Jordan Diaz Question 7

$S1 = 1000$ pages
$S2 = 2000$ pages
$S3 = 7000$ pages
$S4 = 10{,}000$ pages
$S5 = 20{,}000$ pages

$m = 10{,}000$ available frames

a) equal share algorithm:

$10{,}000 / 5 =$ **2,000 frames**

b) Proportional allocation algorithm:

$S = 1000 + 2000 + 7000 + 10{,}000 + 20{,}000$

$S = 22{,}000$

$a1 = (1000/22{,}000) \times 100 = 4.5$ frames
$a2 = (2000/22{,}000) \times 100 = 9.1$ frames
$a3 = (7000/22{,}000) \times 100 = 31.8$ frames
$a4 = (10{,}000/22{,}000) \times 100 = 45.5$ frames
$a5 = (20{,}000/22{,}000) \times 100 = 90.9$ frames

c) total PMT entries in main memory

assuming each page has a size of 2kB

$P_S = 2$kB

$S1 = 1$MB
$S2 = 4$MB
$S3 = 14$MB
$S4 = 20$MB
$S5 = 40$MB
total $= 79$MB

$PMT_{entries} = \frac{79\text{ MB}}{2\text{ kB}} =$ **39,500 entries**

d) total memory size in bytes

assuming each entry is 4 bytes, $S_{PMT} = 4 \times 39{,}500 = 158$ kb per process

total size $= 5 \times 158$ kb $= 790$ kb