

海淀区高三年级第二学期期中练习

理科综合能力测试

参考答案及评分标准

2005.4

第 I 卷 (选择题)

每题 6 分, 共 126 分

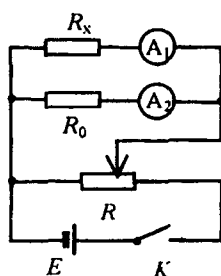
1.D 2.B 3.C 4.A 5.D 6.D 7.C 8.D 9.B 10.B 11.D 12.A 13.A 14.B
15.D 16.C 17.B 18.A 19.C 20.C 21.B

第 II 卷 (非选择题)

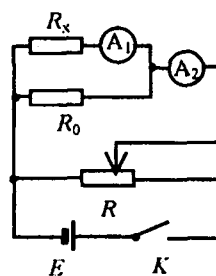
本卷 10 题, 共 174 分

22. (18 分)

- (1) 1.15 2 分
8.95 2 分
 $\frac{d}{5L} (x_2 - x_1)$ 2 分
 5.2×10^{-7} 2 分
(2) ①如答图—1 所示 3 分

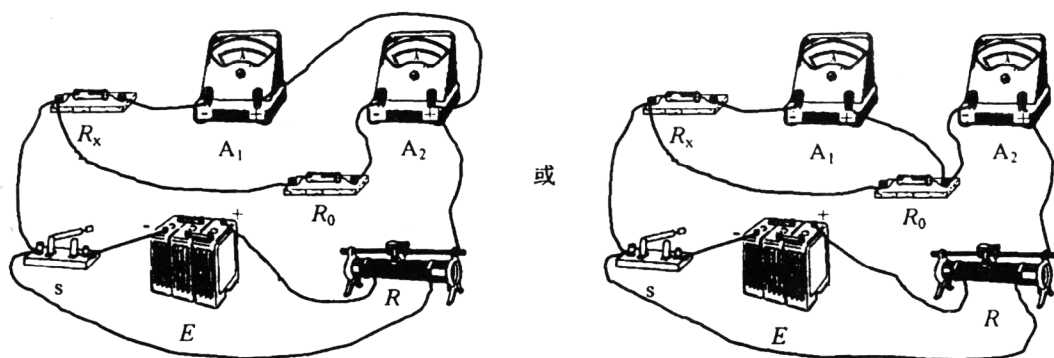


或



答图—1

- ②如答图—2 所示 3 分



答图—2

③ $R_x = \frac{I_2}{I_1} (R_0 + r_2) - r_1$ 或 $R_x = \frac{I_2 - I_1}{I_1} R_0 - r_1$ 4 分

23. (16 分)

(1) 小物块受到斜面的摩擦力 $f_1 = \mu mg \cos \theta$ 1 分

在平行斜面方向由牛顿第二定律 $mg \sin \theta - f_1 = ma$ 2 分

解得 $a = g \sin \theta - \mu g \cos \theta = 4.0 \text{ m/s}^2$ 2 分

(2) 小物块由 A 运动到 B, 根据运动学公式有

$v_B^2 = 2aL$ 解得 $v_B = \sqrt{2aL} = 2.0 \text{ m/s}$ 2 分

小物块由 B 运动到 C 的过程中所受摩擦力为 $f_2 = \mu mg$ 1 分

根据动能定理有: $-f_2 s_{BC} = 0 - \frac{1}{2} mv_B^2$ 2 分

解得 $s_{BC} = 0.80 \text{ m}$ 1 分

(3) 设小物块在 C 点以初速度 v_C 运动, 恰好回到 A 点, 由动能定理得

$-mgL \sin \theta - f_1 L - f_2 s_{BC} = 0 - \frac{1}{2} mv_C^2$ 3 分

解得 $v_C = 2\sqrt{3} \text{ m/s} = 3.5 \text{ m/s}$ 2 分

24. (18 分)

(1) 物体由静止开始向右做匀加速运动, 证明电场力向右且大于摩擦力。进入磁场后做匀速直线运动, 说明它受的摩擦力增大, 证明它受的洛伦兹力方向向下。由左手定则判断, 物体带负电。 2 分

