МИНЕСТЕРСТВО ОБРАЗОВАНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

УЧЕРЕЖДЕНИЕ ОБРАЗОВАНИЯ

«Брестский государственный технический университет»

Кафедра «Интеллектуальные информационные технологии»

Лабораторная работа №7

По дисциплине «Аппаратно-программное обеспечение ЭВМ и сетей»

За 6 семестр

Тема: «НАСТРОЙКА СТАТИЧЕСКОЙ МАРШРУТИЗАЦИИ НА УСТРОЙСТВАХ CISCO»

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Брест 2022

Вариант 4

Задание.

ЧАСТЬ 1

1. Загрузив lab5-a.pdf, изучить материал; выполнить этапы настройки статической маршрутизации на устройствах Cisco, изложенные в документе.

```
R1(config)#ip route 192.168.3.0 255.255.255.0 192.168.2.2
R2(config)#ip route 192.168.1.0 255.255.255.0 192.168.2.1
```

ПК2

Физическое пространство | Конфигурация | Рабочий стол | Sc

Командная строка

```
Packet Tracer PC Command Line 1.0
PC>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.10: bytes=32 time=110ms TTL=126
Reply from 192.168.3.10: bytes=32 time=125ms TTL=126
Reply from 192.168.3.10: bytes=32 time=99ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 99ms, Maximum = 125ms, Average = 111ms

PC>
```

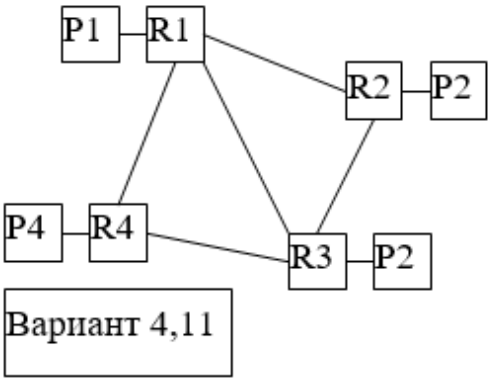
```
R1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, Serial0/1/0
S    192.168.3.0/24 [1/0] via 192.168.2.2
```

```
R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.1.0/24 [1/0] via 192.168.2.1
C    192.168.2.0/24 is directly connected, Serial0/1/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

```
R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

```
R2#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

2. Собрать схему сети согласно выданному варианту задания; распределить IP-адреса по аналогии с примером в lab5-a.pdf; составить таблицу сетевых адресов; сконфигурировать устройства.



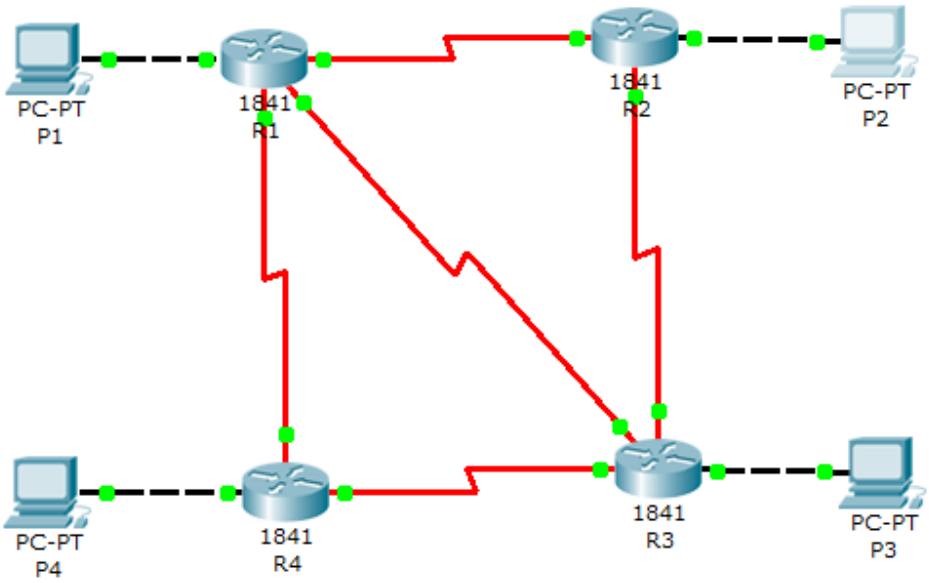


Таблица сетевых адресов

Device	Interface	IP Address	Mask	Default Gateway
R1	Fa0/0	192.168.1.1	255.255.255.0	N/A
	S0/0/0	192.168.5.1	255.255.255.0	N/A
	S0/0/1	192.168.9.1	255.255.255.0	N/A
	S0/1/0	192.168.6.1	255.255.255.0	N/A
R2	Fa0/0	192.168.2.1	255.255.255.0	N/A
	S0/0/0	192.168.5.2	255.255.255.0	N/A
	S0/1/0	192.168.8.1	255.255.255.0	N/A
R3	Fa0/0	192.168.3.1	255.255.255.0	N/A
	S0/0/0	192.168.7.1	255.255.255.0	N/A
	S0/0/1	192.168.9.2	255.255.255.0	N/A
	S0/1/0	192.168.8.2	255.255.255.0	N/A
R4	Fa0/0	192.168.4.1	255.255.255.0	N/A
	S0/0/0	192.168.7.2	255.255.255.0	N/A
	S0/1/0	192.168.6.2	255.255.255.0	N/A
P1	N/A	192.168.1.27	255.255.255.0	192.168.1.1
P2	N/A	192.168.2.27	255.255.255.0	192.168.2.1
P3	N/A	192.168.3.27	255.255.255.0	192.168.3.1
P4	N/A	192.168.4.27	255.255.255.0	192.168.4.1

3. Для собранной схемы сети выполнить настройку статической маршрутизации.
- схему сети с IP-адресами

