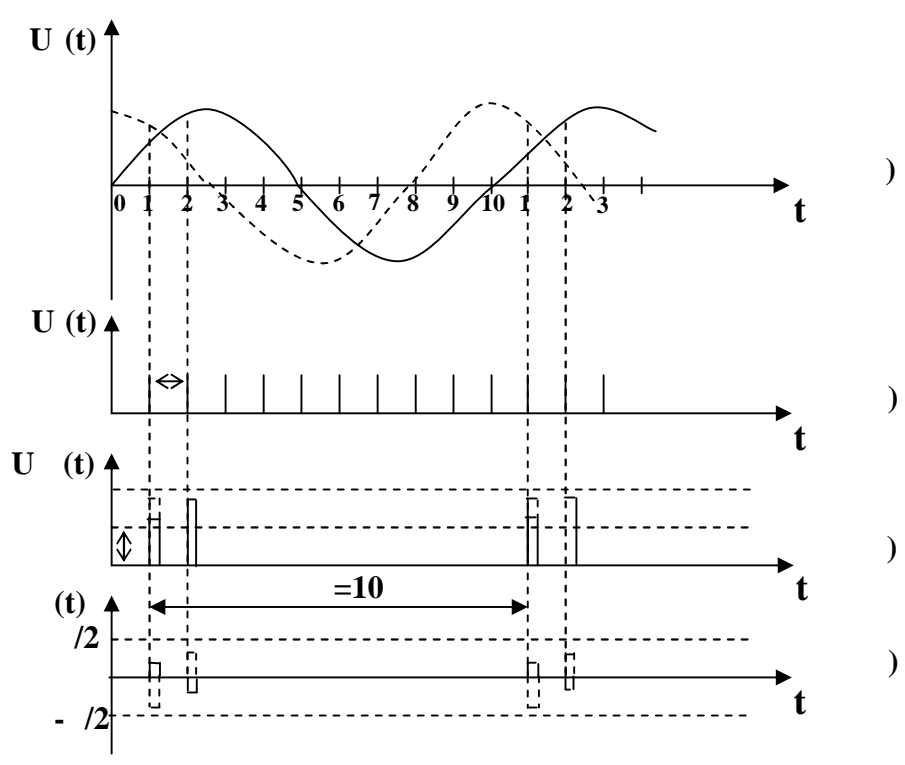
$$f = 800 .$$

$$f = 8 .$$

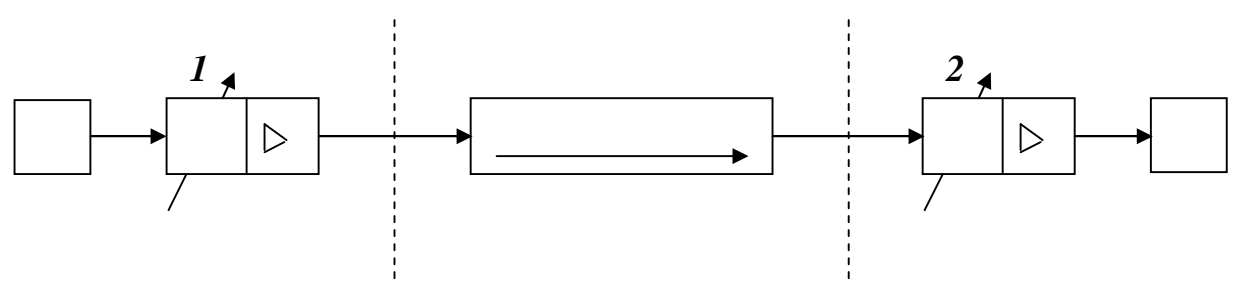
. 2.2.

,

$U_k(t)$ $f=800$
 (. 2.2. -),
 $f=8$ (. 2.2.)
 $=10$, $U(t)$ (.
 2.2. -). (t)
 . 2.2. -



. 2.2 -
 $f=800$.



. 2.3 - .

$$U_k(t) \quad (2.2. -),$$

$$(t) (2.2. -)$$

(f).

(r).