物体带负电而所受电场力向右, 证明电场方向向左。 2 分

(2) 设物体被挡板弹回后做匀速直线运动的速度为 v_2 , 从离开磁场到停在 C 点的过程

中, 根据动能定理有

$$-\mu mg \frac{L}{4} = 0 - \frac{1}{2} mv_2^2 \dots\dots\dots 2 \text{ 分}$$

$$\text{解得 } v_2 = 0.80 \text{ m/s} \dots\dots\dots 1 \text{ 分}$$

$$\text{物体在磁场中向左做匀速直线运动, 受力平衡 } mg = qv_2 B \dots\dots\dots 2 \text{ 分}$$

$$\text{解得 } B = 0.125 \text{ T} = 0.13 \text{ T} \dots\dots\dots 1 \text{ 分}$$

(3) 设从 D 点进入磁场时的速度为 v_1 , 根据动能定理有:

$$qE \frac{1}{2} L - \mu mg \frac{1}{2} L = \frac{1}{2} mv_1^2 \dots\dots\dots 2 \text{ 分}$$

$$\text{物体从 } D \text{ 到 } R \text{ 做匀速直线运动受力平衡: } qE = \mu (mg + qv_1 B) \dots\dots\dots 2 \text{ 分}$$

$$\text{解得 } v_1 = 1.6 \text{ m/s} \dots\dots\dots 1 \text{ 分}$$

$$\text{小物体撞击挡板损失的机械能为: } \Delta E = \frac{1}{2} mv_1^2 - \frac{1}{2} mv_2^2 \dots\dots\dots 2 \text{ 分}$$

$$\text{解得 } \Delta E = 4.8 \times 10^{-4} \text{ J} \dots\dots\dots 1 \text{ 分}$$

25. (20 分)

(1) 设金属杆到达 x_0 处时, 其速度为 v_1 , 由运动学公式

$$v_0^2 - v_1^2 = 2ax_0 \dots\dots\dots 2 \text{ 分}$$

$$\text{解得: } v_1 = \sqrt{v_0^2 - 2ax_0} \dots\dots\dots 1 \text{ 分}$$

$$\text{金属杆的感应电动势 } E = Bdv_1 = Bd \sqrt{v_0^2 - 2ax_0} \dots\dots\dots 2 \text{ 分}$$

(2) 当金属杆的速度减小到零时, 回路中感应电流方向发生改变, 设此时金属杆的位置为 x_m $\dots\dots\dots 3 \text{ 分}$

$$\text{由运动学公式得 } v_0^2 = 2ax_m \text{ 解得 } x_m = \frac{v_0^2}{2a} \dots\dots\dots 2 \text{ 分}$$

(3) 在金属杆沿 x 轴的正方向运动的过程中, 设金属杆到达 x 处时, 速度大小为 v , 则

$$v = \sqrt{v_0^2 - 2ax} \dots\dots\dots 1 \text{ 分}$$

$$\text{金属杆的感应电动势为 } E = Bdv \dots\dots\dots 1 \text{ 分}$$

$$\text{回路中的感应电流为 } I = \frac{E}{R+r} \dots\dots\dots 1 \text{ 分}$$

$$\text{金属杆受到的安培力为 } F_A = BId, \text{ 方向为 } x \text{ 轴负方向} \dots\dots\dots 1 \text{ 分}$$

$$\text{设 } x \text{ 负方向为正方向, 由牛顿第二定律 } F + F_A = ma \dots\dots\dots 1 \text{ 分}$$

外力 F 随金属杆的位置 x 变化的关系为:

$$F = ma - \frac{B^2 d^2 \sqrt{v_0^2 - 2ax}}{R+r} \dots\dots\dots 1 \text{ 分}$$

在金属杆沿 x 轴的负方向运动的过程中, 设金属杆到达 x 处时, 速度大小为 v , 根据匀

变速直线运动的对称性可知, $v = \sqrt{v_0^2 - 2ax}$ 1 分

同理, 此金属杆的感应电动势为 $E = Bdv$, 金属杆受安培力:

$$F_A = Bld = \frac{B^2 d^2 \sqrt{v_0^2 - 2ax}}{R + r}, \text{ 方向为 } x \text{ 轴正方向} \dots\dots\dots 2 \text{ 分}$$