```
R1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
S    192.168.2.0/24 [1/0] via 192.168.5.2
S    192.168.3.0/24 [1/0] via 192.168.9.2
S    192.168.4.0/24 [1/0] via 192.168.6.2
C    192.168.5.0/24 is directly connected, Serial0/0/0
C    192.168.6.0/24 is directly connected, Serial0/1/0
C    192.168.9.0/24 is directly connected, Serial0/0/1
R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.1.0/24 [1/0] via 192.168.5.1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
S    192.168.3.0/24 [1/0] via 192.168.8.2
C    192.168.5.0/24 is directly connected, Serial0/0/0
C    192.168.8.0/24 is directly connected, Serial0/1/0
R3>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.1.0/24 [1/0] via 192.168.9.1
S    192.168.2.0/24 [1/0] via 192.168.8.1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
S    192.168.4.0/24 [1/0] via 192.168.7.2
C    192.168.7.0/24 is directly connected, Serial0/0/0
C    192.168.8.0/24 is directly connected, Serial0/1/0
C    192.168.9.0/24 is directly connected, Serial0/0/1
```

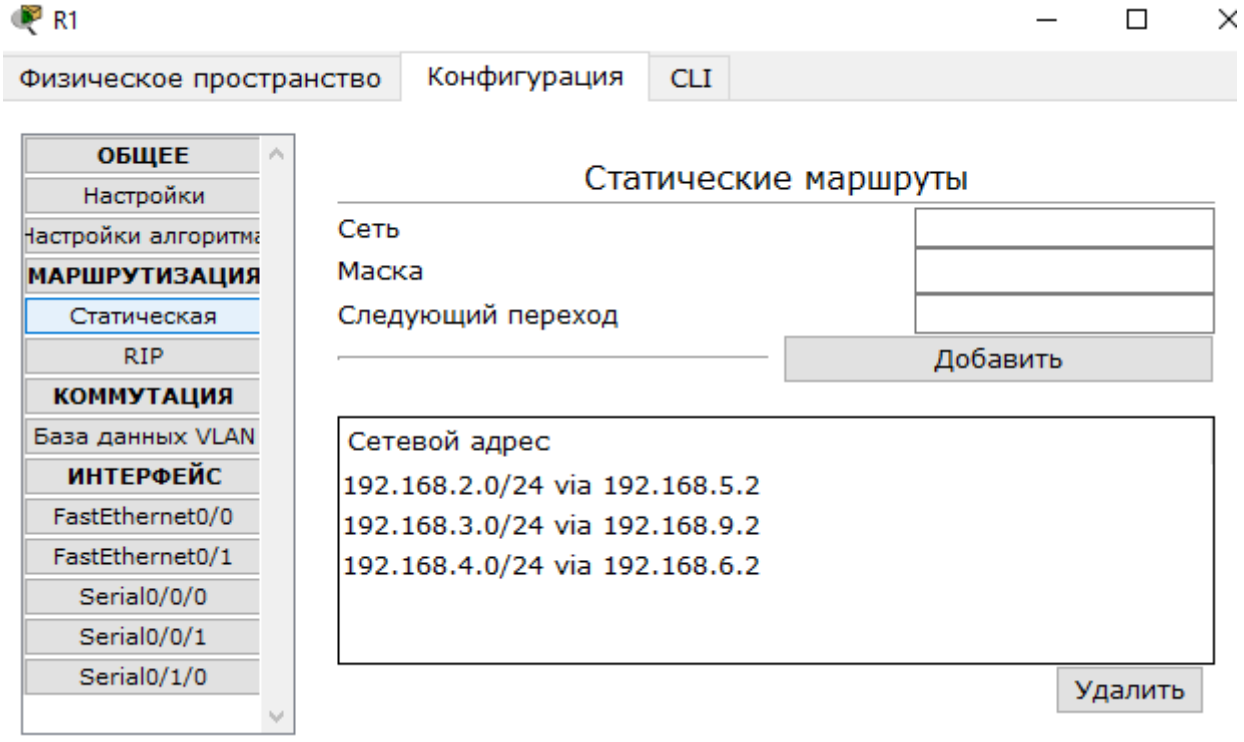
```
R4>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.1.0/24 [1/0] via 192.168.6.1
S    192.168.3.0/24 [1/0] via 192.168.7.1
C    192.168.4.0/24 is directly connected, FastEthernet0/0
C    192.168.6.0/24 is directly connected, Serial0/1/0
C    192.168.7.0/24 is directly connected, Serial0/0/0
```

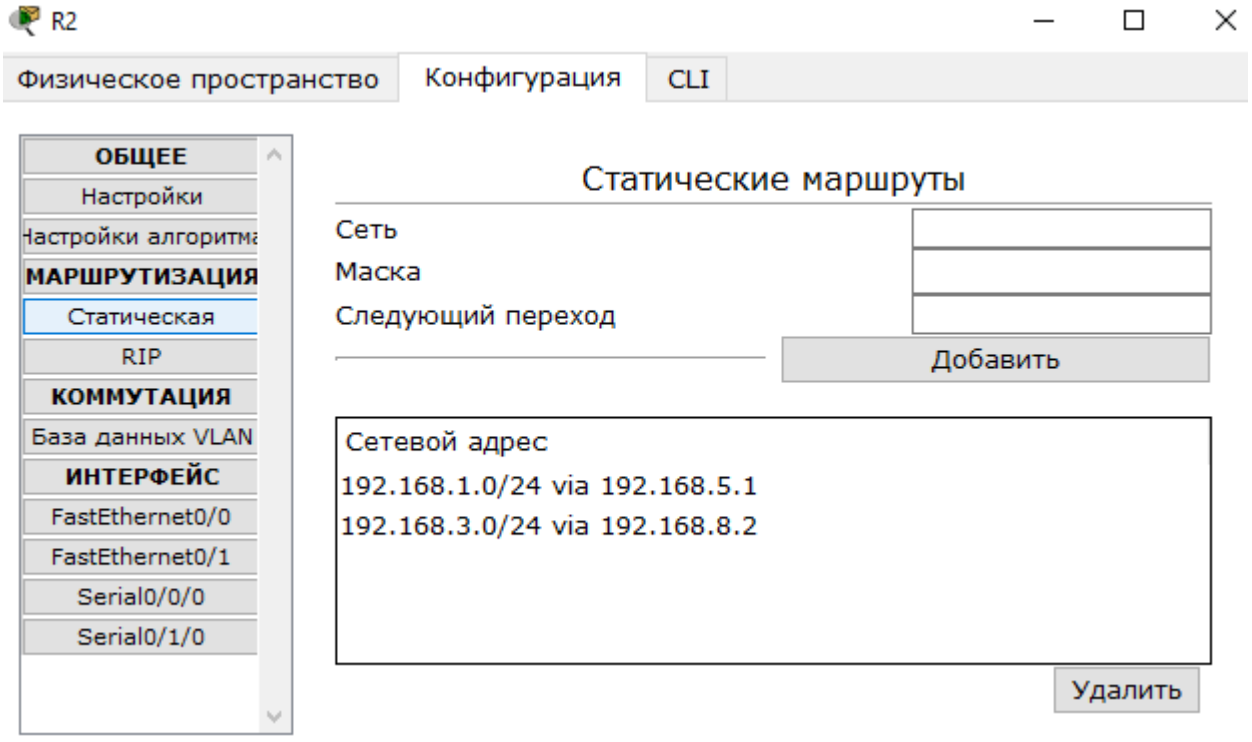
- таблицу IP-адресов

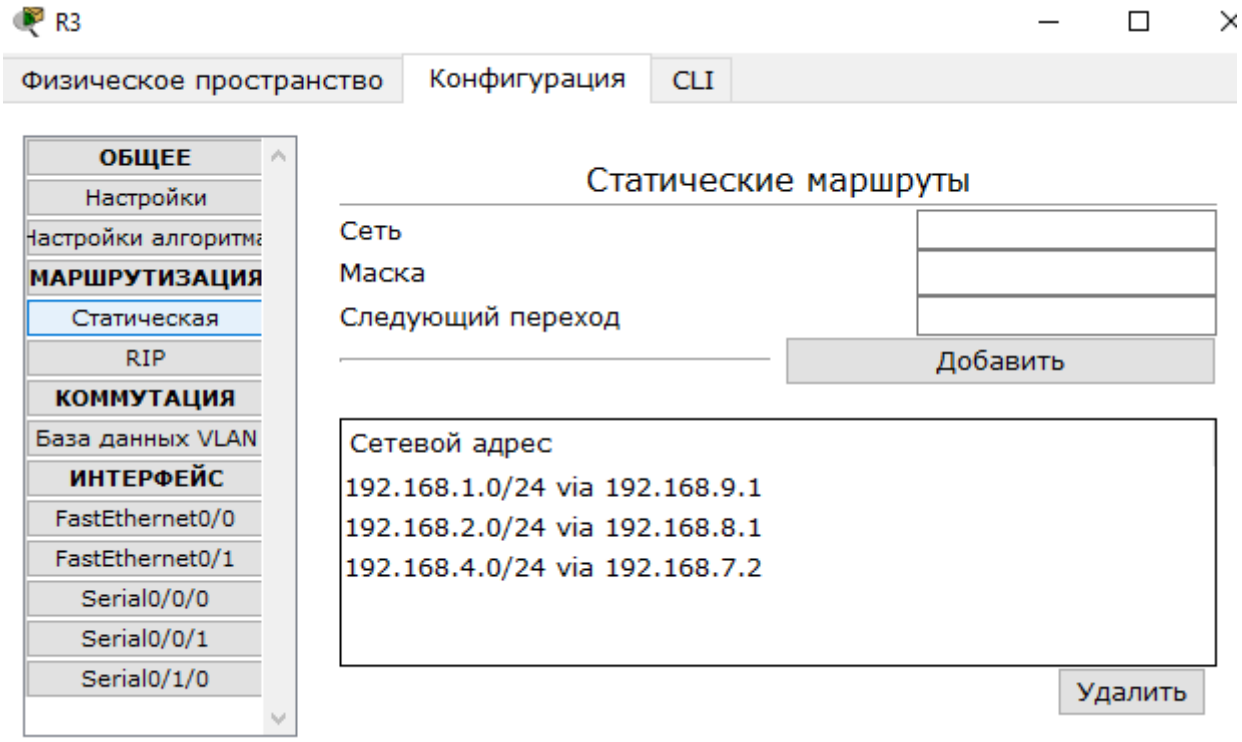
```
R1>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.1.1     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/0/0            192.168.5.1     YES manual up                    up

