中央警察大學 100 學年度碩士班入學考試試題

所　別：各所

科　目：國文

作答注意事項：

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2.不用抄題，可不按題目次序作答，但應書寫題號。

3.禁用鉛筆作答，違者不予計分。

4.請以橫式書寫作答。

壹、解釋下列詞句之義：（每小題 10 分，共 50 分）

一、出處、去就、辭受、取與之辨，孔子、孟子之所恆言。（顧炎武＜與友人論學書＞）

二、惟其遇事而事治，畫策而利害得，治國而國安焉。（王安石＜材論＞）

三、聖人不積，既以為人己愈有，既以與人己愈多。（《老子‧第八十一章》）

四、夫君子之行，靜以修身，儉以養德，非澹泊無以明志，非寧靜無以致遠。（諸葛亮＜誡子書＞）

五、李離曰：「理有法，失刑則刑，失死則死。公以臣能聽微決疑，故使為理。今過聽殺人，罪當死。」（《史記‧循吏列傳》）

貳、論文：50 分

語云：「克己可以治怒，明理可以治懼。」試論之。

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壹、解釋下列語句之義：（每小題 10 分，共 50 分）
　　一、盡其心者，知其性也；知其性，則知天矣。存其心，養其性，所以事天也；夭壽不貳，修身以俟之，所以立命也。(《孟子》)
　　二、為天下及國，莫如以德，莫如行義。(《呂氏春秋》)
　　三、從心而動，不違自然所好；順性而遊，不逆萬物所好。(《列子》)
　　四、夫腹飢不得食，膚寒不得衣，雖慈母不能保其子，君安能以有其民哉？(〈論貴粟疏〉)
　　五、天地有正氣，雜然賦流形。下則為河嶽，上則為日星。於人曰浩然，沛乎塞蒼冥。(〈正氣歌〉)

貳、論文：50 分
　　題目：子曰：君子固窮，小人窮斯濫矣。

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壹、解釋下列語句之義：(每小題 10 分，共 50 分)
一、子曰：「三年學，不至於穀，不易得也。」(《論語‧泰伯》)
二、古者四民異業而同道，其盡心焉，一也。(王陽明〈節菴方公墓表〉)
三、昔大禹鑿九山，通九江，用人力極廣，而無怨讟者，物情所欲，而眾所共有故也。(《貞觀政要‧論儉約》)
四、固知一死生為虛誕，齊彭殤為妄作。(王羲之〈蘭亭集序〉)
五、廷尉，天下之平也，一傾而天下用法皆為輕重，民安所措其手足？
(《史記‧張釋之列傳》)

貳、論文：50 分
　　　　《孫子兵法‧九變》云：「將有五危：必死，可殺也；必生，可虜也；忿速，可侮也；廉潔，可辱也；愛民，可煩也。凡此五者，將之過也。用兵之災，覆軍殺將，必以五危，不可不察也。」請參酌前引古文思想，以「危機管理中的情緒管理」為題，書寫論文一篇。

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4. 請以橫式書寫作答。

壹、解釋下列詞句之義：（每小題 10 分，共 50 分）

一、民不畏死，奈何以死懼之？若使民常畏死，而為奇者，吾得執而殺之，孰敢？（《老子‧第七十四章》）

二、百戰百勝，非善之善者也；不戰而屈人之兵，善之善者也。（《孫子‧謀攻》）

三、非我而當者，吾師也；是我而當者，吾友也；諂諛我者，吾賊也。（《荀子‧修身》）

四、文武不備，良民懼然身修者，官未曾亂也。奉職循理，亦可以為治，何必威嚴哉？（《史記‧循吏列傳》）

五、天下不可以力勝，神祇不可以親恃。惟當弘儉約，薄賦斂，慎終始，可以永固。（《貞觀政要‧納諫》）

貳、論文：50 分

題目：王陽明《傳習錄》：「未有知而不行者；知而不行，只是未知。」　請參酌前引古文思想，以「論知與行」為題，寫作論文一篇。

說明：

一、文言、白話不拘。

二、須分段，並使用標點符號。

三、字跡不可潦草。

四、字數不得少於五百字。

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4.請以橫式書寫作答。

壹、解釋下列詞句之義：(每小題 10 分，共 50 分)

一、呦呦鹿鳴，食野之蒿。我有嘉賓，德音孔昭。視民不恌，君子是則是傚。我有旨酒，嘉賓式燕以敖。(《詩經・小雅・鹿鳴》)

二、初，鄭武公娶于申，曰武姜，生莊公及共叔段。莊公寤生，驚姜氏，故名曰寤生，遂惡之。愛共叔段，欲立之。亟請於武公，公弗許。(《左傳》隱公元年)

三、往者貞觀之初，率土霜儉，一匹絹才得粟一斗，而天下帖然。百姓知陛下甚憂憐之，故人人自安，曾無謗讟。(《貞觀政要・論儉約》)

四、發慮憲，求善良，足以謏聞，不足以動眾；就賢體遠，足以動眾，未足以化民。君子如欲化民成俗，其必由學乎！(《禮記・學記》)

五、子曰：「君子之於天下也，無適也，無莫也，義之與比。」(《論語・里仁》)

貳、論文：50 分

〔宋〕蘇軾〈刑賞忠厚之至論〉云：「先王知天下之善不勝賞，而爵祿不足以勸也；知天下之惡不勝刑，而刀鋸不足以裁也。是故疑則舉而歸之於仁，以君子長者之道待天下，使天下相率而歸於君子長者之道。」請參酌前引古文之思想，以「忠厚乃待人之道」為題，寫作論文一篇。

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一、　Vocabulary and Phrases translation(中翻英、英翻中)：(20 分)
　（一）　擒拿術
　（二）　落地簽證
　（三）　驅逐出境
　（四）　未成年者
　（五）　緩刑
　（六）　an extortion ring
　（七）　Internet auction fraud
　（八）　reckless motorcyclists
　（九）　(to) conduct an impartial investigation
　（十）　large-scale nuclear incidents

二、Passage Translation：(30 分)

（Ⅰ）Please translate the following passage into correct Chinese :

　　　In 1999, a teenage girl was taken from a Haitian orphanage and smuggled — using fake documentation — into Miami, where she was forced to work as a domestic servant for up to 15 hours a day, seven days a week.　She was never paid, not allowed to go to school, occasionally beaten, and subjected to other inhumane treatment.　After suffering for nearly six years, she managed to escape in 2005.　This March, justice was finally served when three of her captors were convicted in the case.　This is just one of hundreds of heart-breaking human trafficking cases the FBI investigates each year.

（Ⅱ）Please translate the following passage into correct English :

　　　一般人相信，要保持健康，人們應該盡量避免生活中的壓力源。然而，這種策略效果有限。想避免壓力也可能導致人們避免人生中有意義的改變，諸如工作的改變或升遷。此外，試圖去避免壓力通常也不切實際。舉例而言，一個人怎能避免生命中父母親過世的打擊？事實上，假如人們不去面對人生中的一些壓力，到頭來終將覺得無聊和缺乏刺激，這對身體也可能有害。

三、Reading Comprehension：(20 分)

David:

　　　I'll be away for a week but my grandfather will let you in to use the computer. There are a few things you need to know. Brian Lee will call on Tuesday night and ask for information on our class science project. Please see the appropriately labeled files in the folder of that name in My Documents. He will ask you some specific questions and you may answer, but giving him any numerical information from the "SCIPorjData" file is something we might regret later, because we don't want other teams to copy our data.