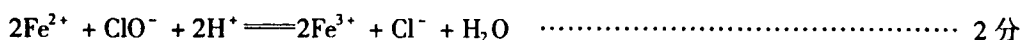
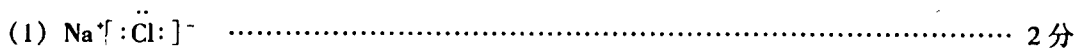
设负 x 方向为正方向, 由牛顿第二定律 $F - F_A = ma$

外力 F 随金属杆位置 x 变化的关系为:

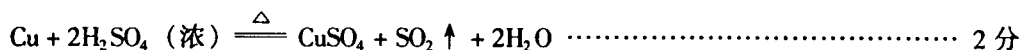
$$F = \frac{B^2 d^2 \sqrt{v_0^2 - 2ax}}{R + r} + ma \dots\dots\dots 1 \text{ 分}$$

(26 题 ~ 29 题中合理答案均可酌情给分)

26. (16 分, 每空 2 分)

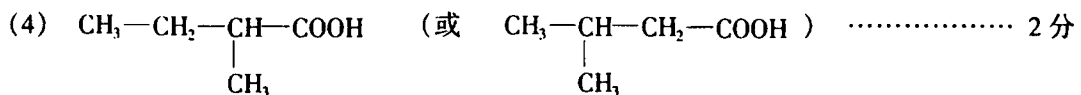
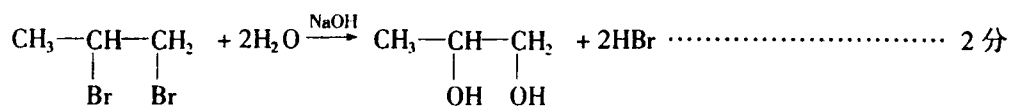
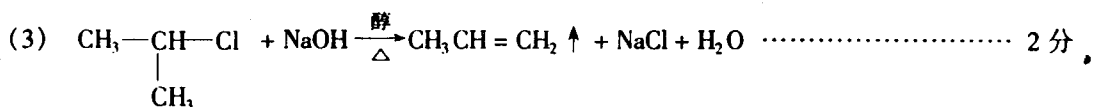
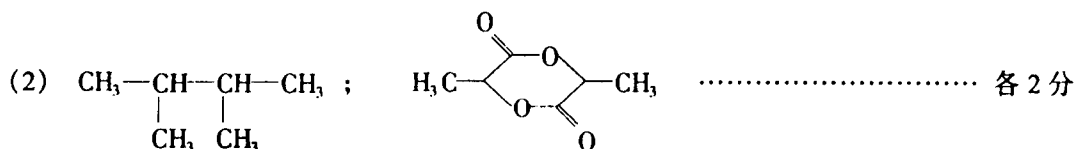


(2) 三; VIA; 分子; 非极性 各 2 分



27. (16 分, 每空 2 分)

(1) $\text{C}_5\text{H}_7\text{Cl}$; 取代反应; 加聚反应 各 2 分

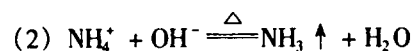


28. (14 分)

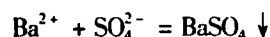
- (1) ①②③ 3 分
- (2) $\frac{25b}{8a}$ 3 分
- (3) 用干燥、洁净的玻璃棒蘸取少量溶液点在 pH 试纸上, 并和标准比色板对比, 读数 3 分
- (4) c a d b e 3 分
- (5) 另取相同质量的氯酸钾固体, 不加 CuO 直接加热, 对比放出氧气的反应速率 2 分

29. (14 分)

