Question 1

a) (i) ip route 0.0.0.0 0.0.0.0 177.1.1.1

ip route 0.0.0.0 0.0.0.0 177.1.1.5 5

Assume that the main route with next hop address 177.1.1.1 is the primary route which has administrative distance of 1. The route with next-hop address 177.1.14 is backup route with administrative distance of 5 which is higher than 1, it will not become the preferred primary route.

(ii) ip route   10.1.1.0   255.255.255.224   10.2.2.6

ip route   10.1.1.32   255.255.255.224   10.2.2.6

(iii) ip route   10.3.3.0   255.255.255.192   s0/1/1

ip route   10.3.3.64   255.255.255.192   s0/1/1

(iv) Route entry with only next-hop address

↳

↳

Route entry with only exit interface

↳

↳

b)

HQ

```
router ospf  6868
network  10.2.2.4  0.0.0.3  area  0
network  10.2.2.0  0.0.0.3  area  0
default-information originate
passive-interface   s0/0/0
passive-interface   s0/0/1
```

FOCS

```
router ospf  6868
network  10.2.2.4  0.0.0.3  area  0
network  10.1.1.0   0.0.0.31  area  0
network  10.1.1.32  0.0.0.31  area  0
passive-interface  g0/1
passive-interface  g0/0
```

Question 2

a) (i) - Internal threat
   -

(ii) - Reputation loss
     - Loss of customer

b) (i) Router FOCS

```
ip access-list standard REMOTE_LOGIN
permit host 10.1.1.10
deny any

line vty 0 4
access-class REMOTE_LOGIN in
```

(ii) Router FOET

```
access-list 153 permit tcp 10.3.3.0 0 0.0.63 host 10.11.62 443
access-list 153 permit icmp 10.3.3.64 0.0.0.63 10.1.1.0 0.0 0.31
access-list 153 permit ospf any any
access-list 153 deny ip any any
```

```
interface s0/1/1
ip access-group 153 out
```

Question 3

a) - Errors : IP helper address is missing in PINK router for relaying PC3 DHCP request to DHCP router.

- Solution :

  interface g0/1
  ip helper-address 10.2.2.6

- Justification .

  The DHCPv4 server is configured in PHCP router. It is located in a subnet different from the PC3 located subnet.

  So, the PC3 client is unable to obtain the IP address from DHCPv4 server.

  The PINK router need to be configured with ip helper-address to relay PC3's DHCPv4 request message to the DHCPv4 server.

- Error : The static address of web server is not excluded in DHCP router for WEB_DNS_SERVER

- Solution :

  ip dhcp excluded-address 10.3.3.62

- Justification:

  The IP address of WEB_DNS_SERVER is a static or fixed IP address so it should be excluded from the pool of addresses.

- Error : Network command is missing in the PINK pool of DHCP router.

- Solution :
    ip dhcp pool PINK
    network 10.3.3.0 255.255.255.192

- Justification :
  Network statement specifies the available addresses in 10.3.3.0/26 network which can be distributed to DHCP client.

- Error : The default-router statement is missing from PINK pool

- Solution :
    ip dhcp pool PINK
    default-router 10.3.3.1

- Justification :
  Default-gateway is to route the packet from one network to another

---

- Error : The dns-server statement is missing from PINK pool

- Solution :
    ip dhcp pool PINK
    dns-server 10.3.3.62

- Justification :

  WEB_DNS_SERVER is the dns server with IP address 10.3.3.62

---

b) (i) <u>NAT router</u>

ip nat inside source static 10.3.3.62   198.1.1.5

~~interface   s0/1/0~~ ⎫ should not be configured here
                        ⎬ (question focuses on WEB_DNS_SERVER's subnet 10.3.3.0/26 only)
~~ip nat inside~~   ⎭

interface s0/1/1
  ip nat   inside

interface s0/0/0
  ip nat   outside

interface s0/0/1
  ip nat   outside

(ii) – Error : The wrong public address is used in the PINK pool
           because the address 188.1.1.5 is already used for static NAT instead of PAT.

     – Solution :

         no ip nat pool PINK 188.1.1.5 188.1.1.5 netmask 255.255.255.252
         ip nat pool PINK 188.1.1.6 188.1.1.6 netmask 255.255.255.252

     ——

     – Error : The ACL statement is missing

     – Solution :

         access-list 12 permit 10.1.1.32 0.0.0.31
         access-list 12 permit 10.3.3.0 0.0.0.63

     ——

     – Error : The ACL binding statement is missing

     – Solution :

         ip nat inside source list 12 pool PINK overload

     ——

     – Error : The overload is missing when ACL binding

     – Solution :

         ip nat inside source list 12 pool PINK overload

- Error : The ip nat inside statement is missing for interface s0/1/0 of NAT router.

- Solution :
    interface s0/1/0
    ip nat inside

This is not configured in Q3 b)(i) question, need to be configured here since ACL involves subnet 10.1.1.32/27