

# ROYAUME DU MAROC

# MINISTERE DE L'EQUIPÈMENT, DU TRANSPORT ET DE LA LOGISTIQUE



# INSTITUT SUPERIEUR D'ETUDES MARITIMES

Concours d'accès en 1ère année du premier Cycle (2016/2017) - Epreuve d'anglais, durée 30 mn

Notation: Réponse juste (+2 points) – Réponse fausse (-1 point) – Pas Question 1: people from Poland went to Scotlan A: Many of B: Many Question 2: There are French speakers in Mo	s de réponse (0 point)	SS. Jether APres	30
Totalion - Repoise juste (12 points) - Repoise inuse (12 points) - La	die the 20th centur	Lell Leals A.P.	
Question 1: people from Poland went to Scotlan	a in the 20th century	L'acure d'	5.
A: Many of B: Many	C: Some of	55. 1 0	D: -
Question 2: There are French speakers in Mo A: Too much B: a lot of	C: a little		D : not much
A . 100 much	C. a little	2	D. Hot Much
Question 3 : She with her friends on Facebook every A : Is communicating B: co		C: will communicatin	g D : comunicate
Question 4 : Answer: I was eating my dinner.	minumcates	C. Will Communicatin	B D. comunicate
A: What did I do yesterday?	R· Wh	at were you doing whe	an I rang you last nigh
C: What did you have for dinner?		at are you doing this ev	
Question 5: Do you still play tennis?	,D. Will	it are you doing this ev	· Cilling:
A: I have been playing when I was at university, but I	don't have enough t	ime now.	
B: I have played C: I used to p			was playing
Question 6: Where are you going for your next holiday?			
A: I'm going to Paris for visiting an old friend.	B: I'm going to P	aris to visit an old frie	nd.
C: I'm going to Paris for to visit an old friend.		Paris to visiting an old f	
Question 7 : Excuse me, can you help me please.		•	
A: I'm looking for the British Museum, but I have lo	st mv wav.		
B: I'm looking for the British Museum, but I am lost			
C: I'm looking for the British Museum, but I did lose			
D: I'm looking for the British Museum, but I have be			
Question 8:			
A: I am going to send Alistair a copy of the email, bu	t the Emily said it wo	ould be a better idea to	call him.
B: I was on the point of send Alistair a copy of the e			
C: I was thinking about send Alistair a copy of the er			
D: I was going to send Alistair a copy of the email, bu			
Question 9	•		
A: Sorry, I'll have been late tomorrow, I'm afraid.	B: sorry	, I'll be late tomorrow,	I'm afraid.
C: sorry, I'll be being late tomorrow, I'm afraid.	D :sorry,	I'll have gone late tor	morrow, I'm afraid.
Question 10: excuse me, do you know when my lunch wi	Il be ready?		
A: In 10minutes. It is prepared as we speak.	B: In 10minutes	. It is being prepared a	s we speak.
C: In 10minutes. It is preparing as we speak.	D: None of these	e answers are correct.	
Question 11: If it wasn't raining,		9	
A: I will go running, but I think I'll stay indoors inst	ead. B: I wo	uld go running, but I t	hink I'll stay indoors instead.
C: I went running, but I think I'll stay indoors instead	d. D: I am	going running, but I t	hink I'll stay indoors instead.
Question 12: Do you know if Steve is coming to the party	on Friday night?		
A: He told me he didn't come because he has other		e he wasn't coming be	ecause he has other plans.
C : He told me he wouldn't come because he has oth	ner plans	D: He told me he sha	in't come because he has othe
plans.			
Question 13 : Hurry up! We'll be late for the meeting!	٠,		
A: Just a minute, I have to put up my jacket!	B: Just a	minute, I have to put	my jacket!
C: Just a minute, I have to put away my jacket!	D: Just a	a minute, I have to put	on my jacket!
Question 14:			
A: He's young and doesn't have a lot of work expen	rience. B: He's	young and doesn't ha	ve a lot of work history.
C: He's young and doesn't have a lot of work cv.	D: He's	young and doesn't hav	ve a lot of work training.
Question 15: Where's Mark?		*	
A: He's normally on holiday. B: He's actually on ho	liday. C He's curren	tly on holiday. D: H	le's really on holiday.
Question 16:			
A: Helen goes to work with the train because the sta	ation is near her hous	e.	
B: Helen goes to work on train because the station i	s near her house.		
C: Helen goes to work in the train because the statio	on is near her house.		
D: Helen goes to work by train because the station i	s near her house.		
Question 17: Sorry, I can't help you right now,			
A I'm very busy. Could you come back later please?			
B I'm very hurried. Could you come back later please	?		
C I'm very stressy. Could you come back later please	?		
D I'm very occupied. Could you come back later plea	ise?		
Question 18: The fast food restaurant was dirty. V	Ve didn't eat there.		
A · extreme  B : extremely		C: bit	D : very much