- (1) NH_4^+ ; Al^{3+} ; SO_4^{2-} 各 2 分



$$n(\text{NH}_4^+) = \frac{0.224 \text{ L}}{22.4 \text{ L} \cdot \text{mol}^{-1}} = 0.01 \text{ mol} \quad \dots\dots 1 \text{ 分}$$



$$n(\text{SO}_4^{2-}) = \frac{4.66 \text{ g}}{233 \text{ g} \cdot \text{mol}^{-1}} = 0.02 \text{ mol} \quad \dots\dots 1 \text{ 分}$$



$$\begin{array}{cc} 2 \text{ mol} & 102 \text{ g} \end{array}$$

$$\begin{array}{cc} n(\text{Al}^{3+}) & 0.51 \text{ g} \end{array}$$

$$n(\text{Al}^{3+}) = 0.01 \text{ mol} \quad \dots\dots 2 \text{ 分}$$

不含结晶水的化合物质量为:

$$0.01 \text{ mol} \times 18 \text{ g} \cdot \text{mol}^{-1} + 0.01 \text{ mol} \times 27 \text{ g} \cdot \text{mol}^{-1} + 0.02 \text{ mol} \times 96 \text{ g} \cdot \text{mol}^{-1} = 2.37 \text{ g}$$

$$\text{结晶水的质量为: } m(\text{H}_2\text{O}) = 0.5 \times 9.06 \text{ g} - 2.37 \text{ g} = 2.16 \text{ g}$$

$$\text{则其结晶水的物质的量为: } n(\text{H}_2\text{O}) = \frac{2.16 \text{ g}}{18 \text{ g} \cdot \text{mol}^{-1}} = 0.12 \text{ mol} \quad \dots\dots 2 \text{ 分}$$

$$\begin{aligned} \text{故 } n(\text{NH}_4^+) : n(\text{Al}^{3+}) : n(\text{SO}_4^{2-}) : n(\text{H}_2\text{O}) &= 0.01 \text{ mol} : 0.01 \text{ mol} : 0.02 \text{ mol} : 0.12 \text{ mol} \\ &= 1 : 1 : 2 : 12 \end{aligned}$$

$$\text{所以结晶水合物的化学式为: } \text{NH}_4\text{Al}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O} \quad \dots\dots 2 \text{ 分}$$

30. (24 分)

- ① 选择具有抗噬菌体突变的大肠杆菌 2 分
- 便于识别 (鉴别) 大肠杆菌的菌落 2 分
- ② 异养型 2 分

注：此空如果答“异养需氧型”不能得分

乳糖（2分）、蛋白胨（2分） 共4分

蛋白胨 2分

③寄生 2分

④支持假设一 2分

A、B两组所有的培养皿中菌落数没有显著差异 2分

⑤抗噬菌体变异发生时刻的差异 2分

A₅比A₄发生突变的时间早（2分），具有抗噬菌体突变的大肠杆菌数比A₄多，培养皿中出现的菌落数就多（2分） 共4分

注：或答A₄比A₅发生突变的时间晚（2分），具有抗噬菌体突变的大肠杆菌数比A₅少，培养皿中出现的菌落数就少（2分）按相应标准给分。

31.（18分）

（1）净光合速率 2分

光照强度（2分）、温度（2分）、CO₂浓度（2分） 共6分

注：以上两个空的答案顺序可以颠倒

（2）最适温度 2分

（3）全光照（2分）、CO₂浓度为1.22%（2分）、温度在30℃左右（2分） 共6分

随着温度的升高呼吸作用的强度随之增大 2分

海淀区高三年级第二学期期中练习

语 文

参考答案及评分标准

2005.4

一、(15分,每小题3分)

1.B 2.D 3.C 4.A 5.C

二、(15分,每小题3分)

6.D 7.D 8.A 9.C 10.A

三、(18分)

11. ①古人把直径一尺的美玉看得很轻,却把很短的时间看得很重,惧怕时间匆匆而过(2分)

②于是就(只顾)经营眼前的事务,而抛弃了名传千古的大事。(2分)

12. (1) C (2分)

(2)

①居易 琵琶行 卖炭翁(只要是白居易的作品即可,2分,错1处减1分)

②这三句诗都人树并写,以景衬情,用树之落叶来比喻人之衰老。(2分)