　　　Also, I've had some trouble with the computer recently. I wanted to get it fixed last week but had no time. There are unexpected crashes about once an hour and mysteriously deleted files around once a week, so back everything up on an ongoing basis. The best way is just to burn it onto a CD after you finish working each day, but save your work every five minutes or so to avoid losing it in a crash.

　　　One last thing: Go ahead and download music if you want but don't add any new names to the approved lists for my peer-to-peer music sharing software. I don't want strangers poking through my computer.

Have fun!
Jerry

1. What is the relationship between David and Jerry?
   Choose the most likely answer from the choices below.
   （A）They are brothers.　　　　　　　（B）They are co-workers.
   （C）They are classmates.　　　　　　（D）They are co-workers of Brian Lee　　．

2. How often should David save files he's working on?
   （A）Each day　　　　　　　　　　（B）Every hour
   （C）Every week　　　　　　　　　　（D）Every five minutes

3. Which of the following isn't correct?
   （A）Brian Lee mustn't be put on the approved list.
   （B）Brian Lee can have some information about the science project.
   （C）David hasn't had his computer fixed recently.
   （D）The "SCIPorjData" file has a lot of numbers in it.

   Every year in Nepal, young men answer a call to recruitment for one of the most feared and respected groups of soldiers in the world – the Gurkhas. On a typical year, 28,000 will come, yet only about 230 will be chosen to join the ranks of some 3,500 elite soldiers. Surprisingly, these soldiers fight not for their own country, but for the United Kingdom.

   During the time of British domination of the Indian subcontinent, British soldiers encountered many stubborn enemies, though few as tough and warlike as the Gurkhas. After the Anglo-Nepali war (1812-1815) the British, so impressed by their adversaries, recruited several regiments of Gurkha soldiers to join the colonial army. They have not regretted this decision, as the Gurkhas' incredible toughness, ferocity and loyalty have won them great respect and many formal honors in numerous conflicts across the world.

   Thus, the British Army maintains the Brigade of Gurkhas to this day, although its soldiers are all Nepalese citizens. In recent years, however, there have been signs of strain in the relationship. This is due to the growing controversy <u>surrounding</u> the disparity in pay between the Gurkhas and regular UK servicemen, with the later making far more money than the former.

4. Why is there growing strain in the relationship between the Gurkhas and the British Army?
   （A）The Gurkhas make more money than the regular UK servicemen.
   （B）The Gurkhas make less money than the regular UK servicemen.
   （C）The Gurkhas are Nepalese but serve in the British Army.
   （D）Not enough Gurkhas are chosen from among the potential recruits.

5. The word "surrounding" is underlined to mean …
   （A）On all sides　　　　　　　　　（B）Close to
   （C）Between　　　　　　　　　　　（D）About

6. Which of the following is true?
   （A）Only 230 out 3,500 recruits are selected annually.
   （B）Only 3,500 out of 28,000 recruits are rejected annually.
   （C）Only 230 out 28,000 recruits are selected annually.
   （D）Of 28,000, approximately 230 are rejected annually.

7. Which of the following would be the best title for this article?
   （A）The Soldiers of Nepal　　　　　　（B）A History of the Gurkhas
   （C）The Gurkhas, Fierce and Loyal Soldiers （D）Money Problems in the British Army

   A seized goods auction sale will take place at 8 AM on Friday, December 10th at the Yellow Dog Fairground in Carleton Place Township. The fairground is located on Highway 15 just north of the town center. For sale by auction will be light trucks, SUVs, sedans, motorcycles and off-road vehicles. Most of these approximately 800 vehicles have been judicially confiscated for use in federal crimes. Others have been repossessed for failure to meet the payment schedule. All vehicles have been given basic overall mechanical appraisal and repairs. They have also been cleaned and are free from all stains and illegal materials.

   All interested members of the public 18 years old and above are invited to the fairground at the above time and place. All potential buyers must register in advance of the auction and may do so on-site or through our website, www.CPpolice.gov. Registration must be completed before 8 AM. Bidders must have credit cards with verifiable limits above the sale price, or pay by cash or cashier's check. Security at the site will be provided by the Carleton Place Sheriff's department. To view our catalogue, please see our website.

8. Why are most of these vehicles being offered for sale?
    Choose the best possible answer from the choices below.
    （A）Because there is an auction.
    （B）Because they were confiscated from rich people.
    （C）Because they were used in crimes.
    （D）Because they were too expensive for the police.
9. What is something that ISN'T required in order to participate in the auction?
    （A）Prove of age　　　　　　　　　　　（B）Knowledge of vehicles
    （C）Advanced registration　　　　　　　（D）The necessary funds
10. The word "fairground" used repeatedly in the article is closest in meaning to which of the following definitions?
    （A）Police-owned land
    （B）A place where the prices are fair
    （C）A place where dogs can live
    （D）Open space used for exhibitions and similar events

四、Essay：(30 分)
　　Plan and write an essay on "**What Makes What You Are Today？**"

中央警察大學 101 學年度碩士班入學考試試題

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一、　Vocabulary：(20 分)
1. _____ is the pat-down of a person's outer clothing after a stop to see if the suspect has a weapon or something that feels like a weapon, which can be seized by the officer.
　（A）Search　　　　　　　　　　　　（B）Arrest
　（C）Frisk　　　　　　　　　　　　　（D）Crack-down
2. Sharp objects and flammable items are _____ on the aircraft.
　（A）prohibited　　　　　　　　　　（B）promoted
　（C）admitted　　　　　　　　　　　（D）permitted
3. _____ is the crime of deceiving people in order to gain something such as money or goods.
　（A）Piracy　　　　　　　　　　　　（B）Murder
　（C）Larceny　　　　　　　　　　　（D）Fraud
4. Technical curricula are requisite in a wide range of fields.
　（A）assimilated　　　　　　　　　　（B）promoted
　（C）demanded　　　　　　　　　　　（D）acquired
5. The expansion of public services has caused concern that the civil service branches are becoming autonomous powers.
　（A）independent　　　　　　　　　　（B）advanced
　（C）superior　　　　　　　　　　　（D）perilous
6. Crowd behavior is characterized as a spontaneous collective reaction to a publicly observed event.
　（A）chaotic　　　　　　　　　　　　（B）gratifying
　（C）instinctive　　　　　　　　　　（D）uninterrupted
7. Because of his novel approaches to scientific problems, Edison was able to patent dozens of inventions.
　（A）original　　　　　　　　　　　　（B）varied
　（C）coherent　　　　　　　　　　　（D）unbiased
8. The fire salamander is so called because of an antiquated belief that it could withstand fire.
　（A）well-developed　　　　　　　　（B）old-fashioned
　（C）carefully fabricated　　　　　　（D）widely held
9. The engineer had a _____ reason for changing the design of the building.
　（A）peculiar　　　　　　　　　　　　（B）legitimate
　（C）sharp　　　　　　　　　　　　　（D）subsequent
10. The recent downturn in the housing industry _____ the poor economic conditions.
　（A）radiates　　　　　　　　　　　　（B）symbolizes
　（C）spans　　　　　　　　　　　　　（D）synthesizes

二、Translation：(30 分)

1. Policy assessment studies in the 1970s cast doubt on the effectiveness of these strategies for preventing crime. For instance, the experimental study of preventive patrol in Kansas City found that changing the level of patrol coverage had no effect on crime and citizen fear of crime. Other evaluative research showed that rapid response to calls for service from citizens didn't increase the likelihood of preventing a crime or apprehending an offender. Finally, evidence from dozens of studies suggests that traditional police strategies to reduce, control, or prevent crime are ineffective.