804...805 , 900 1010 .

() ,

(- ; -) .

.2.3.

- 15

=0

1.

2.

(2.1).

2.2

- () - () .

()

()

()

f:

$$\Delta A_r(f) = A(f) - A(f) \quad (2.2)$$

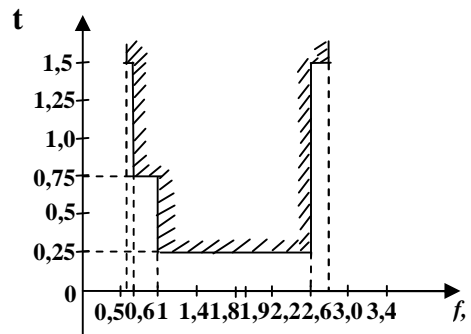
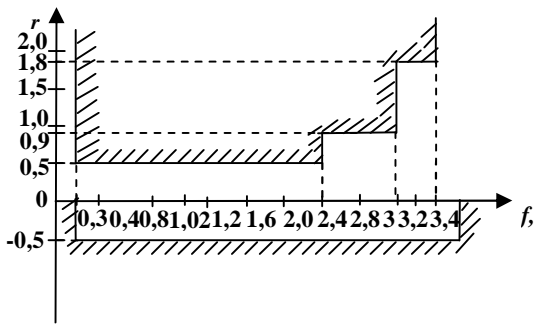
():

$$t = \frac{\partial \varphi}{\partial \omega}$$

$r(f)$ $t(f)$
 . 2.4. . 2.5.

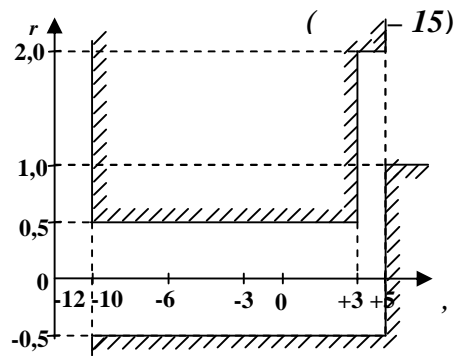
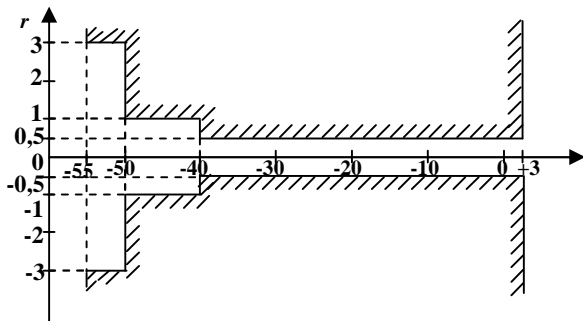
- 15

. 2.3.



. 2.4

2.5



. 2.6

. 2.7

3400, 4600 .

$$f = 8$$

$$f=300, 805, 1010, 3000,$$

- :

$$\Delta A_r(f) = -\Delta P(f) = P(f), \tag{2.3}$$

(f) - .

2.3

()

(r) .

r

:

$$\Delta A_r(P) = A() - A(=). \tag{2.4}$$

$$-55...+3$$

$$700...1100 ,$$

. 2.6.

. 2.7.

$$- 15$$

$$-10...5$$

$$f=805 , 1010$$

1020 .

:

$$\Delta A_r(P) = -\Delta P(), \tag{2.5}$$

-

;

() – (.2.3).

() .

=3,14

– 15

=0

5 .

$r = r + 1,0$.

2.4

(t),

U (t)

(t)

$$P \dots = \int_{-\frac{\Delta}{2}}^{\frac{\Delta}{2}} U_c^2 W_{\xi}(U) dU_c,$$

W(U) –

(t);

– /2 /2

W(U)=1/ .