③司空曙的诗句写了夜雨、昏灯、黄叶树、白头人,形象更加具体鲜明,表现了诗人孤独悲苦的心境,使读者感受更为真切。(2分)

13. ①浩浩乎如冯虚御风 飘飘乎如遗世独立(2分)

②我言秋日胜春朝 晴空一鹤排云上(2分)

③地也,你不分好歹何为地!天也,你错勘贤愚枉做天!(2分)

(每句有错别字则该句不得分)

四、(12分,每小题3分)

14. 过程:种子萌发、生长结束

条件:水量充沛、干旱高温

15. D 16. B

17. ①生长周期短 ②生长发育快 ③靠种子繁衍 ④种子的生命力强 ⑤植株较矮小
(共5点,答出4点得3分,答出3点得2分)

五、(18分)

18. C D (4分)

19. 因为午门已经不是普通意义上的院门,(它的意义不仅仅是供人出入,)它代表着一种权威,一种信仰,甚至一种宗教。(3分)

20. 意思是:皇帝所处的位置越高,他的影像在万众眼中就越小。(2分)

含意一:宫殿把皇帝托举到君临天下的极至之日,也就是皇朝开始走向灭亡之时。(2分)

含意二：虽然宫殿将皇帝的身影弱化为最小，但皇权的威严依然影响着人们的思想。(2分) (意思对即可)

21. (5分) 答题要点：过去的故宫是皇权的象征，是帝王尊严的象征，是暴力的象征。今天的故宫是中华民族悠久历史和灿烂文明的象征，是中华民族具有广阔胸怀和豪迈气概的象征，是改革开放的中国沉稳、坚定、奋发精神的象征。

(以上要点不必全部答出。今昔各2分，语言1分。)

六、(12分)

22. 从小就具有较强自制力的人长大后在事业上容易取得成功。(3分)

23. ④①⑤②③⑥ (3分)

24. 内容健康，感情饱满2分；能恰当地运用议论抒情等表达方式2分；语言生动2分

七、(60分)

25. (60分)

依照高考评分标准评分

附文言译文：

刘毅，字仲雄，东莱掖县人。从小就有孝敬父母的品行，年轻时磨练高洁的操守，但喜欢评论人物优劣，那些王公贵人望见他的仪容风采也敬畏他。寄居在平阳的时候，太守杜恕请他做功曹，他淘汰了郡里的官吏一百多人，在三魏一带出了名。当时的人们做歌谣唱道：“只听说刘功曹，没听说过杜太守。”魏末，依据分部考察的结果推荐他为孝廉，征召他做了司隶都官从事，京城一带官吏都谨守法度。刘毅要弹劾河南府尹，司隶校尉不准，说道：“捕捉野兽的狗，小老鼠也可以爬上它的背。”刘毅说：“如果既能捕兽，又能杀鼠，对狗有什么损害呢？”丢掉任官的符信就离开了。

晋武帝即位，因刘毅忠贞正直，让他掌管谏官。后来又转任司隶校尉，督察管理豪门大户，京城官吏都谨守法度。他管辖范围内的违纪官员听到他任职的消息后弃官而逃的很多，当时人们把他比作西汉时的诸葛丰、盖宽饶。皇太子朝见，乐队快要进入东掖门了，刘毅认为这是(对皇帝)不敬，把他们阻挡在门外，并且上表弹劾太子师傅以下官员。直到皇帝下诏赦免他们，他们才得以进入皇城。

晋武帝曾经到南郊外祭祀，祭祀仪式完成之后，武帝感慨地问刘毅说：“你把我比作汉代的哪个皇帝？”刘毅回答说：“您可以比作东汉末年的桓帝、灵帝。”武帝说：“虽然我的德行不如古人，还是能克制自己(尽力)为政。我又平定了江南，统一了天下，你把我比作桓帝、灵帝，恐怕太过分了吧？”刘毅回答说：“桓帝灵帝卖官，钱收进国库；您卖官，钱却收进私人家里。从这一点来看，(您)恐怕还不如(桓帝灵帝)啊。”晋武帝大笑说：“桓帝灵帝的时代，没有听到过这样的话。现在有(这样)耿直的臣子，所以我和桓帝灵帝还是不同啊。”