Serial0/0/1            192.168.9.1     YES manual up                    up

Serial0/1/0            192.168.6.1     YES manual up                    up

Vlan1                  unassigned      YES unset  administratively down down
R1>
R2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.2.1     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/0/0            192.168.5.2     YES manual up                    up

Serial0/1/0            192.168.8.1     YES manual up                    up

Vlan1                  unassigned      YES unset  administratively down down
R3>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.3.1     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/0/0            192.168.7.1     YES manual up                    up

Serial0/0/1            192.168.9.2     YES manual up                    up

Serial0/1/0            192.168.8.2     YES manual up                    up

Vlan1                  unassigned      YES unset  administratively down down
```

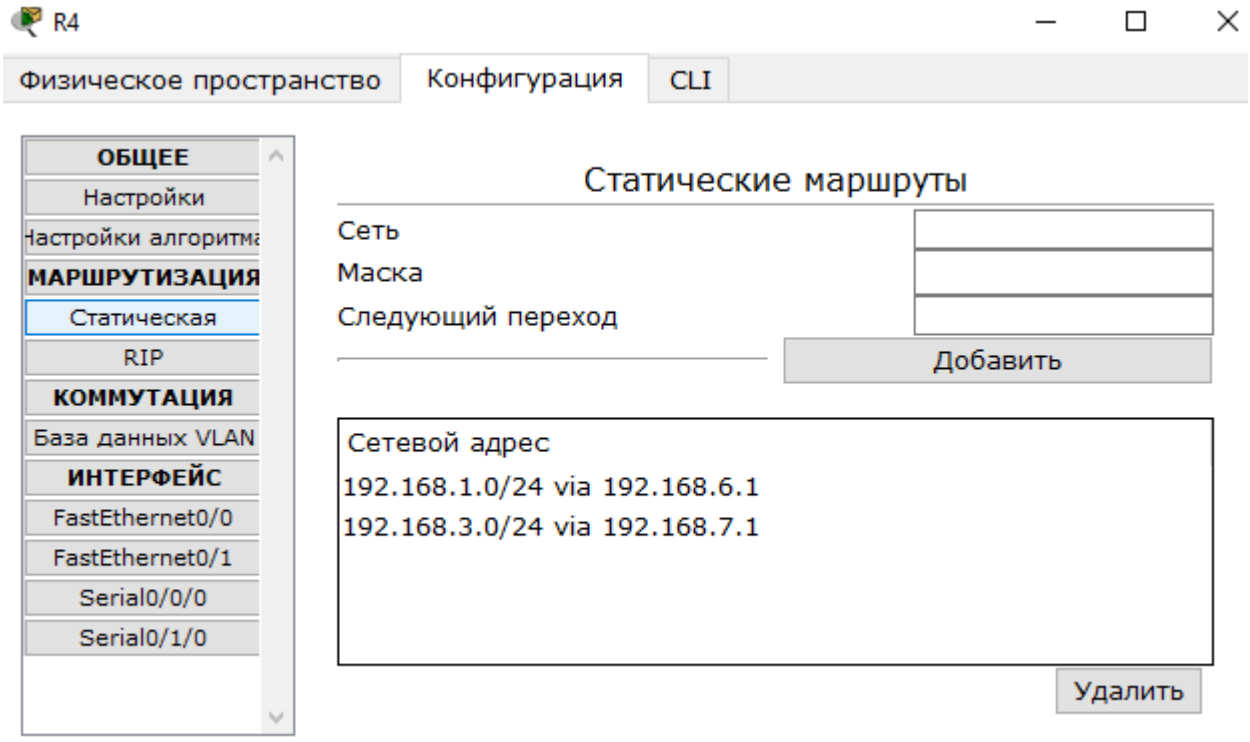
```
R4>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.4.1     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/0/0            192.168.7.2     YES manual up                    up

Serial0/1/0            192.168.6.2     YES manual up                    up

Vlan1                  unassigned      YES unset  administratively down down
```

- ход настройки статической маршрутизации по методике, приведенной в lab5-a.pdf









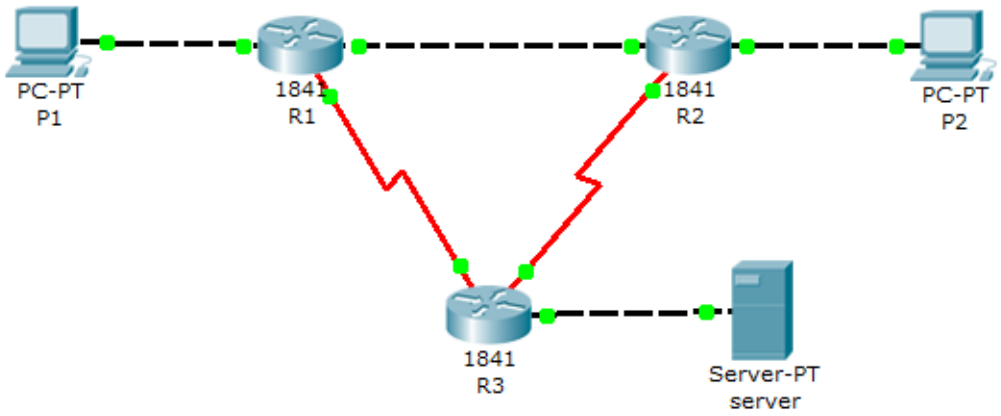
- ход и результаты проверки и тестирования сети по методике, приведенной в lab5-a.pdf