R =1 , :

$$P = \frac{\Delta^2}{12}. \tag{2.6}$$

$$M = \frac{2|U|}{\Delta} + 1. \tag{2.7}$$

$$M' = \frac{|U|}{\Delta} + 1. \tag{2.8}$$

(2.7) (2.8) (2.6),

$$P = \frac{1}{3} \cdot \frac{U^2}{(M-1)^2};$$

$$P = \frac{1}{12} \cdot \frac{U^2}{(M'-1)^2}.$$

$$A = 10 \lg \left(\frac{U^2}{(M-1)^2} \right) = 20 \lg(M-1) + 10 \lg 3;$$

$$A' = 10 \lg \left(\frac{U^2}{(M'-1)^2} \right) = 20 \lg(M'-1) + 10 \lg 12,$$

, U =U .

m – , :

$$A_{...} \approx 6m + 4,8, \quad ; \quad (2.9)$$

$$A'_{...} \approx 6m' + 10,8, \quad .$$

m

(...)

:

$$A_{...} \approx 6m - 10,1, \quad . \quad (2.10)$$

(...)

()

(...), ... = - ...

,

,

(...) ,

(...).

0,1...0,2

0,35...0,55 ,

25

8 .

(...),

. 2.8. 2.9.,

35

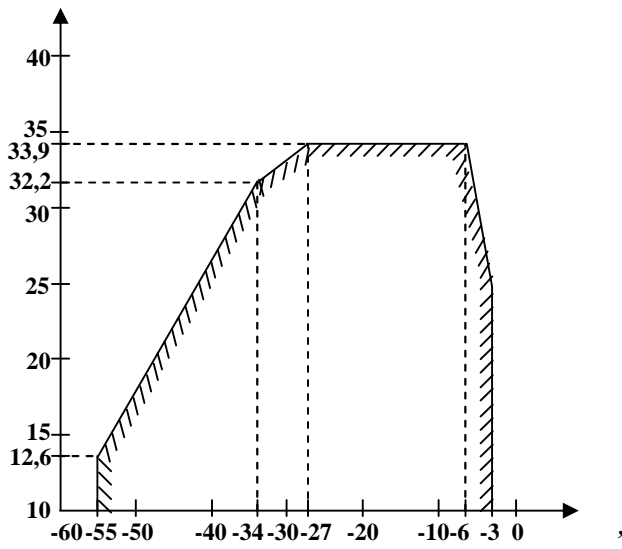
33 .

8-

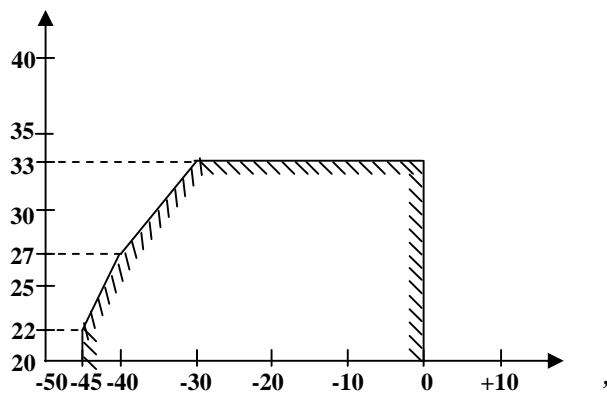
(2.10)

... = 6·8-

10,1>33 .