2. The safeguards introduced under the Police and Criminal Evidence Act, such as an impartial custody officer, a right to free legal advice, strict time limits on the length of detention and the tape-recording of interviews, have subsequently made it more difficult for the police to engage in 'fishing expeditions', to detain suspects without firm grounds for doing so, to make informal deals with them or to apply physical or psychological pressures to induce them to confess.

3. In a study of miscarriages of justice in the USA where the convicted person had subsequently been completely exonerated as a result of DNA testing, it was found that the most common contributory factor was mistaken identity, which occurred in 52 percent of the cases. Caucasians misidentified African-Americans defendants in 35 percent of the cases, but African-Americans also misidentified other African-Americans in 24 percent of the cases.

三、Reading Comprehension：(20 分)

　　Concern for the environment in the US extends back into the nineteenth century, when nature lovers and sports enthusiasts first sought protection for areas of exceptional natural beauty or significance. But it was not until the late 1960's that environment concerns entered the mainstream of American political debate. By then many Americans had come to the conclusion that more development was not necessarily desirable, especially if it meant more polluted air, dying lakes and rivers, and a landscape strewn with unsightly waste, and crowded with sprawling construction projects. In May of 1970, several environmental groups staged the first Earth Day celebration, designed to heighten public awareness of environmental problems. The success of that initial effort led to it becoming a regular annual event.

　　During the 1950s and 1960s, industrial and vehicle pollution levels had become a serious threat to public health, so the environmental movement of this period focused heavily on restoring and ensuring the cleanliness of basic air and water supplies. Rapidly expanding development pressures were also **spurring** efforts to preserve unique lands and threatened wildlife habitats, and to protect the endangered species supported by them before they vanished into extinction. It is generally accepted that the environmental protection movement was so successful because of its grass roots support; groups of activists in hundreds of towns that took the initiative in cleaning up their own communities. During the 1970s, this local activism reinforced support for the passage of key laws at the national level, such as the Clean Water Act, Clean Air Act, Endangered Species Act, and National Environmental Policy Act, which together have constituted the foundation for environmental standards in the US ever since.

　　In addition to this national legislation, the year after the first Earth Day, by executive order, President Nixon established the Environmental Protection Agency (EPS); an organization dedicated to restoring and protecting the environment. The EPA **spearheaded** many contemporary efforts to protect the environment, but it was not working alone. It was allied with a wide variety of distinctly different and separate organizations ranging from a small number of well-funded high-profile national and international organizations to many thousands of smaller special interest groups and even individuals working at the local level. The EPA has now become one of the government's largest and most influential regulatory agencies. Through its own efforts and in cooperation with other organizations, it has earned a large measure of credit for protecting and restoring the quality of the environment in the United States.

　　Although one might assume that the cause of environmental protection would engender

universal support, it does have its detractors. One criticism that has been leveled against the movement is the claim that its predictions about the **dire** consequences of environmental damage have often been in error. Environmentalists counter this assertion by pointing out that their warnings have often brought about changes on the part of the public, the government and private industry, and that these changes prevented the predictions from being realized. However, just as it is often very difficult to gauge the impact of human activity on something as complex as the environment, it is equally difficult to determine which side is right in this debate. Because environmental issues cover such a wide range of concerns, this is a question that must be considered on a case by case basis. <u>These voices of **dissent** have demonstrated to environmentalists the need to apply quantitative methods in assessing the extent of the destruction they have witnessed, or the degree to which their work has been manifested in actual improvement of the environment.</u>

However vocal the critics of environmental protection efforts may be, given the very considerable body of environmental legislation that exists, it is safe to assume that their views do not represent the majority opinion. Private advocacy groups, the EPS, state legislatures and Congress have worked together to enact numerous laws regarding air and water quality, land use and waste management. That should be evidence enough of the broad extent of the popular support that underlies the movement.

1. On which of the following does the passage mainly focus?
（A）Earth Day's impact on the environmental movement.
（B）How to protect the environment of the planet.
（C）The environmental protection movement, and how it began.
（D）The success of the EPA in protecting natural resources.

2. The word **spurring** in the passage is closest in meaning to
（A）opposing
（B）managing
（C）supporting
（D）motivating

3. According to paragraph 2, why was the environmental protection movement so widely successful?
（A）It protected plants and animals people cared about.
（B）It functioned well at the local level.
（C）It voted unsympathetic politicians out of office.
（D）It forced ratification of important national laws.

4. Which president established the EPA?
（A）Roosevelt
（B）Clinton
（C）Nixon
（D）Obama

5. The word **spearheaded** in the passage is closest in meaning to
（A）led
（B）inspired
（C）conceived
（D）modified

6. According to paragraph 4, what was a common criticism of the environmental movement?
（A）It suggested measures that would harm the economy.
（B）It predictions could not be prevented through practical action.
（C）That it lacked the support needed to make any real progress.
（D）The environmental damage it claimed was not seen.

7. According to the passage, what effect did the criticism of the environmental movement have?
（A）It caused the environmentalists to change their methods.
（B）It decreased federal assistance for environmental protection.
（C）It diminished popular support for the EPA.
（D）It revitalized support for the environmental protection movement.

8. Which of the sentences below best expresses the essential information in the underlined

sentence in the passage?

（A）Critics of the movement were successful in dissuading many environmentalists from supporting some of the more drastic measures that had been suggested by questioning the quantitative methods they employed.

（B）Opponents of the environmental protection movement succeeded in getting the activists to take another, more objective, approach to substantiating their claims.

（C）People who disagreed with the environmentalists eventually were able to persuade many that the methods employed by the environmental movement were invalid and their conclusion incorrect.

（D）Members of environmental groups were reluctant to employ quantitative methods in assessing environmental damage because they felt the results might not substantiate their claims.

9. The word **dire** in the passage is closest in meaning to

（A）unrealized　　　　　　　　　（B）possible

（C）grave　　　　　　　　　　　（D）imaginary

10. The word **dissent** in the passage is closest in meaning to

（A）opposition　　　　　　　　　（B）support

（C）indifference　　　　　　　　（D）ambivalence

四、Essay：(30 分)

　　Write an essay on the following topic: **Information technology in policing and its impacts**

中央警察大學 102 學年度碩士班入學考試試題

英文 1

所　別：各所
科　目：英文

作答注意事項：
1.本試題共 4 大題；共 4 頁。
2.不用抄題，可不按題目次序作答，但應書寫題號。
3.禁用鉛筆作答，違者不予計分。

一、 Vocabulary and Phrases into English or Chinese：(20 分)

1. 認罪協商　　　　　　　6. red-handed offender
2. 陰謀論　　　　　　　　7. vehicle impoundment
3. 炸彈客　　　　　　　　8. security breach
4. 自白　　　　　　　　　9. malefactor
5. 舞水端中程飛彈　　　　10. avian influenza

二、 Passage Translation：(30 分)

1. For many years, the law enforcement community has attempted to detect impaired drivers through numerous innovative efforts and measures. The problem of driving under the influence is well known throughout society, yet, even with all of the strategies used to remove these drivers from U.S. highways, it continues to cause needless and tragic loss of life each year. When will such madness end?　When will society no longer tolerate drunk driving?　Until that time, the law enforcement community must attempt to contain the carnage inflicted upon law-abiding citizens by impaired drivers.

2. 紐約市的美國銀行(Bank of America)遭到搶劫。兩名戴著面罩、武裝的搶匪進入銀行。有位女性共犯在幫助搶匪逃跑的車內等候他們。當搶匪跳到櫃台取走金錢後，其中一位搶匪進入金庫並企圖搶走更多的現金。很快地，搶匪離開了銀行，而在跳進車內時，掉了一包袋子。不久之後，一位制服巡邏員警發現這部協助嫌犯脫逃的車輛被棄置在距離銀行幾哩的地方。哪裡是第一犯罪現場?而哪裡又是第二犯罪現場?