```
PC>ping 192.168.2.27

Pinging 192.168.2.27 with 32 bytes of data:

Reply from 192.168.2.27: bytes=32 time=88ms TTL=126
Reply from 192.168.2.27: bytes=32 time=87ms TTL=126
Reply from 192.168.2.27: bytes=32 time=96ms TTL=126
Reply from 192.168.2.27: bytes=32 time=82ms TTL=126

Ping statistics for 192.168.2.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 82ms, Maximum = 96ms, Average = 88ms
```

```
PC>ping 192.168.3.27

Pinging 192.168.3.27 with 32 bytes of data:

Reply from 192.168.3.27: bytes=32 time=88ms TTL=126
Reply from 192.168.3.27: bytes=32 time=88ms TTL=126
Reply from 192.168.3.27: bytes=32 time=87ms TTL=126
Reply from 192.168.3.27: bytes=32 time=88ms TTL=126

Ping statistics for 192.168.3.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 87ms, Maximum = 88ms, Average = 87ms

PC>ping 192.168.1.27

Pinging 192.168.1.27 with 32 bytes of data:

Reply from 192.168.1.27: bytes=32 time=72ms TTL=126
Reply from 192.168.1.27: bytes=32 time=50ms TTL=126
Reply from 192.168.1.27: bytes=32 time=88ms TTL=126
Reply from 192.168.1.27: bytes=32 time=48ms TTL=126

Ping statistics for 192.168.1.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 48ms, Maximum = 88ms, Average = 64ms
PC>ping 192.168.1.27

Pinging 192.168.1.27 with 32 bytes of data:

Reply from 192.168.1.27: bytes=32 time=105ms TTL=126
Reply from 192.168.1.27: bytes=32 time=89ms TTL=126
Reply from 192.168.1.27: bytes=32 time=87ms TTL=126
Reply from 192.168.1.27: bytes=32 time=69ms TTL=126

Ping statistics for 192.168.1.27:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 69ms, Maximum = 105ms, Average = 87ms
```

ЧАСТЬ2

1. Загрузив lab6-a.pdf, изучить материал; выполнить этапы настройки маршрутизации по умолчанию на устройствах Cisco, изложенные в документе.



```
R1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 3 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
R       10.0.0.4 [120/1] via 10.0.0.2, 00:00:07, FastEthernet0/1
                 [120/1] via 10.0.0.10, 00:00:04, Serial0/0/0
C       10.0.0.8 is directly connected, Serial0/0/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
R    192.168.2.0/24 [120/1] via 10.0.0.2, 00:00:07, FastEthernet0/1
```

```
R2#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 3 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
C       10.0.0.4 is directly connected, Serial0/0/1
R       10.0.0.8 [120/1] via 10.0.0.1, 00:00:08, FastEthernet0/1
                 [120/1] via 10.0.0.5, 00:00:02, Serial0/0/1
R    192.168.1.0/24 [120/1] via 10.0.0.1, 00:00:08, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
```

```
R3#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 3 subnets
R       10.0.0.0 [120/1] via 10.0.0.6, 00:00:01, Serial0/0/1
                 [120/1] via 10.0.0.9, 00:00:03, Serial0/0/0
C       10.0.0.4 is directly connected, Serial0/0/1
C       10.0.0.8 is directly connected, Serial0/0/0
R    192.168.1.0/24 [120/1] via 10.0.0.9, 00:00:03, Serial0/0/0
R    192.168.2.0/24 [120/1] via 10.0.0.6, 00:00:01, Serial0/0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

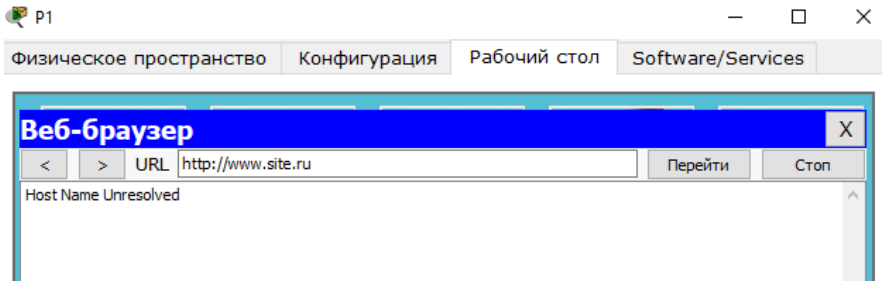
```
R3#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ip route 0.0.0.0 0.0.0.0 fastEthernet 0/0
```

```
R3#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 3 subnets
R       10.0.0.0 [120/1] via 10.0.0.6, 00:00:25, Serial0/0/1
                 [120/1] via 10.0.0.9, 00:00:26, Serial0/0/0
C       10.0.0.4 is directly connected, Serial0/0/1
C       10.0.0.8 is directly connected, Serial0/0/0
R    192.168.1.0/24 [120/1] via 10.0.0.9, 00:00:26, Serial0/0/0
R    192.168.2.0/24 [120/1] via 10.0.0.6, 00:00:25, Serial0/0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
```