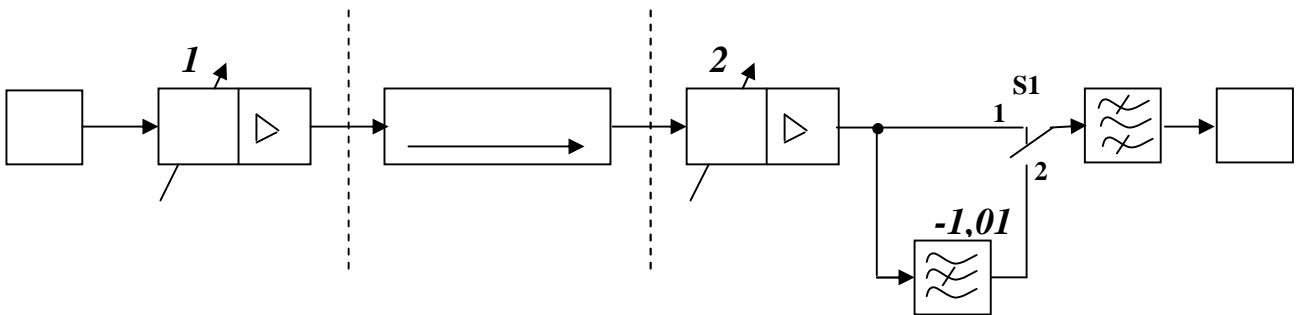


. 2.8 –

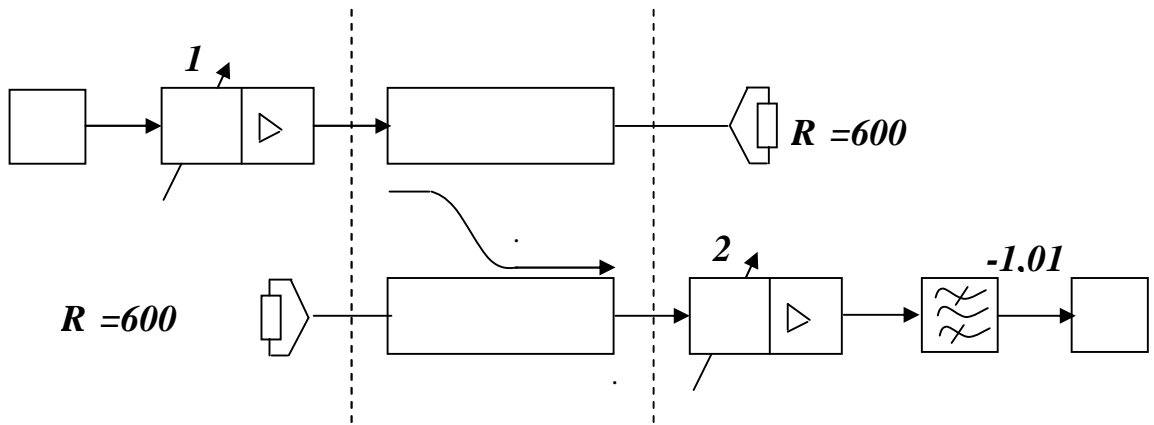


. 2.9 –

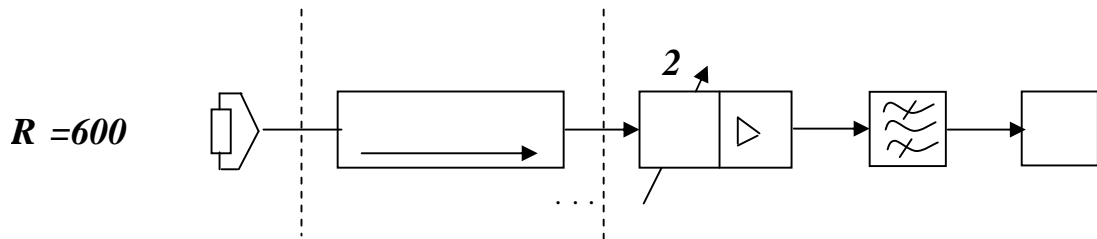
$$f = 1010 \text{ (1020)}$$



. 2.10 –



. 2.11 -



. 2.12 -

$$f = 1010 (1020)$$

2.10.

(S1) 1
 () 0,3...3,4
 2
 () (2)

$$A \dots () = - \dots () \tag{2.11}$$

()
 ()

， “0” ，
 (=0)

.