三、Reading Comprehension：(20 分)

(I)

Internet dating has gone from daring to dull.　As a result, many singles these days are looking to their cell phones instead of their laptops in an effort to locate love.

Cell phone technology now allows users to post tiny photographs and mini-profiles to a dating service mailbox, which can be visited by other cell phone users in search of a date. When a profile looks promising, users use their phones to send a text message to their person of interest.

Some phone dating services also are experimenting with ways to turn cell phone into homing devices.　In other words, the phones can alert users to potential dates who may be just a short distance away　－　or, at the other end of the bar.

Europeans are heavily into phones dating, and China, which has 430 million cell phone users, also has embraced "mobile romance."

The wireless service providers love phone dating, too, because all that text messaging pumps up their revenues.　Analysts estimate that global mobile dating revenues were US $31 million in 2005; by 2009, that figure is projected to reach US $215 million.

Some people say that phone dating is more about flirting than about serious romance. "People who want to use their mobile devices are more interested in short-term relationships than people who want to use their computers," said an officer of Match.com, a service with a quarter-million mobile users.

But, who really can say for sure.　The next time the cell phones rings, it could be one calling Cupid.

1. Which is the function the dating service can offer through cell phones?
    (A) Alerting users to potential dates.
    (B) Increasing user's revenues.
    (C) Holding a wedding.
    (D) Giving a gift to possible dates.

2. How can someone get information on any possible date on their cell phones?
    (A) By asking the operator.
    (B) By making an emergency call.
    (C) By using a laptop.
    (D) By looking at mini-photos in a dating mailbox.

3. Who may gain the most advantage of cell phone dating economically?
    (A) Users.
    (B) Possible dates.
    (C) The wireless service suppliers.
    (D) The store owners.

4. What are cell phone romance seekers often interested in?

    (A) Shorter-term relationship.

    (B) Getting a new laptop.

    (C) Finding other phone users.

    (D) Short distance calling.

5. According to this passage, which of the following statements is **NOT** true?

    (A) Many unmarried people use their cell phones rather than laptops to locate love.

    (B) Match.com has two hundred thousand mobile users,

    (C) European people like phone dating.

    (D) Internet dating has gone from daring to uninteresting.

(II)

Outstanding opportunity with local real estate corporation. Requires strong background in real estate, financing, closing. Some legal training helpful. Prefer candidate with M.A. and two or more years of successful real estate experience. Broker's license required. Salary range $16,000-$23,000 commensurate with education and experience. Begin immediately. Interviews will be conducted Tuesday and Thursday, June 10 and 12. Call for an appointment 243-1153, or send a letter of application and résumé to:

    Personnel Department
    Executive Real Estate Corporation
    500 Capital Avenue
    Lawrence, Kansas 67884

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6. Which of the following is **NOT** a requirement for the job advertised?

    (A) At least two years experience.

    (B) A broker's license.

    (C) An M.A.

    (D) Extensive legal training.

7. The salary range indicates that

    (A) everyone earns a beginning salary of $16,000.

    (B) the salary depends upon the amount of education and work experience that the applicant has.

    (C) some applicants would earn less than $16,000.

    (D) candidates with an M.A. would earn $23,000.

8. What should an interested candidate submit with his or her application?

    (A) A current address and telephone number.

    (B) A signed contract.

    (C) A summary of work experience.

    (D) A request for employment.

9. This passage would most probably be found in

    (A) the classified section of a newspaper.

    (B) a college catalog.

    (C) a textbook.

    (D) a dictionary.

10. Real estate employees would most probably

    (A) persuade people to buy insurance.

    (B) sell houses.

    (C) give professional opinions on personnel management.

    (D) teach people how to do bookkeeping.

四、Essay：(30 分)

Write an essay on the following topic. The length of your essay should be no less than 100 words and no more than 200 words.

How to Create an Anti-Graft Society

中央警察大學 103 學年度碩士班入學考試試題

所　別：各所
科　目：英文

作答注意事項：
　1.本試題共 4 大題；共 4 頁。
　2.不用抄題，可不按題目次序作答，但應書寫題號。
　3.禁用鉛筆作答，違者不予計分。

一、Vocabulary and Phrases translation：(20 分)
　1、公部門
　2、犯罪俚語
　3、線民
　4、引渡
　5、鄰里守望相助計畫
　6、a motor bike
　7、acute stress disorder
　8、cloned cars
　9、electronic monitoring
　10、intelligence apparatuses

二、Translation：(30 分)
　1、We have investigated the alarm and there is a small fire on the fourth floor. The fire department has arrived and the fire has been contained. We are asking everyone to leave the building in an orderly fashion. Exit through stairwell B on the south side of the building.
　2、As people start using their smart phones to tap into computer networks, the damage caused by malware could grow more severe. If smart phones serve as payment devices, malware that nabs your identity and taps directly into your credit line could follow.
　3、In an unprecedented effort to save the species, South Africa has bought new ships equipped with top-of-the-line military night-vision equipment. They've also begun testing seized boats for DNA to prove they were used in abalone harvesting.

三、Reading Comprehension：(20 分)
　　Most people can remember a phone number for up to thirty seconds. When this short amount of time **elapses**, however, the numbers are erased from the memory. How did the information get there in the first place?

Information that makes its way to the short term memory (STM) does so via the sensory storage area. The brain has a filter which only allows stimuli that is of immediate interest to pass on to the STM, also known as the working memory.

There is much debate about the capacity and duration of the short term memory. The most accepted theory comes from George A. Miller, a cognitive psychologist who suggested that humans can remember approximately seven chunks of information. A chunk is defined as a meaningful unit of information, such as a word or name rather than just a letter or number. Modern theorists suggest that one can increase the capacity of the short term memory by chunking, or classifying similar information together. By organizing information, one can optimize the STM, and improve the chances of a memory being passed on to long term storage.

When making a conscious effort to memorize something, such as information for an exam, many people engage in "rote rehearsal". By repeating something over and over again, one is able to keep a memory alive. Unfortunately, this type of memory maintenance only succeeds if there are no interruptions. As soon as a person stops rehearsing the information, it has the tendency to disappear. When a pen and paper are not handy, people often attempt to remember a phone number by repeating it aloud. If the doorbell rings or the dog barks to come in before a person has the opportunity to make a phone call, he will likely forget the number instantly. Therefore, rote rehearsal is not an efficient way to pass information from the short term to long term memory. A better way is to practice "**elaborate** rehearsal". This involves assigning semantic meaning to a piece of information so that it can be filed along with other pre-existing long term memories.

Encoding information semantically also makes **it** more retrievable. Retrieving information can be done by recognition or recall. Humans can easily recall memories that are stored in the long term memory and used often; however, if a memory seems to be forgotten, it may eventually be retrieved by prompting. The more **cues** a person is given (such as pictures), the more likely a memory can be retrieved. This is why multiple choice tests are often used for subjects that require a lot of memorization.

1、According to the passage, how do memories get transferred to the STM？
(A) They revert from the long term memory.
(B) They enter via the nervous system.
(C) They get chunked when they enter the brain.
(D) They are filtered from the sensory storage area.