A: expensive Question 20: Do you like Faceb	B: expe	anciivoct		D. mant aumanatus
Question 20: Do you like Faceb		ELIZIACAT	C: more expensive	D: most expensive
	oook?		D	•
•	ve hours every day o	on it. What about	vou?	
A: No! I like it. I'm not inte				
B: No! I have it. I'm not in				
C: No! I hate it. I'm not in				
D: No! I never it. I'm not i	interested in photos	of my friends' b	abies.	
		144 344 1		
Question 21: The hospital emp	lovs two hundred			
A :Nurses	B: Waitresses	4.7	C: Patients	D: Lawyers
Question 22: Does she	D. ************************************		Cirdicites	5. 23.172.13
	D		C: tools and spects?	D. aranas and anosta?
A : do any sports?		ports	C: train any sports?	D : prepare any sports?
Question 23: We have a meeting		Section 1		
A: per day	B: all day		C: all the days	D: every day
Question 24:		W. 1		
A: I often go out	with friends on Satu	irday evenings. V	Ve usually only see each of	ther during the week.
				ach other during the week.
			Ve usually only see each of	
D: Talways go ou	at with friends on Sa	turday evenings.	We usually only see each	other during the week.
Overtion 27 - A - did	wour flight to Don't	last weekla	D . dtd	ou your fly to Davie last west?
Question 25 : A: did you enjoy				oy your fly to Paris, last week?
C : did you enjoy you	ur plane to Paris, las	t week?	D did you enjoy your p	lane to Paris, last week?
Question 26: A: I found the led	cture very harsh to fo	ollow, didn't you	? B: I found the	lecture very tight to follow, didn't you
C: I found the lecture	e very hard to follow	didn't you?	D: I found the lecture v	very strict to follow, didn't you?
S Solite Die leetal	, 12 1011011			, , ,
Question 27 : A: were you invit	ted to James and Me	elinda's marriage	? B: were you invited to	o James and Melinda's wedding?
	ed to James and Mel			vited to James and Melinda's occasion?
c. were you mivite	cu to Junies and Mici	maa 3 noneymo	on: D were you me	rica to sames and memba s occasion.
	1			
Question 28 : Answer: My num		513		
A: What's your ph	hone number?			phone number?
C: Which is your p	phone number?		D: Who is your	phone number?
Question 29: Excuse me, sir. Y	ou			
		1		
A. Cauld abautin			-b that dage	
A: Could show yo				
	passport before you			
B: Can show your	passport before you	can go through	that door.	
B: Can show your C: need show you	passport before you ir passport before yo	u can go through ou can go through	that door. h that door.	
B: Can show your C: need show you D: Have to show y	passport before you passport before yo your passport before	u can go through ou can go through e you can go thro	that door. h that door.	
B: Can show your C: need show you D: Have to show y Question 30 : You worked reall	passport before you or passport before yo your passport before ly hard last month, J	u can go through ou can go through e you can go thro	that door. In that door. Bugh that door.	
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#### MINISTERE DE L'EQUIPEMENT, DU TRANSPORT ET DE LA LOGISTIQUE

#### INSTITUT SUPERIEUR D'ETUDES MARITIMES



### Concours d'accès en 1ère année du premier Cycle (2016/2017) Epreuve de Physique, durée 1h30

Attention: Sur la grille de réponse, il est possible de choisir une des 3 réponses proposées (A, B ou C) ou une réponse D (votre proposition).

