



## Correction du DM n° 4 : QCM MOODLE

### BIOPHYSIQUE DE LA CIRCULATION

1/	ACD	2/	A	3/	C	4/	D	5/	E
6/	E	7/	D	8/	B	9/	AB	10/	C
11/	D	12/	E	13/	A	14/	E	15/	D
16/	D	17/	ABCD	18/	C	19/	ABD	20/	ABCD
21/	E	22/	AE	23/	B	24/	BCD	25/	C
26/	AC	27/	C	28/	BD				

#### QCM 3 : C

- A)  
B)  
C)  $P = \rho gh = 13,6 \cdot 10^3 \times 10 \times 10^{-1} = 13600 \text{ Pa} = 136 \text{ hPa}$   
D)  
E)

#### QCM 6 : E

- A)  $P_{\text{tesr}} = P + \frac{1}{2} \rho v^2$   
B)  
C)  $v^2 = \frac{2(P_{\text{tesr}} - P)}{\rho} = \frac{40}{10^3} = 4 \cdot 10^{-2}$   
D)  
E)  $v = 0,2 \text{ m} \cdot \text{s}^{-1} = 20 \text{ cm} \cdot \text{s}^{-1}$

#### QCM 7 : D

- A)  $r = 4 \cdot 10^{-6} \text{ m}$   
 $l = 1 \cdot 10^{-3} \text{ m}$   
B)  $Q = 1,2 \text{ L} \cdot \text{min}^{-1} = 1,2 \cdot 10^{-3} \text{ m}^3 \cdot \text{min}^{-1} = 2 \cdot 10^{-5} \text{ m}^3 \cdot \text{s}^{-1}$   
C)  $R_i = \frac{8\eta l}{\pi r^4} = \frac{8 \times 3,14 \cdot 10^{-3} \times 1 \cdot 10^{-3}}{\pi (4 \cdot 10^{-6})^4} = \frac{2 \cdot 10^{-6}}{4^3 \cdot 10^{-24}} = \frac{2 \cdot 10^{18}}{64} = \frac{1}{32} \cdot 10^{18} \cong 3 \cdot 10^{16}$   
D)  $R = \frac{R_i}{n} = \frac{3 \cdot 10^{16}}{6 \cdot 10^8} = 5 \cdot 10^7 \text{ kg} \cdot \text{m}^{-4} \cdot \text{s}^{-1}$   
E)  $\Delta P = Q \times R = 2 \cdot 10^{-5} \times 5 \cdot 10^7 = 1 \cdot 10^3 \text{ Pa} = 10 \text{ hPa}$

#### QCM 11 : D

- A)  
B)  
C)  
D)  $R = \frac{\rho \Delta v}{\eta} = \frac{4 \cdot 10^3 \times 4 \cdot 10^{-3}}{4 \cdot 10^{-3}} = 1200 < 2000$   
E)

#### QCM 15 : D

- A)  $d = 0,1 \text{ cm}$        $r = 0,5 \cdot 10^{-3} \text{ m}$   
 $l = 3,14 \text{ cm}$        $l = 3,14 \cdot 10^{-2} \text{ m}$   
B)  $n = 512$   
C)  $Q = 6 \text{ L} \cdot \text{min}^{-1}$      $Q = 0,1 \text{ L} \cdot \text{s}^{-1} = 1 \cdot 10^{-4} \text{ m}^3 \cdot \text{s}^{-1}$   
D)  $R_i = \frac{8\eta l}{\pi r^4} = \frac{8 \times 4 \cdot 10^{-3} \times 3,14 \cdot 10^{-2}}{\pi \times 0,5^4 \times 10^{-12}} = \frac{32 \cdot 10^{-5}}{\frac{1}{16} \times 10^{-12}} = 16 \times 32 \times 10^7 = 512 \cdot 10^7 \text{ kg} \cdot \text{m}^{-4} \cdot \text{s}^{-1}$   
E)  $\frac{1}{R} = n \frac{1}{R_i}$   
 $R = \frac{R_i}{n} = \frac{512 \cdot 10^7}{512} = 10^7 \text{ kg} \cdot \text{m}^{-4} \cdot \text{s}^{-1}$   
 $\Delta P = R \cdot Q = 1 \cdot 10^7 \times 1 \cdot 10^{-4} = 10^3 = 1000 \text{ Pa}$

#### QCM 26 : AC

- A)  $Re = (1 \cdot 10^3 \times 12 \cdot 10^{-3} \times 4) / 4 \cdot 10^{-3} = 12 \text{ 000}$   
B)  
C)  
D)  
E)