ROYAUME DU MAROC

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 d'anglais, durée 30 mn

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

Question 1: ____ people from Poland went to Scotland in the 20th century.
A: Many of B: Many C: Some of D: –

Question 2: There are _____ French speakers in Montreal.
A : Too much B : a lot of C : a little D : not much

Question 3 : She ____ with her friends on Facebook everyday
A : Is communicating B: communicates C : will communicating D : comunicate

Question 4 : Answer: I was eating my dinner.
A : What did I do yesterday? B: What were you doing when I rang you last nigh
C : What did you have for dinner? D : What are you doing this evening?

Question 5: Do you still play tennis?
A: I have been playing when I was at university, but I don't have enough time now.
B: I have played C : I used to play D: I 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 Paris to visit an old friend.
C : I'm going to Paris for to visit an old friend. D: I'm going to Paris to visiting an old friend.

Question 7 : Excuse me, can you help me please.
A : I'm looking for the British Museum, but I have lost my way.
B : I'm looking for the British Museum, but I am lost my way.
C : I'm looking for the British Museum, but I did lose my way.
D : I'm looking for the British Museum, but I have been losing my way.

Question 8:
A: I am going to send Alistair a copy of the email, but the Emily said it would be a better idea to call him.
B: I was on the point of send Alistair a copy of the email, but the Emily said it would be a better idea to call him
C: I was thinking about send Alistair a copy of the email, but the Emily said it would be a better idea to call him
D: I was going to send Alistair a copy of the email, but the Emily said it would be a better idea to call him.

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 tomorrow, I'm afraid.

Question 10 : excuse me, do you know when my lunch will be ready?
A: In 10minutes. It is prepared as we speak. B: In 10minutes. It is being prepared as we speak.
C: In 10minutes. It is preparing as we speak. D : None of these answers are correct.

Question 11 : If it wasn't raining,
A: I will go running, but I think I'll stay indoors instead. B: I would go running, but I think I'll stay indoors instead.
C: I went running, but I think I'll stay indoors instead. D: I am going running, but I think 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 plans. B: He told me he wasn't coming because he has other plans.
C : He told me he wouldn't come because he has other plans D : He told me he shan't come because he has other plans.

Question 13 : Hurry up! We'll be late for the meeting!
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 minute, I have to put on my jacket!

Question 14:
A : He's young and doesn't have a lot of work experience. B: He's young and doesn't have 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 have a lot of work training.

Question 15: Where's Mark?
A: He's normally on holiday. B : He's actually on holiday. C He's currently on holiday. D : He's really on holiday.

Question 16 :
A : Helen goes to work with the train because the station is near her house.
B : Helen goes to work on train because the station is near her house.
C : Helen goes to work in the train because the station is near her house.
D : Helen goes to work by train because the station is 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 please?

Question 18: The fast food restaurant was _____ dirty. We didn't eat there.
A : extreme B : extremely C : bit D : very much

Question 19: The ____ coffee in the world comes from Indonesia.
A : expensive B: expensivest C: more expensive D: most expensive

Question 20: Do you like Facebook?
I love it! I spend five hours every day on it. What about you?
A: No! I like it. I'm not interested in photos of my friends' babies.
B: No! I have it. I'm not interested in photos of my friends' babies.
C: No! I hate it. I'm not interested in photos of my friends' babies.
D: No! I never it. I'm not interested in photos of my friends' babies.

Question 21: The hospital employs two hundred
A :Nurses B: Waitresses C : Patients D: Lawyers

Question 22: Does she
A : do any sports? B : make any sports? C: train any sports? D : prepare any sports?

Question 23: We have a meeting at 10 o'clock
A: per day B : all day C: all the days D: every day

Question 24 :
A : I often go out with friends on Saturday evenings. We usually only see each other during the week.
B: I sometimes go out with friends on Saturday evenings. We usually only see each other during the week.
C: I rarely go out with friends on Saturday evenings. We usually only see each other during the week.
D: I always go out with friends on Saturday evenings. We usually only see each other during the week.

Question 25 : A: did you enjoy your flight to Paris, last week? B : did you enjoy your fly to Paris, last week?
C : did you enjoy your plane to Paris, last week? D did you enjoy your plane to Paris, last week?

Question 26 : A: I found the lecture very harsh to follow, didn't you? B: I found the lecture very tight to follow, didn't you
C: I found the lecture very hard to follow, didn't you? D: I found the lecture very strict to follow, didn't you?

Question 27 : A: were you invited to James and Melinda's marriage? B: were you invited to James and Melinda's wedding?
C: were you invited to James and Melinda's honeymoon? D were you invited to James and Melinda's occasion?

Question 28 : Answer: My number is 00 44 1 726 9513
A: What's your phone number? B: How's your phone number?
C: Which is your phone number? D: Who is your phone number?

Question 29 : Excuse me, sir. You
A: Could show your passport before you can go through that door.
B: Can show your passport before you can go through that door.
C: need show your passport before you can go through that door.
D: Have to show your passport before you can go through that door.

Question 30 : You worked really hard last month, Jane.
A: I thank you all your help B: I thank for all your help
C: I really am appreciating all your help. D: I really appreciate all your help.