Notation: Réponse juste (+2 points) - Réponse fausse (-1 point) - Pas de réponse (0 point)

## Exercice I

C:  $V_m = m/kg$ ), ASS. Jeures Après Bac Une goutte d'eau de masse m tombe en chute libre sous l'effet de son poids ; la résistance de l'air est proportionnelle alle la vitesse, v, et l'on pose f= k v. on désigne par k le coefficient de frottement.

Question 1: la vitesse maximale  $V_m$  atteinte par la goutte est : A:  $V_m = k/(mg)$ , B:  $V_m = (mg)/k$ 

$$A: V_m = k/(mg),$$

$$\mathbf{B}: V_m = (mg)/k$$

$$C: V_m = m/kg),$$

Question2 : Appliquer le principe fondamental de la dynamique à la goutte. En déduire l'équation différentielle du mouvement.

$$A_{i}m\frac{dv}{dt}-kv+mg=0,$$

$$B: m\frac{dv}{dt} + kv + mg = 0$$

$$B: m\frac{dv}{dt} + kv + mg = 0 \qquad C: m\frac{dv}{dt} + kv - mg = 0g.$$

Question 3: Donner la solution v(t) de l'équation différentielle de la question  $2^{\circ}$ ) en considérant qu'à l'instant t=0, la vitesse est nulle.

$$A: \left(v(t) = V_m(1 - e^{\frac{g}{V_m}t})\right)$$

$$B: v(t) = V_m(1 + e^{-\frac{g}{V_m}t})$$

C: 
$$v(t) = V_m(1 + e^{-\frac{V_m}{g}t})$$

Question 4: Déterminer l'expression donnant la distance parcourue, x(t), depuis le début de la chute où la position initiale et la vitesse initiale sont nulles.

$$A: x(t) = \frac{(v_m)^2}{g} Ln\left(\frac{v_m}{v_m - v}\right) + \frac{v_m}{g} v$$

$$A: x(t) = \frac{(v_m)^2}{g} Ln\left(\frac{v_m}{v_m-v}\right) + \frac{v_m}{g} v$$

$$B: x(t) = \frac{(v_m)^2}{g} Ln\left(\frac{v_m}{v_m-v}\right) - \frac{v_m}{g} v$$

$$C: x(t) = \frac{(v_m)^2}{g} Ln\left(\frac{v_m - v}{v_m}\right) - \frac{v_m}{g} v$$

Question 5: Déterminer l'expression de x(t) en considérant si  $V_m = 0.2 \frac{m}{s}$ .

A: 
$$x(t) = \frac{1}{250} Ln \left( \frac{1}{1-5v} \right) - \frac{v}{50}$$

B: 
$$x(t) = \frac{1}{250} Ln\left(\frac{1}{1-5v}\right) + \frac{v}{50}$$

C: 
$$x(t) = \frac{1}{250} Ln(1 - 5v) - \frac{v}{50}$$
  
D -  $N = 3.2t - \frac{1}{250} (1 - e)$ 

Question 6 : Déterminer l'expression du temps t en fonction de vet  $V_m$ .

$$A: t = \frac{g}{v_m} Ln\left(\frac{v_m}{v_{m-1}v}\right)$$

$$\mathbf{B}: t = \frac{v_m}{g} Ln \left( \frac{v_m}{v_m - v} \right)$$

$$C: t = \frac{v_m}{g} Ln\left(\frac{v_m}{v_m + v}\right)$$

Question 7: Calculer le temps t au bout duquel la vitesse v atteint 0.9  $V_m$ 

t=0.046

B: t = 0.092

C: t = 0.138

# Exercice II

On place en série une résistance R= 100 G un condensateur de capacité C = 10 \(\mu\) F et un solénoïde d'inductance (L = 10. 10-3 H)et de résistance négligeable. On établit aux bornes de ce circuit une tension sinusoïdale(u = U sin (ω t), de fréquence 50Hz et de valeur efficace U = 110V.