2、The word **elapses** in paragraph 1 is closest in meaning to：
(A) continues

(B) adds up
(C) appears
(D) passes

3、All of the following are mentioned as places in which memories are stored EXCEPT the：

(A) STM
(B) long term memory
(C) sensory storage area
(D) maintenance area

4、Why does the author mention a dog's bark？

(A) To provide a type of interruption
(B) To give an example of a type of memory
(C) To prove that dogs have better memories than humans
(D) To compare another sound that is loud like a doorbell

5、How do theorists believe a person can remember more information in a short time？

(A) By organizing it
(B) By repeating it
(C) By giving it a name
(D) By drawing it

6、The author believes that rote rehearsal is：

(A) the best way to remember something
(B) ineffective in the long run
(C) more efficient than chunking
(D) an unnecessary interruption

7、The word **it** in the last paragraph refers to：

(A) encoding
(B) information
(C) semantics
(D) STM

8、The word **elaborate** in paragraph 3 is closest in meaning to：

(A) pretty
(B) efficient
(C) complex
(D) regular

9、Which of the following is NOT supported by the passage？

(A) The working memory is the same as the short term memory.
(B) A memory is kept alive through constant repetition.

(C) Multiple choice exams are the most difficult.

(D) Cues help people to recognize information.

10、The word **cues** in the passage is closest in meaning to

(A) clues

(B) questions

(C) images

(D) tests

四、**Essay：（30 分）**

Write an essay on the following topic. The length of your essay should be <u>no less than 100 words</u> and <u>no more than 200 words</u>. In your opinion, does "Sunflower Movement" create a new threat to Taiwan's national security？

中央警察大學 104 學年度碩士班入學考試試題

所　別：各所
科　目：英文

作答注意事項：
　1.本試題共 4 大題；共 2 頁。
　2.不用抄題，可不按題目次序作答，但應書寫題號。
　3.禁用鉛筆作答，違者不予計分。

一、Vocabulary and Phrases：（20 分）

（一）輻射汙染　　　　　　（六）司法互助
（二）自拍神器　　　　　　（七）溫室效應
（三）事故現場　　　　　　（八）恐怖攻擊
（四）警政署署長　　　　　（九）食安危機
（五）客機空難　　　　　　（十）內線交易

二、Translation：（30 分）

（一）For at least half a century, police have considered it important to cut to a minimum of their response times to crime calls. The faster the response, they have reasoned, the better the chances of catching the criminal at or near the scene of the crime.（10 分）

（二）Officers shall not use their police power to resolve personal grievances (e.g. those involving the officer, family members, relatives, or friends) except under circumstances that would justify the use of self-defense, actions to prevent injury to another person, or when a serious offense has been committed that would justify an arrest.（10 分）

（三）The essence of the police role in maintaining order is to reinforce the informal control mechanisms of the community itself. Areas where community controls break down are vulnerable to criminal investigation.（10 分）

三、Reading Comprehension：（20 分）

Another large-scale study conducted by William Spelman and Dale Brown and published in 1984 was also to challenge a core police assumption of that period – that improvement in rapid response to calls for service would lead to improvements in crime fighting. This study was developed in good part because of the findings of a prior investigation in Kansas City that found little support for the crime control effectiveness of rapid response to calls for service (Kansas City Police Department 1977). With support from the National Institute of Justice, Spelman and Brown investigated 4000 victims, witnesses, and bystanders in some 3300 serious crimes in four American cities. This was another major study in terms of the resources brought to bear and the methods used. Again it examined a strategy that was aided by technological advances in the twentieth century and that was central dogma of police administrators – that police must get to the scene of a crime quickly if they are to apprehend criminal offenders.

根據以上內容，用**英文**回答以下問題（每題 2 分）：

（一）Spelman and Brown 的研究報告發表於哪一年？

（二）在 Spelman and Brown 的研究之前，哪個城市警察局做過類似研究？

（三）Spelman and Brown 的研究是在哪個部門的支持下進行？

（四）Spelman and Brown 研究的實證資料係蒐集自幾個美國城市？

根據以上內容，用**中文**回答以下問題（每題 3 分）：

（五）Spelman and Brown 所要挑戰的研究假設是什麼？

（六）在 Spelman and Brown 研究之前的類似研究，有何研究發現？

（七）Spelman and Brown 研究的實證資料來自 4000 個研究對象，這些研究對象是每個案件中的什麼人？

（八）"dogma of police administrators"的意義為何？

四、**Essay：**（**30 分**）

Write an essay on the following topic. The length of your essay should be <u>no less than 100 words</u> and <u>no more than 200 words</u>.

"Mobile Police Station" and its Impacts

中央警察大學 100 學年度碩士班入學考試試題

所　別：消防科學研究所

科　目：微積分（加考）

作答注意事項：

1. 本試題共 4 題，每題各占 25 分；共 1 頁。
2. 不用抄題，可不按題目次序作答，但應書寫題號。
3. 禁用鉛筆作答，違者不予計分。

一、(1) 求 $\displaystyle\int_2^\infty \frac{x+3}{(x-1)(x^2+1)}\,dx = ?$　(12 分)

　　(2) 求由曲線 $y = x^2 + 1$ 與直線 $x + y = 3$ 所圍成區域繞 x-軸旋轉所得旋轉體的體積。　(13 分)

二、(1) 求 $\displaystyle\int \frac{1}{(1-\sin^2 x)\sqrt{1+\tan x}}\,dx = ?$ (12 分)

　　(2) 求 $\displaystyle\int_0^{\frac{1}{\sqrt{2}}} \frac{\sin^{-1} x}{\sqrt{1-x^2}}\,dx = ?$　　　　(13 分)

三、(1) 請證明半徑為 r 的球體之體積為 $\dfrac{4}{3}\pi r^3$。(13 分)

　　(2) 請證明半徑為 r 的球面面積為 $4\pi r^2$。　(12 分)

四、(1) 已知 $y' = ye^x$ 及 y(0)=5e，求算 $y = ?$　(5 分)

　　(2) 若 $x^3 + y^3 + z^3 = xyz$，求算 Z_x 與 Z_y。　(5 分)

　　(3) 求 $f(x,y) = xy$ 在 $x^2 y + xy^2 = 4$ 限制下之最大值。　(7 分)

　　(4) 求 $f(x,y) = x + 2y$，在 $4x^2 + y^2 = 1$ 限制下之最大值及最小值。(8 分)

中央警察大學 101 學年度碩士班入學考試試題

所　別：消防科學研究所
科　目：微積分(同等學力加考）

作答注意事項：
 1. 本試題共 4 題，每題各占 25 分；共 2 頁。
 2. 不用抄題，可不按題目次序作答，但應書寫題號。
 3. 禁用鉛筆作答，違者不予計分。

一、請回答下列問題：

 (一)試證：$\lim_{\theta \to 0} \dfrac{\sin \theta}{\theta} = 1$。（8 分）

 (二)已知 $x = \theta - \sin\theta$，$y = 1 - \cos\theta$，求 $\dfrac{d^2 y}{dx^2}$。（8 分）

 (三)有一個充滿空氣的圓形汽球，其半徑為 360 公分，當空氣以 900 立方公分/秒的速率從汽球逸出時，則汽球表面積的收縮速率為何？ （9 分）

二、請回答下列問題：

 (一)求拋物線 $y = 2x - x^2$ 與 $y = 3x^2 - 6x$ 所圍成之區域的形心。（12 分）

 (二)求在圓 $r = 1$ 外部且在心臟線 $r = 1 + \cos\theta$ 內部之區域的形心。

 （13 分）

三、請回答下列問題：

 (一)求函數 $f(x, y, z) = x + 2y + 2z$ 受限於平面 $x - y + z = 1$ 與橢圓柱 $x^2 + 2y^2 = 1$ 之相交曲線的絕對最大值。(15 分)