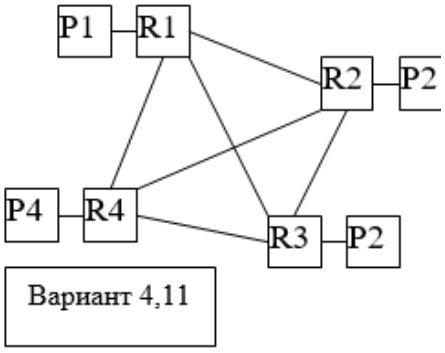
```
R3#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router rip
R3(config-router)#default-informatoin originate
                                  ^
% Invalid input detected at '^' marker.

R3(config-router)#default-information originate
R3(config-router)#
```

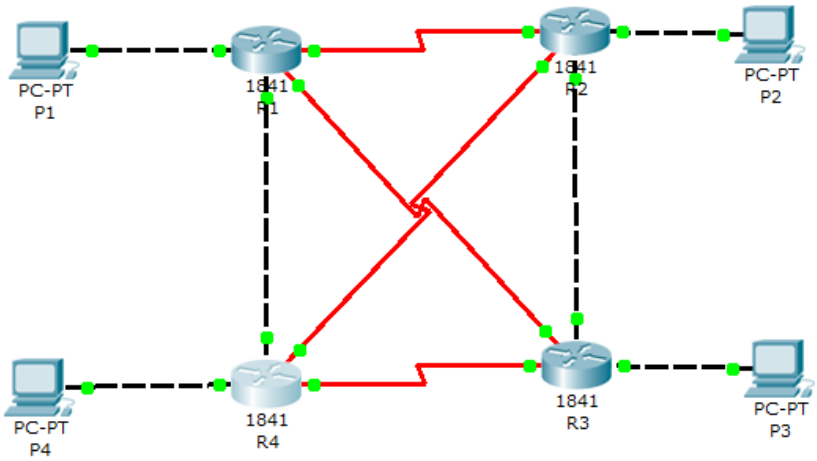
```
R1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 10.0.0.10 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 3 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
R       10.0.0.4 [120/1] via 10.0.0.2, 00:00:22, FastEthernet0/1
                 [120/1] via 10.0.0.10, 00:00:25, Serial0/0/0
C       10.0.0.8 is directly connected, Serial0/0/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
R    192.168.2.0/24 [120/1] via 10.0.0.2, 00:00:22, FastEthernet0/1
R*   0.0.0.0/0 [120/1] via 10.0.0.10, 00:00:25, Serial0/0/0
```

```
R2#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 10.0.0.5 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 3 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
C       10.0.0.4 is directly connected, Serial0/0/1
R       10.0.0.8 [120/1] via 10.0.0.1, 00:00:03, FastEthernet0/1
                 [120/1] via 10.0.0.5, 00:00:26, Serial0/0/1
R    192.168.1.0/24 [120/1] via 10.0.0.1, 00:00:03, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R*   0.0.0.0/0 [120/1] via 10.0.0.5, 00:00:26, Serial0/0/1
```



2. Собрать схему сети согласно выданному варианту задания; распределить IP-адреса по аналогии с сетью в lab6-a.pdf; составить таблицу сетевых адресов; сконфигурировать устройства.





Device	Interface	IP Address	Mask	Default Gateway
R1	Fa0/0	192.168.1.1	255.255.255.0	N/A
	S0/0/0	10.0.0.1	255.255.255.252	N/A
	S0/0/1	10.0.0.5	255.255.255.252	N/A
	S0/1/0	10.0.0.9	255.255.255.252	N/A
R2	Fa0/0	192.168.2.1	255.255.255.0	N/A
	S0/0/0	10.0.0.2	255.255.255.252	N/A
	S0/0/1	10.0.0.13	255.255.255.252	N/A
	S0/1/0	10.0.0.17	255.255.255.252	N/A
R3	Fa0/0	192.168.3.1	255.255.255.0	N/A
	S0/0/0	10.0.0.21	255.255.255.252	N/A
	S0/0/1	10.0.0.6	255.255.255.252	N/A
	S0/1/0	10.0.0.18	255.255.255.252	N/A
R4	Fa0/0	192.168.4.1	255.255.255.0	N/A
	S0/0/0	10.0.0.22	255.255.255.252	N/A
	S0/0/1	10.0.0.14	255.255.255.252	N/A
	S0/1/0	10.0.0.10	255.255.255.252	N/A
P1	N/A	192.168.1.27	255.255.255.0	192.168.1.1
P2	N/A	192.168.2.27	255.255.255.0	192.168.2.1
P3	N/A	192.168.3.27	255.255.255.0	192.168.3.1
P4	N/A	192.168.4.27	255.255.255.0	192.168.4.1

