

Question 1

a)

```
Access-list 1 deny 170.16.10.5 0.0.0.0
```

```
Access-list 1 permit any
```

```
R3 Interface E0
```

```
Ip access-group 1 out
```

```
Access-list 1 permit 0.0.0.0 255.255.255.255
```

b)

```
Access-list 2 deny 170.16.40.0 0.0.0.255
```

```
Access-list 2 permit 170.16.0.0 0.0.255.255
```

```
R2 Interface E0
```

```
Ip access-group 2 out
```

c)

```
access-list 101 deny tcp 170.16.50.75 0.0.0.0 170.16.70.2 0.0.0.0 eq 80
```

```
access-list 101 permit tcp 170.16.50.7 0.0.0.0 170.16.70.2 0.0.0.0 eq 80
```

```
Access-list 1 permit any
```

```
R3 interface E1
```

```
ip access-group 101 out
```

d)

```
access-list 102 permit tcp 170.16.80.16 0.0.0.0 170.16.40.89 0.0.0.0 eq 23
```

```
access-list 102 deny tcp 170.16.80.0 0.0.0.255 170.16.40.89 0.0.0.0 eq 23
```

```
access-list 102 permit 170.16.0.0 0.0.255.255
```

```
R2 interface E1
```

```
Ip access-group 102 out
```

e)

```
access-list 103 permit tcp 170.16.10.5 0.0.0.0 170.16.70.0 0.0.0.255 range 20-21
```

```
access-list 103 permit 170.16.0.0 0.0.255.255
```

R1 interface E1

```
ip access-group 103 out
```

f)

```
access-list 104 deny 170.16.20.0 0.0.0.255
```

```
Access-list 104 permit any
```

R3 interface S0

R3 interface E1

```
ip access-group 104 in
```

```
ip access-group 104 out
```

g)

```
access-list 105 permit ip 170.16.70.2 0.0.0.0 172.16.0.0 0.0.255.255
```

R3 intergace E1

```
ip access-group 105 out
```

Question 2

Sample inputs:

Standard:

```
access-list 101 deny 172.16.3.40 0.0.0.0
access-list 101 permit 172.16.0.0 0.0.255.255
interface E0
ip access-group 101 out
```

```
172.16.3.40
172.22.1.2
172.16.4.14
```

Output:

deny packet from 172.16.3.40

deny packet from 172.22.1.2

permit packet from 172.16.4.14

standard 2:

```
access-list 101 deny 172.16.3.40 0.0.0.0
access-list 101 deny 172.16.4.0 0.0.0.255
access-list 101 permit 172.16.3.0 0.0.0.255
interface EO
ip access-group 101 out
```

```
172.16.3.40
172.16.3.14
172.16.4.2
```

deny packet from 172.16.3.40

permit packet from 172.16.3.14

deny packet from 172.16.4.2

standard 3:

```
access-list 101 deny 172.16.3.14 0.0.0.0
access-list 101 deny 172.16.4.2 0.0.0.0
access-list 101 permit 172.16.0.0 0.0.255.255
interface EO
ip access-group 101 out
```

```
172.16.3.14
172.16.4.2
172.16.4.3
```

deny packet from 172.16.3.14

deny packet from 172.16.4.2

permit packet from 172.16.4.3

extended:

```
access-list 101 deny tcp 172.16.0.0 0.0.255.255 172.16.3.0 0.0.0.255 range
20-21
access-list 101 permit ip 172.16.0.0 0.0.255.255 172.16.3.0 0.0.0.255
```

```
interface E0
ip access-group 101 out
```

```
172.16.4.4 172.16.3.1 20
172.16.4.4 172.16.3.5 22
172.25.3.1 172.16.3.4 22
```

deny packet from 172.16.4.4 to 172.16.3.1

permit packet from 172.16.4.4 to 172.16.3.5

deny packet from 172.25.3.1 to 172.16.3.4

extended 2:

```
access-list 101 deny tcp 172.16.4.0 0.0.0.255 172.16.3.0 0.0.0.255 eq 80
access-list 101 permit ip 172.16.0.0 0.0.255.255 172.16.3.0 0.0.0.255
interface E0
ip access-group 101 out
```

```
172.16.4.4 172.16.3.1 80
172.16.4.4 172.16.3.5 22
172.25.3.1 172.16.3.4 22
```

deny packet from 172.16.4.4 to 172.16.3.1

permit packet from 172.16.4.4 to 172.16.3.5

deny packet from 172.25.3.1 to 172.16.3.4

extended 3:

```
access-list 101 permit tcp 172.16.4.14 0.0.0.0 172.16.3.0 0.0.0.255 eq 22
access-list 101 deny tcp 172.16.4.0 0.0.0.255 172.16.3.0 0.0.0.255 eq 22
access-list 101 permit ip 172.16.0.0 0.0.255.255 172.16.3.0 0.0.0.255
interface E0
ip access-group 101 out
```

```
172.16.4.14 172.16.3.1 22
172.16.4.4 172.16.3.5 22
172.16.12.33 172.16.3.4 80
```

permit packet from 172.16.4.14 to 172.16.3.1

deny packet from 172.16.4.4 to 172.16.3.5

permit packet from 172.16.12.33 to 172.16.3.4