刘毅整天忙于公事，每天天不亮就等着上朝，言谈议论恳切直率，不屈不挠，被朝廷内外的人所敬仰。(即使)他的妻子儿女有过错，也要马上惩罚。他做事就是这样公正。但由于严峻刚直，没能作到三公辅相。皇帝因为刘毅清贫，赏给他三十万钱，并且每天供给米粮和肉食。太康六年刘毅去世，晋武帝手抚着几案震惊地说：“我失掉了这样一位有名的大臣，没能让他活着作到三公的官职。”当即追赠和三公相同的仪仗，派使者监管护卫他的丧事。

海淀区高三年级第二学期期中练习

英 语

参考答案及评分标准

2005.4

第一、二、三部分 (Key to 1—75)

1. A 2. B 3. C 4. B 5. A 6. B 7. C 8. A 9. B 10. C
11. B 12. C 13. A 14. C 15. A 16. C 17. C 18. A 19. B 20. B
21. D 22. B 23. C 24. D 25. B 26. A 27. A 28. D 29. B 30. C
31. C 32. A 33. C 34. D 35. A 36. C 37. A 38. B 39. D 40. B
41. C 42. D 43. A 44. B 45. D 46. C 47. B 48. A 49. C 50. D
51. B 52. A 53. A 54. C 55. D 56. C 57. B 58. A 59. C 60. D
61. A 62. B 63. D 64. C 65. B 66. A 67. D 68. B 69. A 70. B
71. D 72. B 73. D 74. C 75. A

第四部分：书面表达

第一小题：情景作文

Possible Version

Dear editor,

Recently students of our school have made a survey of "Views on Newspapers". The people whom we interviewed have two different opinions. 45% of the people enjoy reading newspapers. First of all, as a convenient source of information, reading newspapers is not limited by time. Secondly, reading also makes people think, which helps develop people's intelligence. Moreover, people can select and read whatever section they are interested in.

However, 55% of the people don't turn to newspapers to get information. They hold the idea that newspapers are not very attractive because they lack the sound and video that make other sources of information more exciting to look at than newspapers. What's more, readers receive information from newspapers later than from the Internet and TV.

In my opinion, people can make use of whatever means to gather information, so long as it's convenient for them.

Yours,

Li Hua

第二小题：开放作文

Possible version (1)

I quite agree with them. For one thing, I could get a better education because there are many well-known universities in Beijing, such as Beijing University and Tsinghua University. Besides, I could

save the time and money travelling to and from the university. Also, if I stay in Beijing, my parents and I could take good care of each other. I am sure staying in Beijing would benefit me a lot.

Possible version (2)

I don't agree with my parents. I'd like to study at a university outside Beijing so that I could live on my own. In that case, I would have to handle everything by myself, which would make me independent from my parents. For example, I would have to wash my own clothes. Besides, I would have more chances to make new friends and to experience a way of life quite different from that in Beijing. I think my future university life would be more challenging and exciting.

附：听力材料

第一节

Text 1

M: I had my bike repaired. Last night I put it at the gate but can't find it now.

W: It was in my way when I went to the garden. So I put it under the stairs. It's still there.

Text 2

W: Why don't we stay at the Grand Regency Hotel?

M: You are joking! Do you know how expensive that place is? There is no way we can afford to stay there.

Text 3

M: Don't you usually leave for the airport at four o'clock?

W: Yes. I usually do.

M: Well, why are you leaving so early?

W: It's going to snow, so I have to leave half an hour earlier.

Text 4

W: Mr. Stone's lessons were a waste of time. He was always telling funny stories.

M: But he was actually covering what we should learn.

Text 5

M: I'd love to go to the Super Bowl next week, but I don't think there are any more tickets.

W: Why don't you talk to Laura? She's a big football fan. She might be able to give you some advice on how to get a ticket. And I know she is planning to go herself, so maybe you could go with her.

Text 6

W: So what do you think you are going to do when you graduate, John?