Question 31 : Would you like some sugar in your tea?
A : No, I wouldn't like B: No, Thank you C: No, I don't like D: No, please

Question 32 : I'm sorry, I
A : Not understand. Could you say that again, please? B: Don't understand. Could you say that again, please?
C: am not understanding. Could you say that again, please? D: Understand not. Could you say that again, please?

Question 33 : Can you give me a lift to the bus stop, please?
A : Sorry, I don't have a driving license. B: Sorry, I don't have my drive permit.
C: Sorry, I don't have my driving allowance. D: Sorry, my driving permit is difficult.

Question 34 : Excuse me, sir. You
A : Couldn't use your phone in here. Please switch it off. B: Mustn'tuse your phone in here. Please switch it off.
C : Don't have to use your phone in here. Please switch it off. D: Shouldn't use your phone in here. Please switch it off.

Question 35 : First we'll have lunch and
A: after we'll discuss the project. B: thanwe'll discuss the project.
C : Next we'll discuss the project. D: After that we'll discuss the project.

Question 36 How often do you visit your family?
A : Every summer B: For two weeks C : Last month D: Next month

Question 37: She has ____ finished this week's report.
A : yet B: already C : ever D : never

Question 38: The film Avatar was directed ____ James Cameron.
A: by B: from C: for D: with

Question 39: Cecilia knows someone ____ went to the carnival in Rio de Janeiro.
A: who B: which C : she D : where

Question 40 : I mostly ____ my friends via email.
A: get on well with B :have in common C: keep in touch with D: see a chother

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I.S.E.M

2016

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

Une goutte d'eau de **masse m** tombe en chute libre sous l'effet de son poids ; la résistance de l'air est proportionnelle à 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 :** $V_m = (mg)/k$ **C :** $V_m = m/kg$),

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

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

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

A : $v(t) = V_m(1 - e^{-\frac{g}{V_m}t})$ **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 : $x(t) = \frac{(V_m)^2}{g} Ln\left(\frac{V_m}{V_m - v}\right) + \frac{V_m}{g}v$ **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 :** $x(t) = \frac{1}{250} Ln(1 - 5v) - \frac{v}{50}$

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

A : $t = \frac{g}{V_m} Ln\left(\frac{V_m}{V_m - v}\right)$ **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

A : t=0.046 **B :** $t = 0.092$ **C :** $t = 0.138$

Exercice II

On place en série une résistance R= 100 Ω, un condensateur de capacité C = 10 μ 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 :** $\pi\, rad.s^{-1}$ **B :** $10\,\pi\, rad.s^{-1}$ **C :** $100\pi rad.s^{-1}$

Question 9 : Calculer L ω **A :** 1 Ω **B :**2 Ω **C :**0.5 Ω

Question 10 : Calculer 1/(C ω) A : 310 Ω B : 318Ω C : 328 Ω

Question 11 : Calculer l'impédance du circuit : A : $Z = 330\ \Omega$ B : $Z = 332.4\ \Omega$ C : Z=335.4 Ω

Question 12 : Quelle est l'intensité du courant I ? A : $I = 0.33\ A$ B : $I = 0.11\ A$ C : I = 0.22 A

Question 13 : Quelle est le déphasage φ de l'intensité i par rapport à la tension$u$?
A : $\varphi = 36°15'$ B : $\varphi = 144°60'$ C : $\varphi = 72°30'$

Question 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 : $Z = R$ C : Z=2 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^{-1}. Dans tout le problème on prendra g = 10 m. s^{-2}.**Les deux parties A et B sont indépendantes.**

Partie A

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$\vec{\Gamma}$.

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

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

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

A : $\Delta l = \frac{M}{k}(g+\gamma)$ B : $\Delta l = \frac{1}{Mk}\frac{1}{(g+\gamma)}$ C : $\Delta l = \frac{K}{M}(g+\gamma)$

Le mouvement comprend trois phases

a- Une phase uniformément accélérée $|\gamma_1| = 2\ m.s^{-2}$
b- Une phase uniforme
c- Une phase uniformément retardée $|\gamma_2| = 2.5\ m.s^{-2}$

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	: $T_1 = 0.17N$;	$T_2 = 5N$;	$T_3 = 0.27N$
C	: $T_1 = 0.17N$;	$T_2 = 0{,}5N$;	$T_3 = 3{,}75N$

$T_4 = 6{,}25\ N$?

D $T_1 = 6$ $T_2 = 5$ $T_3 = 3{,}75$

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

A	: $\Delta l_1 = 12\ cm$;	$\Delta l_2 = 10\ cm$	$\Delta l_3 = 5.3$ mm
B	: $\Delta l_1 = 3$ mm	$\Delta l_2 = 4$ mm	$\Delta l_3 = 7.5\ cm$
C	: $\Delta l_1 = 12$ mm	$\Delta l_2 = 4$ mm	$\Delta l_3 = 5.5\ cm$

$\Delta l_4 = 10$ cm
$\Delta l_4 = 12{,}5$ cm

$\Delta l_1 = 12$ cm $\Delta l_2 = 10$ cm $\Delta l_3 = 7{,}5$