Gabriel Emerson Due 10/28

R12: Yes, there is one for every interface.

R13: 11011111 00000001 00000011 00011100

R15: Travel over 8 interfaces and 3 forwarding tables.

R17: The 8-bit protocol field in the IP datagram contains information about which transport protocol the destination host should pass the segment to.

P13: 223.1.17.0 /26
223.1.17.128 /25
223.1.17.192 /28

P16: Any IP 128.119.40.128 → 128.119.40.191
Four subnets of equal size:
128.119.40.64 /28 128.119.40.80 /28
128.119.40.96 /28 128.119.40.112 /28

P17: a.) Subnet A: 214.97.255. /24
Subnet B: 214.97.254.0 /25 - 214.97.254.0 /29
Subnet C: 214.97.254.128 /25

P17: Subnet D: 214.97.254.0 /31
Subnet E: 214.97.254.2 /31
Subnet F: 214.97.254.4 /30

b.) To simplify, assume no datagrams have router interfaces as destinations. Also label DEF for interior subnets.

Router 1

11010110 01100001 11111111 Sub A
11010110 01100001 1111111 0 00000000 Sub D
11010110 01100001 1111111 0 00000001 Sub F

Router 2

11010110 01100001 11111111 00000000 Sub D
11010110 01100001 1111110 0 Sub B
11010110 01100001 1111110 00000001 Sub E

Router 3

11010110 01100001 1111111 000001 Sub F
11010110 01100001 1111110 00000001 Sub E
11010110 01100001 111111 0 1 Sub C

P19: Max size data fragment = 680
Required fragments = $\frac{2400-20}{680} = 4$

Each fragment will have Id number 422.
Each fragment (except last) will have size 700 bytes.
Last will be 360 bytes
Offsets = 0, 85, 170, 255
Each of first 3 fragments will set Flag = 1, Last fragment flag = 0.

P20: File size = 5 million bytes
Each Datagram carries 1500 - 40 = 1460 bytes
Number of datagrams = $\frac{5 \text{ million}}{1460} = 3425$

All but last datagram = 1500 bytes
last = 960 + 40 = 1000 bytes

Host does not create datagrams over 1500 bytes, which is smaller than the MTU's.
* No Fragmentation.