 (二)求函數 $f(x, y, z) = \dfrac{x^2}{16} + \dfrac{y^2}{9} + \dfrac{z^2}{4}$ 在點 $(4, 3, 2)$ 有最大方向導數的單位向量。(10 分)

四、請回答下列問題：

（一）請證明 $\int (\ln x)^n \, dx = x(\ln x)^n - n\int (\ln x)^{n-1} \, dx$。（10 分）

（二）請證明 $\int x^n e^x \, dx = x^n e^x - n\int x^{n-1} e^x \, dx$。（10 分）

（三）$\int \dfrac{1}{x^2 \sqrt{4 - x^2}} dx =$ ？（5 分）

中央警察大學 102 學年度碩士班入學考試試題

所　　別：消防科學研究所
科　　目：微積分（同等學力加考）
作答注意事項：
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　　3.禁用鉛筆作答，違者不予計分。

一、請回答下列問題：

（一）若 $y = (\ln x)^{\frac{1}{\ln x}}$，求 $\dfrac{dy}{dx}$。（12 分）

（二）若 $y = \tan^{-1}(x - \sqrt{x^2+1})$，求 $\dfrac{dy}{dx}$。（13 分）

二、請回答下列問題：

（一）求拋物面 $z = 4 - x^2 - y^2$ 與 xy 平面所圍成的立體體積。（12 分）

（二）求拋物面 $z = 2x^2 + y^2$ 與圓柱 $z = 4 - y^2$ 面所圍成的立體體積。（13 分）

三、請回答下列問題：

（一）求 $y = f(x) = \cos x^2$，以 0 為中心的泰勒展開式。（8 分）

（二）$\displaystyle\lim_{x \to \infty}\left(1 + \frac{2}{x}\right)^x = ?$　（8 分）

（三）$z = f(x,y),\ x^2 z + \dfrac{1}{8} y z^3 = x$，求 $\dfrac{\partial z}{\partial x}, \dfrac{\partial z}{\partial y}$ 在點 $(1,-1,2)$ 之值。（9 分）

四、請回答下列問題：

（一）求 $\displaystyle\int_0^{\sqrt{\pi/2}} \int_x^{\sqrt{\pi/2}} \int_1^3 \sin y^2\ dz\,dy\,dx = ?$（13 分）

（二）求 $\displaystyle\int_0^\infty \frac{4}{\sqrt{x}\,(x+6)}\ dx = ?$（12 分）

中央警察大學 103 學年度碩士班入學考試試題

所　別：消防科學研究所
科　目：微積分（同等學力加考）

作答注意事項：
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　3. 禁用鉛筆作答，違者不予計分。

一、請回答下列問題：

（一）求 $\displaystyle\int 3x\sqrt{1-2x^2}\,dx=?$（8 分）

（二）求 $\displaystyle\int \frac{1}{x\sqrt{1-x}}\,dx=?$　（8 分）

（三）求 $\displaystyle\int_0^{\frac{\pi}{2}} \sin^8 x\,dx=?$　（9 分）

二、請回答下列問題：

（一）求 $\displaystyle\int \sin^4(3x)\cdot\cos^2(3x)\,dx$　（12 分）

（二）求 $\displaystyle\int \frac{dx}{x\sqrt{x^2+x+2}}$　（13 分）

三、請回答下列問題：

（一）求 $y=f(x)=\sqrt{1+x^3}$，以 0 為中心的泰勒展開式。（8 分）

（二）$\displaystyle\lim_{x\to 2}\frac{\sqrt{16x-x^4}-2\sqrt[3]{4x}}{2-\sqrt[4]{2x^3}}=?$（8 分）

（三）求 $z=f(x,y)=y^3-3x^2y-3x^2-3y^2+1$ 之極值或鞍點。（9 分）

四、請回答下列問題：

（一）求 $\displaystyle\int_R\int (x+y)^2 \sin^2(x-y)\, dA = ?$　其中 R 為以 $(0, 1)$，$(1, 2)$，$(2, 1)$ 以及 $(1, 0)$ 為頂點之正方形區域。（13 分）

（二）求 $\displaystyle\int_0^\infty e^{-2x^2}\, dx = ?$（12 分）

中央警察大學 100 學年度碩士班入學考試試題

所　　別：消防科學研究所
科　　目：火災科學

作答注意事項：
　1.本試題共 4 題，每題各占 25 分；共 2 頁。
　2.不用抄題，可不按題目次序作答，但應書寫題號。
　3.禁用鉛筆作答，違者不予計分。
　4.不需使用計算機，可用中文答題。

一、(一)何謂熱釋放率（$\dot{Q}_c$）？何謂燃燒熱（ΔH_c）？試以方程式說明兩者之間的關係。（9 分）

　　(二)何謂通風控制燃燒？何謂燃料控制燃燒？（8 分）

　　(三)試分別計算通風控制燃燒與燃料控制燃燒下燃料的熱釋放率。（8 分）

二、若火災時撒水頭感溫元件溫度變化的微分方程式為：

$$\frac{dT}{dt} = \frac{\sqrt{|\vec{u}|}}{RTI}\left(T_g - T\right) - \frac{C}{RTI}\left(T - T_m\right) - \frac{C_2}{RTI}\beta|\vec{u}|$$

　　(一)試說明微分方程式中 RTI 的意義。（4 分）

　　(二)試從熱傳導的觀點判斷等號右邊各項的物理意義。（9 分）

　　(三)試說明擴散火焰可分為哪三個區域？並說明擴散火焰如何影響撒水頭的啟動？（12 分）

三、(一)Please define the discrete random variable of negative binomial distribution and write down its probability mass function. (5 分)

(二)What does "mutually exclusive" mean? Describe it in terms of event A and B. (5 分)

(三)不管 X,Y,Z 是否獨立，E(aX+bY+cZ)=aE(X)+bE(Y)+cE(Z)；但當 X,Y,Z 獨立時，$Var(aX+bY+cZ) = a^2Var(X) + b^2Var(Y)+c^2 Var(Z)$，對嗎？ (5 分)

(四)Describe "total probability theorem" and "Bayes' theorem" in formula. (5 分)

(五)If $Z=(X-\mu)/\sigma \sim N(0, 1)$, please write down the p. d. f. of X and calculate Var(Z)E(X)+Var(X)E(Z)=? (5 分)

四、(一)On the average a certain area results in 3 fire accidents per month. What is the probability that in any given month at this area (7 分)
　(a) No accident will occur?
　(b) Exactly 5 accidents will occur? ((b)列出算式即可)

(二)Suppose that $E(X^2)-(EX)^2 =4$, $E(Y^2)-(EY)^2 =9$, Cov(X, Y)=6, find Var(2X-3Y+4)=? (8 分)

(三)Let X and Y be independent Poisson random variables with respective means λ_1 and λ_2, then the distribution of X+Y will also follow Poisson with mean ($\lambda_1 + \lambda_2$). What does P(X=k|X+Y=n) mean (please write down the conditional p. m. f.)? What is the value of E(X|X+Y=n)? (10 分)

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一、有一居室之長寬高分別為 10M*10M*4M，今在該居室地板面之中心點有一大小為 1Mw 之穩態火災，試問該火災之天花板熱氣流(Ceiling Jet) 初到達天花板之角落時，其流速為何？（已知：$\sqrt{2}$=1.4，$7^{5/6}$=5）（25 分）

二、試從 Pyrolysis Rate 和 Burning Rate 之觀點，探討區劃空間火災(Compartment Fire)和開放空間火災(Open Space Fire)之相同與相異點。（25 分）