M: I'm not sure. My dad says I should work in information technology. You know, something with computers.

W: Is that what your dad does?

M: Not really. He is an engineer.

W: How about you? What are you interested in doing?

M: Well. I'm interested in medicine. I'd love to be a doctor.

W: Yeah, what subject are you good at?

M: Math is my best subject. And I'm also pretty good at science.

Text 7

W: If that man gives me any more letters to type, I'll scream. He's given me ten already today, and there'll be more when I get back from coffee break. I'll be here till midnight.

M: Calm down, Franny. He can't make you stay after five. Finish what you can, and leave the rest for Mary.

W: But they're important letters, Joe. They should go out tonight.

M: That's not your worry. If they're that urgent, he should've given them to you earlier.

Text 8

M: Tell me what happened.

W: Well, I wasn't paying attention when I started to cross the street, and I stepped in front of a taxi. I didn't realize it was still moving.

M: Can you walk?

W: Not very well.

M: Where does it hurt?

W: My side hurts when I take a step.

M: Okay, don't try to walk anymore. Don't worry. An ambulance is on the way. You know, you're very lucky; you could have easily been killed in the accident.

W: Yes, I guess I could have.

M: You'll have to fill out a form. Do you have any identification with you?

W: I have my passport. By the way, how did you get here so fast?

M: Someone dialed 911 and reported the accident. We were in the area and got a radio call. It only took a minute or so to get here.

Text 9

M: Excuse me, can you help me?

W: Of course. What can I do for you?

M: Can you tell me how I can get to the Excelsior Hotel from here?

W: The Excelsior? Let's see, that's in the city, right?

M: Yes, it is. On Forty-third Street, just off Eleventh Avenue.

W: Well, you can take a bus to the city. Just go out the front door of the terminal and cross the street. There is a sign that says, "Airport-City Bus." Otherwise, you can take a taxi. You can catch one right in front of the terminal.

M: Thank you. Oh, do you know how much the bus fare is?

W: It's five dollars. A taxi runs about fifteen to twenty dollars.

M: I'd better take a bus then. How often does the bus run?

W: I think you just missed one. There is a schedule printed on the sign outside. I think that the buses run every half hour or so.

M: On second thought, I'd better take a taxi. I have a lot of luggage and it's late. Thank you!

Text 10

W: Yes, sir. You called?

M: Yes, I wonder if you could bring me another bottle of beer.

W: Certainly. Would you like anything else?

M: Well, my grandson is supposed to meet me in London at the airport. Do you think he'll be able to find me?

W: I'm sure he will. You don't have to worry about that. Are you going to be visiting him?

M: Yes. I've never seen my grandson.

W: I think you'll have a wonderful time in London. It's beautiful. Is this your first time abroad?

M: No, I saw quite a bit of Europe before, Rome, Berlin, Paris, places like that, but I've never been to London.

W: Oh, then you have flown before too.

M: No, that was during the Second World War and I went to Europe on a large ship carrying soldiers.

W: Things are quite different in Europe nowadays.

M: I'm sure they are. I'm really anxious to get there.

W: Well, it's 4:00 now and we'll be there at 6:00. Will you be staying long?

M: I plan to stay five weeks. I was a teacher but I have stopped working. My wife is dead and so I can go wherever I want.

W: I think you'll have a good time. I'll go and get a beer for you.

Text 11

W:

There are many ways in which the memory can be improved. In fact, I believe we all have the ability to remember up to six times more than we do.

A lot of people find that visualizing information is very helpful. For example, if you are trying to remember a telephone number, imagine it written down on a piece of paper.

Remembering people's names is a problem for a lot of people. I recommend that when you are introduced to someone you concentrate on his or her first name. It probably won't offend anyone if you have to say, "What was your last name again, Sarah?" but Sarah might be upset if you forget her first name.

Of course, regular breaks are important and it's better not to work for long periods without taking one, stopping for rest about every twenty minutes is best.

Finally, take care of yourself physically. Avoid substances like coffee, alcohol or drugs, because they dull the mind. And don't forget your vitamins — B1 and B2 are particularly good for the memory.