2.5

·
 ·
 () () , () :
 · = - · (2.12)

,

- 15

$f=1010$ · . 2.11.
 (- 1,01)
 1,01 24 ·

65 ·

2.6

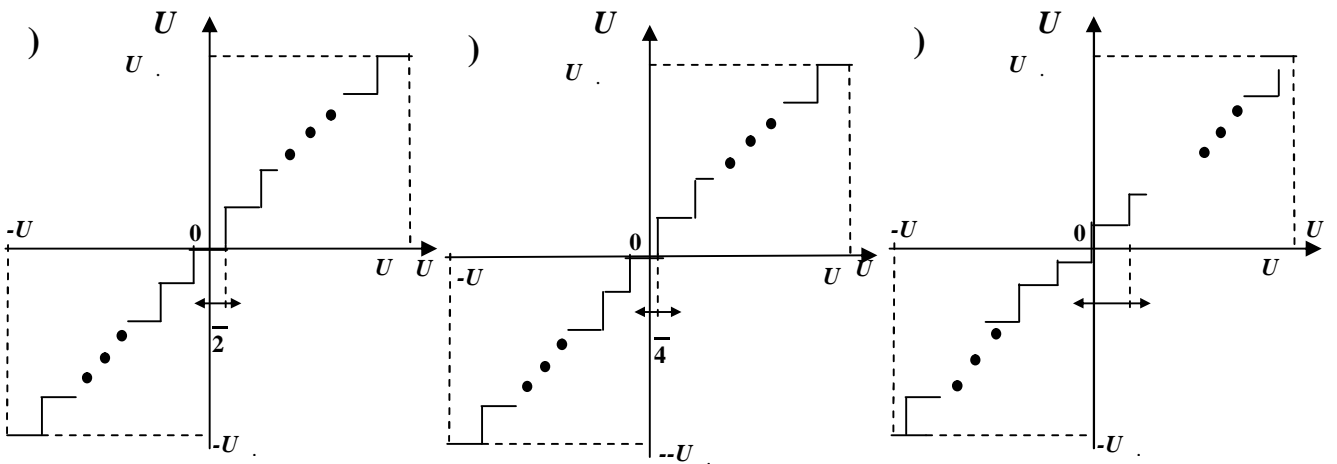
· ()
 () “ ”
 · , ,
 , ,
 , , “ ”
 (. 2.13).

. 2.13 , , /2; /4; -

. 2.13. ,

()

. 2.12,



. 2.13 -

“ ”

3

3.1

2-

4-

3.2

3.3

()

() 2-

4-

3.4

(0,8; 1)?

3.5

()

– () –

3.6

?

?

3.7

()

3.8

3.9

?

3.10

?

3.11

()

?

3.12

?

?

3.13

3.14

?

3.15

– 15?

4

4.1

4.2

(3).

4.3

. 5.2),

(.5.2 ÷ .5.5)

(. 5.1,

(. 2.4)

(. 2.7)

(. 2.9).

4.4

5.

4.5

4.5.1

4.1

	1	2	3	4	5	6	7	8	9	10	11	12
	2-	4-	2-	4-	2-	4-	2-	4-	2-	4-	2-	4-
,	-1	-13	+3	-10	+1	-15	0	-20	-5	-11	-3	-25

4.5.2

U

$m -$

.4.2.

4.2

	1	2	3	4	5	6	7	8	9	10	11	12
m	7	9	8	12	9	7	11	8	10	11	12	10
U	1,5	2,25	0,5	2,0	0,25	1,25	2,75	1,0	2,5	0,75	1,75	3,0

5

5.1

5.1.1

5.1.2

5.1.3

“ ”

1

“ ”.

: “ ”, “ ”

“ ”.

5.1.4

“ ” “ ”

“ ”, “ ”.

5.1.5

1×4×0,9

3

“ ” “ ” 1 2
“ ”.

5.1.6

“ ” “ ”.

5.1.7

’
.
:
()
“ ”;
;
“10 ”;
“ ” “ ”
“ ” — “ ”
“ ”;
“ ”
“ ” “ ”;
“ ”;
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,
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“ ”
,
“10 ” “20 ”, “30 ”, “40 ”
“50 ”.
,
- 15.

5.1.8

“ ”.
:
“ ” “ ”
“ ”;
“ ” “ ”
“ ”
“ ”
“ ”
“ ”
;
“ ”

- “ ”
512 “512 ”

“ ”.
“ ”
.

5.1.9

, :
“512 ”;
“ ”, “ ”.
“ ” “ ”
“ ” “ ” “ ”
“ ” ().

5.1.10

. 5.1.