3. Для собранной схемы сети выполнить настройку маршрута по умолчанию

- схему сети с IP-адресами

```
R1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 10 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
C       10.0.0.4 is directly connected, Serial0/0/0
C       10.0.0.8 is directly connected, Serial0/0/1
R       10.0.0.12 [120/1] via 10.0.0.10, 00:00:11, Serial0/0/1
                  [120/1] via 10.0.0.6, 00:00:11, Serial0/0/0
R       10.0.0.16 [120/1] via 10.0.0.2, 00:00:08, FastEthernet0/1
                  [120/1] via 10.0.0.6, 00:00:11, Serial0/0/0
R       10.0.0.20 [120/1] via 10.0.0.10, 00:00:11, Serial0/0/1
                  [120/1] via 10.0.0.2, 00:00:08, FastEthernet0/1
R       10.0.4.4 is possibly down, routing via 10.0.0.6, Serial0/0/0
R       10.0.4.8 is possibly down, routing via 10.0.0.6, Serial0/0/0
R       10.0.4.12 is possibly down, routing via 10.0.0.2, FastEthernet0/1
R       10.0.4.20 is possibly down, routing via 10.0.0.6, Serial0/0/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
R    192.168.2.0/24 [120/1] via 10.0.0.6, 00:00:11, Serial0/0/0
R    192.168.3.0/24 [120/1] via 10.0.0.10, 00:00:11, Serial0/0/1
R    192.168.4.0/24 [120/1] via 10.0.0.2, 00:00:08, FastEthernet0/1
```

```
R2#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 7 subnets
R       10.0.0.0 [120/1] via 10.0.0.18, 00:00:02, Serial0/0/1
                 [120/1] via 10.0.0.5, 00:00:00, Serial0/0/0
C       10.0.0.4 is directly connected, Serial0/0/0
R       10.0.0.8 [120/1] via 10.0.0.14, 00:00:17, FastEthernet0/1
                 [120/1] via 10.0.0.5, 00:00:00, Serial0/0/0
C       10.0.0.12 is directly connected, FastEthernet0/1
C       10.0.0.16 is directly connected, Serial0/0/1
R       10.0.0.20 [120/1] via 10.0.0.18, 00:00:02, Serial0/0/1
                  [120/1] via 10.0.0.14, 00:00:17, FastEthernet0/1
R       10.0.4.8 is possibly down, routing via 10.0.0.14, FastEthernet0/1
R    192.168.1.0/24 [120/1] via 10.0.0.5, 00:00:00, Serial0/0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 10.0.0.14, 00:00:17, FastEthernet0/1
R    192.168.4.0/24 [120/1] via 10.0.0.18, 00:00:02, Serial0/0/1

Gateway of last resort is not set

     10.0.0.0/30 is subnetted, 7 subnets
R       10.0.0.0 [120/1] via 10.0.0.22, 00:00:08, Serial0/0/0
                 [120/1] via 10.0.0.9, 00:00:05, Serial0/0/1
R       10.0.0.4 [120/1] via 10.0.0.13, 00:00:23, FastEthernet0/1
                 [120/1] via 10.0.0.9, 00:00:05, Serial0/0/1
C       10.0.0.8 is directly connected, Serial0/0/1
C       10.0.0.12 is directly connected, FastEthernet0/1
R       10.0.0.16 [120/1] via 10.0.0.22, 00:00:08, Serial0/0/0
                  [120/1] via 10.0.0.13, 00:00:23, FastEthernet0/1
C       10.0.0.20 is directly connected, Serial0/0/0
R       10.0.4.8 is possibly down, routing via 10.0.0.13, FastEthernet0/1
R    192.168.1.0/24 [120/1] via 10.0.0.9, 00:00:05, Serial0/0/1
R    192.168.2.0/24 [120/1] via 10.0.0.13, 00:00:23, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
R    192.168.4.0/24 [120/1] via 10.0.0.22, 00:00:08, Serial0/0/0
R3#

Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
R       10.0.0.4 [120/1] via 10.0.0.17, 00:00:01, Serial0/0/1
                 [120/1] via 10.0.0.1, 00:00:10, FastEthernet0/1
R       10.0.0.8 [120/1] via 10.0.0.21, 00:00:02, Serial0/0/0
                 [120/1] via 10.0.0.1, 00:00:10, FastEthernet0/1
R       10.0.0.12 [120/1] via 10.0.0.21, 00:00:02, Serial0/0/0
                  [120/1] via 10.0.0.17, 00:00:01, Serial0/0/1
C       10.0.0.16 is directly connected, Serial0/0/1
C       10.0.0.20 is directly connected, Serial0/0/0
R    192.168.1.0/24 [120/1] via 10.0.0.1, 00:00:10, FastEthernet0/1
R    192.168.2.0/24 [120/1] via 10.0.0.17, 00:00:01, Serial0/0/1
R    192.168.3.0/24 [120/1] via 10.0.0.21, 00:00:02, Serial0/0/0
C    192.168.4.0/24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R4#
```

- таблицу IP-адресов

```
R1#sh ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.1.1     YES manual up                    up

FastEthernet0/1        10.0.0.1        YES manual up                    up

Serial0/0/0            10.0.0.5        YES manual up                    up

Serial0/0/1            10.0.0.9        YES manual up                    up
```

```
R2#sh ip interface brief
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.2.1     YES manual up                    up

FastEthernet0/1        10.0.0.13       YES manual up                    up

Serial0/0/0            10.0.0.6        YES manual up                    up

Serial0/0/1            10.0.0.17       YES manual up                    up

R3#sh ip interface brief
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.3.1     YES manual up                    up

FastEthernet0/1        10.0.0.14       YES manual up                    up

Serial0/0/0            10.0.0.21       YES manual up                    up

Serial0/0/1            10.0.0.10       YES manual up                    up

R4#sh ip interface brief
Interface              IP-Address      OK? Method Status                Protocol

FastEthernet0/0        192.168.4.1     YES manual up                    up

FastEthernet0/1        10.0.0.2        YES manual up                    up

Serial0/0/0            10.0.0.22       YES manual up                    up

Serial0/0/1            10.0.0.18       YES manual up                    up
```