三、請回答下列問題：
　（一）Please describe two examples for each of continuous random variables and "nominal data" (名目資料) relating to fire sciences.(5 分)
　（二）Define "mutually exclusive" and "sampling distribution". (5 分)
　（三）If $f(x) = \dfrac{1}{\sqrt{2\pi}2} e^{-\frac{1}{2}(\frac{x-4}{2})^2}$, then E(X²)=?（No integral!）(5 分)
　（四）Concerning simple random sampling, what distribution does each of the statistics $(\frac{\bar{x}-\mu}{\sigma/\sqrt{n}})$ and $(\frac{\bar{x}-\mu}{s/\sqrt{n}})$ follow if (1) the population is normal and n is small? (2) the population is not normal and n is large? (5 分)
　（五）Describe the merits or characteristics of cluster sampling（叢式抽樣或部落抽樣）method.（5 分）

四、請回答下列問題：
　（一）Suppose that fires in a compartment can be classified into three types with given probabilities: F_1: Smouldering fire, $P(F_1)$=0.2; F_2: Flaming fire, $P(F_2)$=0.4; F_3: Flashover fire, $P(F_3)$=0.4. Let D denote the event of death and suppose that $P(D|F_1)$=0.01, $P(D|F_2)$=0.3, $P(D|F_3)$=0.699, find out the probability of death of an occupant in a compartment fire.(6 分)
　（二）If $X_1, X_2, \ldots X_{10}$ ~ iid N(0, 1), find out the distributions of the following random variables：(1) $(X_1^2 - X_2^2)/2$；　(2) $(X_1^2 + X_2^2 + \ldots + X_5^2)/(X_6^2 + X_7^2 + \ldots + X_{10}^2)$；
　　　　(3) $X_1 / \sqrt{X_2^2 + X_3^2 + \ldots + X_{10}^2}$　(9分)

（三）某種健身減肥活動聲稱 3 個月可以達到減肥 5 公斤以上的效果，隨機抽樣 36 位參與此項活動的人，結果 36 位平均減輕體重 5.5 公斤，減輕體重的標準差是 1.2 公斤。(1)寫出檢定的虛無假設與對立假設。(2)請問：此項活動是否達到其聲稱可減肥 5 公斤以上的目標？（α=0.05，$t_{35,\,0.05}=1.690$，$t_{35,\,0.025}=2.030$，$z_{0.025}=1.96$）(10 分)

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一、請回答下列問題：
 （一）Describe "moment generating function" and "pooled sample variance" of independent sample t-test.
 （二）With linear regression analysis, what does Least Square Method and Normal Equations mean？
 （三）Specify a reasonable or suitable probability density function (not mass function) for describing possible fire risk (i. e. random variable or function) and its statistics (統計量). Also, describe the purposes of Chi-Square test.
 （四）With reference to simple random sampling, what does the distribution (if any applies) of the statistics $(\frac{\bar{x}-\mu}{\sigma})^2$ follow if the population is normal and n is small? What does "standard error" mean?
 （五）Define "significant level" and "power of test".

二、火藥及炸藥均屬爆炸性物質，具有化學不穩定性，在一定外因的作用之下，能以極快的速度發生猛烈的化學反應，產生的大量氣體和熱量無法於短時間內逸散，致使周圍的溫度迅速升高，產生巨大壓力而引起爆炸。請說明一般爆炸性物質具有哪些特性？並請寫出下列兩種火（炸）藥受熱而分解爆炸之反應方程式：
 （一）組成為 KNO_3：S：C 為 75：10：15 之黑色火藥
 （二）成分為 $C_3H_5(ONO_2)_3$ 之硝化甘油

三、請回答下列問題：
 （一）An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a mean 40 weeks and standard deviation of 14 weeks. If 49 bulbs are randomly sampled from the firm, find the probability that the sample mean of 49 bulbs

exceeds 42 weeks.（7 分）

（二）Suppose that the five random variables $X_1, X_2, \ldots X_5$, are i.i.d. and each has a standard normal distribution. Determine a constant c such that the random variable $c(X_1 + X_2)/\sqrt{X_3^2 + X_4^2 + X_5^2}$ will have a t distribution.（8 分）

（三）A random sample of 8 cigarettes of a certain brand has an average nicotine content of 2.6 milligrams and a standard deviation of 0.9 milligram. Construct a 99% confidence interval for the true average nicotine content of this particular brand of cigarettes, assuming the distribution of nicotine contents to be approximately normal.（10 分）

Possibly useful data:（$z_{0.025} = 1.96$，$z_{0.005} = 2.58$，$P(Z \leq -1) = 0.1587$，$t_{8, 0.005} = 3.355$， $t_{7, 0.005} = 3.499$，$t_{8, 0.025} = 2.306$）

四、鈉（Na）、過氧化鈉（Na_2O_2）、磷化鋅（Zn_3P_2）、碳化鈣（CaC_2）及碳化鋁（Al_4C_3）均屬禁水性之物質，其與水接觸即會發生化學反應，因而致生公共危險。試寫出此五種物質與水作用之化學反應方程式，並說明其危害性？

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一、請繪圖說明煙囪效應對於火災煙氣流動的影響效果為何？此種影響效果對於火場指揮官的救災判斷有何意義？

二、請說明肇因電氣因素形成絕緣破壞而生火災之現象有哪些？為防止這些現象造成火災，應有的防火宣導對策為何？

三、請回答下列問題：

（一）Find $[\int_{-\infty}^{\infty} z^2 \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2} dz] - \int_{-\infty}^{\infty} z \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2} dz + [\int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}z^2} dz]^2 = ?$（7 分）

（二）Let $X_1, X_2, \dots X_{25}$, be a random sample of size 25 from $N(0, \sigma^2)$

Determine a constant k such that $P(-k \le \frac{S}{\overline{X}} \le k) = 0.95$. The coefficient of variation is defined as the ratio of standard deviation (S) to mathematical mean ($\overline{X}$).（18 分）

Possibly useful data: From F table $P(F_{24,1} \ge 249.052) = 0.95$, from Z table $P(Z \le 1.645) = 0.95$

四、請回答下列問題：

(一)Could "mutually independent" and "mutually exclusive" occur simultaneously given that $P(E)\neq0$ and $P(F)\neq0$？ Describe or show your results or proof in terms of event E and F.(5 分)

(二)Describe (1) the difference between "standard deviation" and "standard error" (2) total probability theorem. (5 分)

(三)A prisoner is trapped in a cell containing three doors. The first door leads to a tunnel that returns him to his cell after two days of travel. The second leads to a tunnel that returns him to his cell after three days of travel. The third door leads immediately to freedom. Assuming that the prisoner will always select doors 1, 2, and 3 with probabilities 0.5, 0.3, 0.2, what is the expected number of days until he reaches freedom？ (15 分)

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一、試回答下列問題：
（一）試說明如何測量燃燒範圍？並說明燃燒範圍與爆炸範圍的差異。（12 分）
（二）試以圖形說明預混合可燃性氣體，其燃燒上、下限與環境溫度之間的關係
　　　（橫坐標為環境溫度，縱座標為可燃性氣體體積百分比），並在圖形上標
　　　示自燃溫度（發火點）曲線，藉此說明引燃與自燃的差異。（13 分）

二、試回答下列問題：
（一）何謂理論空氣量？（5 分）
（二）假設木材的平均分子式為 $CH_{1.5}O_{0.7}$，試計算 1 公斤木材燃燒的理論空氣量
　　　。（10 分）
（三）試說明區劃空間在閃燃後，通風控制燃燒下的燃燒率（kg/min），並計算
　　　此時流入區劃空間的空氣流率（kg/min）。（10 分）

三、試回答下列問題：
（一）Suppose a tank contains 1000gal of water in which initially 100 lb of salt is
　　　dissolved. Brine runs in a rate of 10 gal/min. And each gallon contains 5lb of
　　　dissolved salt. The mixture in the tank is kept uniform by stirring. Brine runs
　　　out at 10 gal/min. Find the amount of salt in the tank at any time t.（8 分）
（二）Find the general solution of $y'' - 5y' + 6y = -3\sin(2x)$.（8 分）
（三）Solve the initial value problem. $(e^{x+y} + ye^y)dx + (xe^y - 1)dy = 0$，$y(0) = -1$.（9 分）

四、Find the solution of the initial-boundary value problem.