5.1

		,	,
1.	2-	“0”	“-7”
2.	4-	“-13”	+4”
3.	4-	“-3,5”	“-3,5”

, .
2-
“ ”, “2- ”
(-I - II).
4-
“ ” “ ”,
4-
:
15 ().
“2-
” “ ” “ ”

5.2

- S_r)

r (

. 5.1

5.2.1

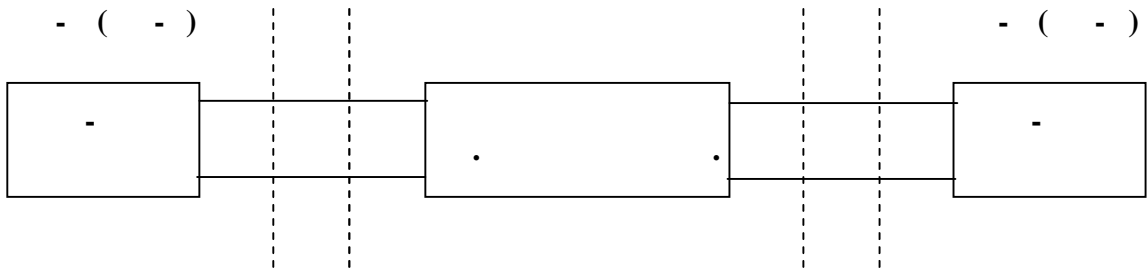
- ():

- “ dB_{mo}” “0”;
- “ Hz” - “805” (“1010”);
- “(\Rightarrow ” -

5.2.2

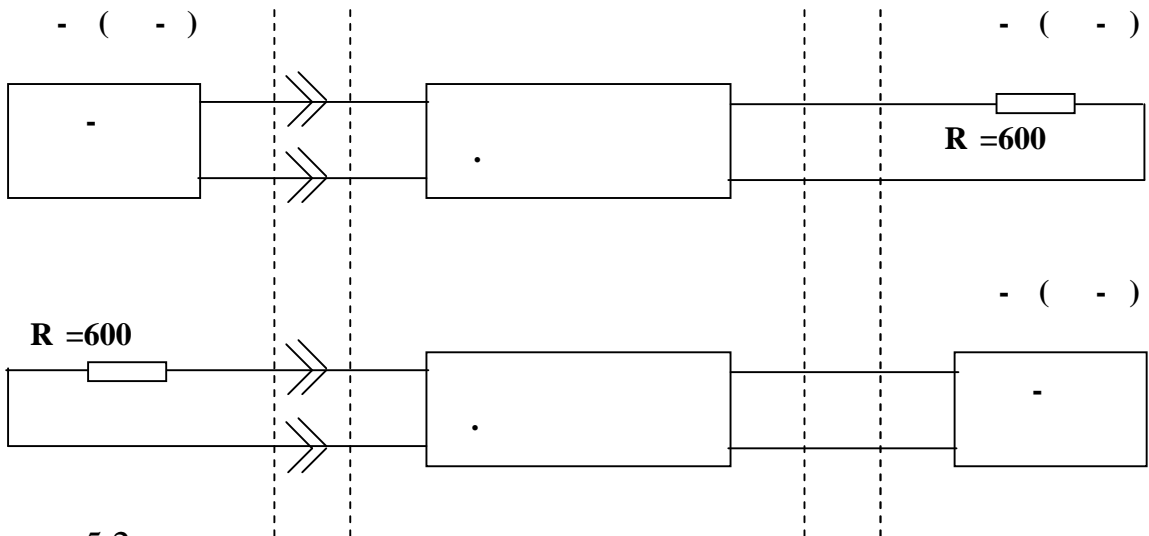
- ():

- “ ”, - “0”;



. 5.1 -

, , ,



. 5.2 -

- “ \Rightarrow ”
 ;
 - “-10”, “0”, “+10”
 , ()
);
 - .
 805 (1010)

(2.2):

$$A_r = (\quad - \quad) - \quad = \quad . \quad - \quad , \quad (5.1)$$

-
 . 5.1 (
 dB_{mo}).