Question 8 : Calculer la pulsation ω.

A: πrad.s-1

B:  $10 \pi rad. s^{-1}$ 

C: 100 mrad. s-1

Question 9 : Calculer L @

 $A:1\Omega$ 

B:2Ω

C:0.5 \O

(D) : TLASZ

C: 328 Ω

Question 11 : Calculer l'impédance du circuit :  $A : Z = 330 \Omega$ 

$$\mathbf{A}: \mathbf{Z} = 330 \,\Omega$$

$$B: Z = 332.4 \Omega$$

Question 12 : Quelle est l'intensité du courant I ?

$$A: I = 0.33 A$$

$$(B:)$$
  $I = 0.11 A$ 

Question 13 : Quelle est le déphasage φ de l'intensité i par rapport à la tensionu ?

A: 
$$\varphi = 36^{\circ}15'$$

B: 
$$\varphi = 144^{\circ}60'$$

C: 
$$\varphi = 72^{\circ}30'$$

Ouestion 14 : Quelle devrait être la valeur de la fréquence de la tension sinusoïdale pour que i e u soient en phase ?

$$A: Z = \frac{R}{2}$$

$$B:Z=R$$

#### Exercice III

On utilise dans cet exercice un ressort AB à spires non jointives, de masse négligeable, de constante de raideur k = 50 N.m<sup>-1</sup>. Dans tout le problème on prendra g = 10 m. s<sup>-2</sup>.Les deux parties A et B sont indépendantes.

Le ressort est fixé au plafond de la cabine d'un ascenseur par son extrémité A. On suspend à l'extrémité inférieure B un corps de masse M =500 g

Question 15 : Quel est l'allongement du ressort lorsque l'ensemble est au repos :

$$A \Delta l_o = \frac{Mg}{k}$$

$$B: \Delta l_o = \frac{g}{Mk}$$

$$C: \Delta l_o = \frac{M}{gk}$$

Question 16 : Application Numérique :

$$A:\Delta l_o = 0.4 m$$

$$B: \Delta l_o = 10 \, cm$$

$$C:\Delta l_o = 0.8 m$$

La cabine est animée d'un mouvement rectiligne vertical vers le haut, d'accélération \( \tilde{\cappa} \).

Question 17: Etablir l'expression de la tension du ressort en fonction de M, g et Γ.

$$A:T = M(g + \gamma)$$

$$\mathbf{B}: \mathbf{T} = \frac{1}{M(g+\gamma)}$$

$$C:T = g(M + \gamma)$$

Question 18 : Déduire l'expression de l'allongement du ressort

$$(A) \Delta l = \frac{M}{k} (g + \gamma)$$

$$\mathbf{B}:\Delta l=\frac{1}{Mk}\frac{1}{(q+\gamma)}$$

$$C: \Delta l = \frac{\kappa}{M}(g + \gamma)$$

Le mouvement comprend trois phases

- une phase uniformément accélérée |γ<sub>1</sub>| = 2 m. s<sup>-2</sup>
- b- Une phase uniforme
- c- Une phase uniformément retardée  $|\gamma_2| = 2.5 \text{ m. s}^{-2}$

Question 19: Calculer pour chacune des trois phases la tension du ressort

$$A : T_1 = 6N ;$$

$$T_2 = 0.2N$$

$$T_3 = 3.75N$$

B : 
$$T_1 = 0.17/$$

$$T_2 = 5N$$

$$T_3 = 0.27N$$

B

$$T_2 = 0.5N$$

$$T_3 = 3,75$$



Ti= 6 = Ti=V

Ouestion 20: Calculer pour chacune des trois phases l'allongement du ressort

A

$$\Delta l_2 = 10 \ cm$$

$$\Delta l_3 = 5.3 \text{ mm}$$

$$\Delta l_2 = 4$$

$$\Delta l_3 = 7.5 \text{ cm}$$

$$\Delta l_3 = 5.5 \text{ cm}$$

bl= 12m Dl=10- D(=71)