- ход настройки маршрута по умолчанию по методике, приведенной в Lab6-a.pdf.

```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
C       10.0.0.4 is directly connected, Serial0/0/0
C       10.0.0.8 is directly connected, Serial0/0/1
R       10.0.0.12 [120/1] via 10.0.0.10, 00:00:28, Serial0/0/1
                  [120/1] via 10.0.0.6, 00:00:22, Serial0/0/0
R       10.0.0.16 [120/1] via 10.0.0.2, 00:00:10, FastEthernet0/1
                  [120/1] via 10.0.0.6, 00:00:22, Serial0/0/0
R       10.0.0.20 [120/1] via 10.0.0.10, 00:00:28, Serial0/0/1
                  [120/1] via 10.0.0.2, 00:00:10, FastEthernet0/1
C    192.168.1.0/24 is directly connected, FastEthernet0/0
R    192.168.2.0/24 [120/1] via 10.0.0.6, 00:00:22, Serial0/0/0
R    192.168.3.0/24 [120/1] via 10.0.0.10, 00:00:28, Serial0/0/1
R    192.168.4.0/24 [120/1] via 10.0.0.2, 00:00:10, FastEthernet0/1
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R1#
```

```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
R       10.0.0.0 [120/1] via 10.0.0.18, 00:00:09, Serial0/0/1
                 [120/1] via 10.0.0.5, 00:00:05, Serial0/0/0
C       10.0.0.4 is directly connected, Serial0/0/0
R       10.0.0.8 [120/1] via 10.0.0.14, 00:00:02, FastEthernet0/1
                 [120/1] via 10.0.0.5, 00:00:05, Serial0/0/0
C       10.0.0.12 is directly connected, FastEthernet0/1
C       10.0.0.16 is directly connected, Serial0/0/1
R       10.0.0.20 [120/1] via 10.0.0.18, 00:00:09, Serial0/0/1
                  [120/1] via 10.0.0.14, 00:00:02, FastEthernet0/1
R    192.168.1.0/24 [120/1] via 10.0.0.5, 00:00:05, Serial0/0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 10.0.0.14, 00:00:02, FastEthernet0/1
R    192.168.4.0/24 [120/1] via 10.0.0.18, 00:00:09, Serial0/0/1
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R2#
```

```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
R       10.0.0.0 [120/1] via 10.0.0.22, 00:00:23, Serial0/0/0
                 [120/1] via 10.0.0.9, 00:00:19, Serial0/0/1
R       10.0.0.4 [120/1] via 10.0.0.13, 00:00:05, FastEthernet0/1
                 [120/1] via 10.0.0.9, 00:00:19, Serial0/0/1
C       10.0.0.8 is directly connected, Serial0/0/1
C       10.0.0.12 is directly connected, FastEthernet0/1
R       10.0.0.16 [120/1] via 10.0.0.22, 00:00:23, Serial0/0/0
                  [120/1] via 10.0.0.13, 00:00:05, FastEthernet0/1
C       10.0.0.20 is directly connected, Serial0/0/0
R    192.168.1.0/24 [120/1] via 10.0.0.9, 00:00:19, Serial0/0/1
R    192.168.2.0/24 [120/1] via 10.0.0.13, 00:00:05, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
R    192.168.4.0/24 [120/1] via 10.0.0.22, 00:00:23, Serial0/0/0
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R3#
```

```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
R       10.0.0.0 [120/1] via 10.0.0.13, 00:00:20, Serial0/0/1
                 [120/1] via 10.0.0.9, 00:00:19, Serial0/1/0
R       10.0.0.4 [120/1] via 10.0.0.21, 00:00:25, Serial0/0/0
                 [120/1] via 10.0.0.9, 00:00:19, Serial0/1/0
C       10.0.0.8 is directly connected, Serial0/1/0
C       10.0.0.12 is directly connected, Serial0/0/1
R       10.0.0.16 [120/1] via 10.0.0.13, 00:00:20, Serial0/0/1
                  [120/1] via 10.0.0.21, 00:00:25, Serial0/0/0
C       10.0.0.20 is directly connected, Serial0/0/0
C    192.168.4.0/24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R4#
```

- ход и результаты проверки и тестирования сети по методике, приведенной в lab6-a.pdf.

```
R1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router rip
R1(config-router)#default-information originate
R1(config-router)#
```

```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

     10.0.0.0/30 is subnetted, 6 subnets
C       10.0.0.0 is directly connected, Serial0/0/0
C       10.0.0.4 is directly connected, Serial0/0/1
C       10.0.0.8 is directly connected, Serial0/1/0
R       10.0.0.12 [120/1] via 10.0.0.2, 00:00:10, Serial0/0/0
                  [120/1] via 10.0.0.10, 00:00:18, Serial0/1/0
R       10.0.0.16 [120/1] via 10.0.0.2, 00:00:10, Serial0/0/0
                  [120/1] via 10.0.0.6, 00:00:17, Serial0/0/1
R       10.0.0.20 [120/1] via 10.0.0.6, 00:00:17, Serial0/0/1
                  [120/1] via 10.0.0.10, 00:00:18, Serial0/1/0
C    192.168.1.0/24 is directly connected, FastEthernet0/0
S*   0.0.0.0/0 is directly connected, FastEthernet0/0
R1#
```