. 5.2.

5.2

,	(S),	,	. ,	, . ,
.				,
...				
...				
...-				
	7±1,0 (17,3±0,5)	+3,14	65	-65

2-

(7±1,0) ; 4-
 (17,3±0,5) .

5.3

. 5.1.

5.3.1

- “ dB_{mo} ” “0”;
 - “(\Rightarrow ” ;

“ Hz”

“300”, “805”, “1010”, “3000”, “3400” “4600”.

5.3.2 – ():

“0”;

“ \Rightarrow ” ;

“ ”,
805 (1010),

“ \blacktriangledown ”
“0 ”;

“300 ”; “805

(1010)”, “3000 ”, “3400 ”, “4600 ”

(f) ,
 $r(f)$

:

$$A_r(f) = - (f). \quad (5.2)$$

(f) . 5.3.

5.3

$f,$	300	805	1010	3000	3400	4600
(f),						

(f) . 5.3, . 2.4. (f)

5.4

() r ()

. 5.1 :

5.4.1 – ():

“ Hz” “805” (“1010”);

“(\Rightarrow)” ;

() “

dB_{mo}” “-12”, “0”
“+5”.

5.4.2 - ():

- “ ”;
- “ \Rightarrow ” ;
- “ ”
- 805 (1010). (“ \blacktriangledown ” “0”);
- =-12 ; 0 ; +5
“-10”, “0”, “+10”,
- .
- :

$$A_r(\) = - (\). \quad (5.3)$$

5.4

.2.7.

5.4

,	-12	0	+5
(),			
r(),			

r()

.2.7.

(5.4).

$$\approx 5/\Delta_r (=+5). \quad (5.4)$$

5.5

... ()

.5.1

:

5.5.1 - ():

- “ Hz” “1010”;
- “ \Rightarrow ” ;

-

“ dB_{mo}”
“-36”; “-24”; “-12”; “0”; “5”.

5.5.2 - ():

- “ ”;

- “ ⇒ ” ;

- “ Hz” “1010”;

- -36 ,

-24 , -12 , 0 , 5

“ ”, “ dB_{mo}”
“-36”; “-24”; “-12”; “0”; “5”, “ ▼ ”

“ ” “ ▼ ” “0”

“ ▼ ”;

- “-10”;

“-20” “-30”

.

(2.11)

:

$A \dots () = - ()$. (5.5)

. 5.5 (. 2.9).

5.5

	-36	-24	-12	0	+5
.. (),					

5.6

. 5.2 :

5.6.1 - (): “ dB_{mo}” “0”,

- “ Hz” “1010”;

- “ \Rightarrow ”
- ;

- (.)
- 14- .

5.6.2 - ():
- “ \Rightarrow ”

- 14- ;
- “03”,
- “0” .;

- , ,
- , .2
60” (“-40”, “-50”, “-
(, ,
) .

- , , :
- = .1 - .2 (5.6)

5.2.

65 .

5.7

- .5.1 :
5.7.1 - ():
- “ \Rightarrow ” ;

- “ ” () .

5.7.2 - ():
- “ ” ;
- “ \Rightarrow)”
- “-40”, “-50”, “-60”

. 5.2.

“-65”。

5.8

：

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- ()；
- “ ”；
- “ ” “ ”

；

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6

6.1

[5].

6.2

- 15.

- 15

- 15

6.3

. 6.1.

6.4

6.4.1

- 6.4.2 ' "⊥"
- 6.4.3 ' "220 v, 50 Hz"
" " , " "
- 6.4.4 ' " (⇔)"
" ⇔)".
- 6.4.5 " dB_{mo}"
" dB_{mo}" "0" (),
" Hz" "805" ("1010").
- 6.4.6 " dB_{mo}"
"0" ,
"03" "0" () .
(0±0,3)

6.4.7

7

128 :

- 7.1
- 7.2
- 7.3
- 7.4
- 7.5

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1. : . - . : , 1980. -
. 286-295.
 2. :
. - . : , 1988. - . 300-310.
 3. :
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118.
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128,
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