（一）$\dfrac{\partial^2 y}{\partial t^2} = c^2 \dfrac{\partial^2 y}{\partial x^2}$ for $0 < x < L$, t>0, $y(0,t) = y(L,t) = 0$ for $t > 0$,

　　　$y(x,0) = 0$, and $\dfrac{\partial y}{\partial t}(x,0) = g(x)$ for $0 < x < L$.（12 分）

（二）$\dfrac{\partial u}{\partial t} = k \dfrac{\partial^2 u}{\partial x^2}$ for $0 < x < L$, t>0, $u(x,0) = f(x)$, for $0 \le x \le L$

　　　$u(0,t) = T_1$, $u(L,t) = T_2$ for $t > 0$.（13 分）

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一、最近日本大地震引起的核電廠火災事故引起世人震驚，更引發複合
　　式災害消防救災對策應如何執行的難題。如果你是該轄區的消防中
　　隊長，抵達現場後，奉命就此一核電廠的火災研擬一份事故行動計
　　畫書(IAP)。請問，研擬此一 IAP 的程序為何？其應包含的內容有哪
　　些？

二、執行消防特搜任務時，由於搜救環境的特殊性，經常需要配合空中
　　消防勤務進行救災，但因空勤作業危險性高，常有飛安風險事件發
　　生，例如阿里山小火車翻覆災難中，一架搭載事故傷患的空中消防
　　隊直升機便發生失控墜落事件。請根據過去相關的災例，分析消防
　　特搜人員配合空勤直升機執行特搜任務時，潛在的事故風險為何？
　　又如何從風險管理的角度降低此一風險？

三、消防實務機關自火場採樣所得的跡證，為驗證是否含有可燃性液體
　　的縱火劑，常利用美國材料測試學會公告之活性碳被動式頂空濃縮
　　方法(即 ASTM E1412)對火場殘跡進行前處理，回收濃縮所含之易
　　燃性液體成分再加以分析。請說明此標準方法的樣品準備/吸附程序
　　應有哪些注意事項？活性碳吸附包的空白試驗及吸附包的吸附效
　　率檢驗應如何執行？

四、電線斷痕的種類判斷及鑑定關係著火災原因調查的結果。對於銅金屬導線的電線通常需觀察其顯微組織，而在火場取得之銅金屬導線樣本必須經過一連串的前處理過程，才能對此導線的顯微組織清楚地觀察，以支持火場鑑識人員對火災起火原因判定的正確性。請說明觀察銅金屬材料顯微組織之前處理流程為何？

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一、當災害事故愈大時，災害現場救災資源的管理就愈重要，唯有良好的救災資源管理，才能確保消防救災的順利。請依據 ICS(Incident Command System) 的作業觀念，說明救災資源的分類為何?同時，災害現場救災資源應如何妥善管理?（25 分）

二、火災現場的救災安全管理對於消防人員的生命安危影響頗大，尤其火場安全官的作為更是重要。請說明火場安全官的職責為何?同時，請以某一半導體科技工廠火災為例，說明火場安全官應如何作為，才能確保全體救災人員的安全。（25 分）

三、氧乙炔之切焊所引起之火災，其有可能是切焊火花掉落所引起，亦有可能是本身逆火(回火)所引起，請問其識鑑要領為何？（25 分）

四、車輛火災之鑑識若懷疑與使用之油類有關，請問一般車輛會使用之油類有那些？各有何特性？相關之鑑識要領為何？（25 分）

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一、有關火災案件出庭作證時的證言分為事實證言（Fact Witnesses）和專業證言
　　（Expert Witnesses）兩大類，請依照我國刑事訴訟法的內容說明這兩類證言
　　的內容和作證者的身分有何不同？
二、火災原因調查報告事關民眾權益至鉅，一般為求報告書的品質，會建立有效
　　的審查制度。請列表說明行政審查（Administration Review）、技術審查（Technical
　　Review）和同儕審查（Peer Review）的定義、內容、審查者和應用時機的異
　　同。
三、近幾年醫院火災事故案例中，發現消防防護計畫書難以符合第一線應變人員
　　（first responders）初期應變 R.A.C.E.的需求，請就消防防護計畫書所規範項
　　目中，實務上常見不合理及未能針對場所特性的計畫書內容，嘗試提出指導
　　建議，讓計畫書更符合醫護人員初期應變的實際需要。
四、就建築防火安全體系而言，消防安全檢查係掌握建築火災危險因子及確保火
　　災時建築物設施設備正常功能，以防護建築物內生命財產安全之法定行政作
　　為；試說明現行法制體系下有關「消防安全檢查」的內容包括哪些？並說明
　　各類檢查實施方式及其重點為何？

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一、103 年 3 月 27 日下午，位於臺北市仁愛路一棟六層樓的建築物發生
　　火警，這棟大樓一樓是鞋店，起火點地下室是該鞋店的倉庫，現場
　　不斷竄出濃煙，消防人員獲報前往，除了疏散樓上民眾之外，也進
　　入地下火場搶救。不過，突如其來的爆燃現象，造成 5 名消防人員
　　1 人死亡 4 人重傷的悲劇；請說明前述地下空間火災搶救戰術原則
　　與火場勤務戰技運用重點，以提升未來類似空間搶救作業安全。

二、消防檢查中第二種檢查關係消防搶救成效至鉅，請說明該種檢查相
　　關項目內容為何？（5 分）另建築管理對於消防搶救亦有緊急進口
　　相關規定，以供消防搶救佈署使用。請說明消防審查、勘查及檢查
　　時，如何要求依設計規劃保持避難與消防搶救開口隨時堪用？
　　（5 分）以及所需消防車輛救災活動空間的有效性？（15 分）

三、依據美國材料測試學會（American Society for Testing and Materials,
　　ASTM）公告的分離濃縮火場殘跡樣品中之易燃性液體殘留物的前
　　處理技術，活性碳片被動式頂空濃縮法（即 ASTM E1412）及被動
　　式頂空濃縮固相微萃取法（即 ASTM E2154）均需執行空白（blank）
　　試驗及添加標準品（standard）試驗，請說明該等樣品前處理技術執
　　行這些試驗之意義為何？

四、下列圖譜為自某一火場採樣獲得含有土壤、石塊及焦炭之疑似縱火
　　殘跡證物，該證物經以活性碳片於 60 ℃的溫度下吸附萃取頂空
　　部之易燃性液體成分 18 小時，再以 200 mL 二硫化碳（CS_2）脫
　　附後，注入氣相層析質譜儀，經適當的層析條件分離分析所得之
　　總離子層析圖（total ion chromatogram, TIC，如圖 A）及萃取離子
　　層析圖（extracted ion chromatogram, EIC，如圖 B 及圖 C），試判

斷該火災殘跡證物中含有何種縱火加速劑？並詳細說明做此判斷結論之理由？
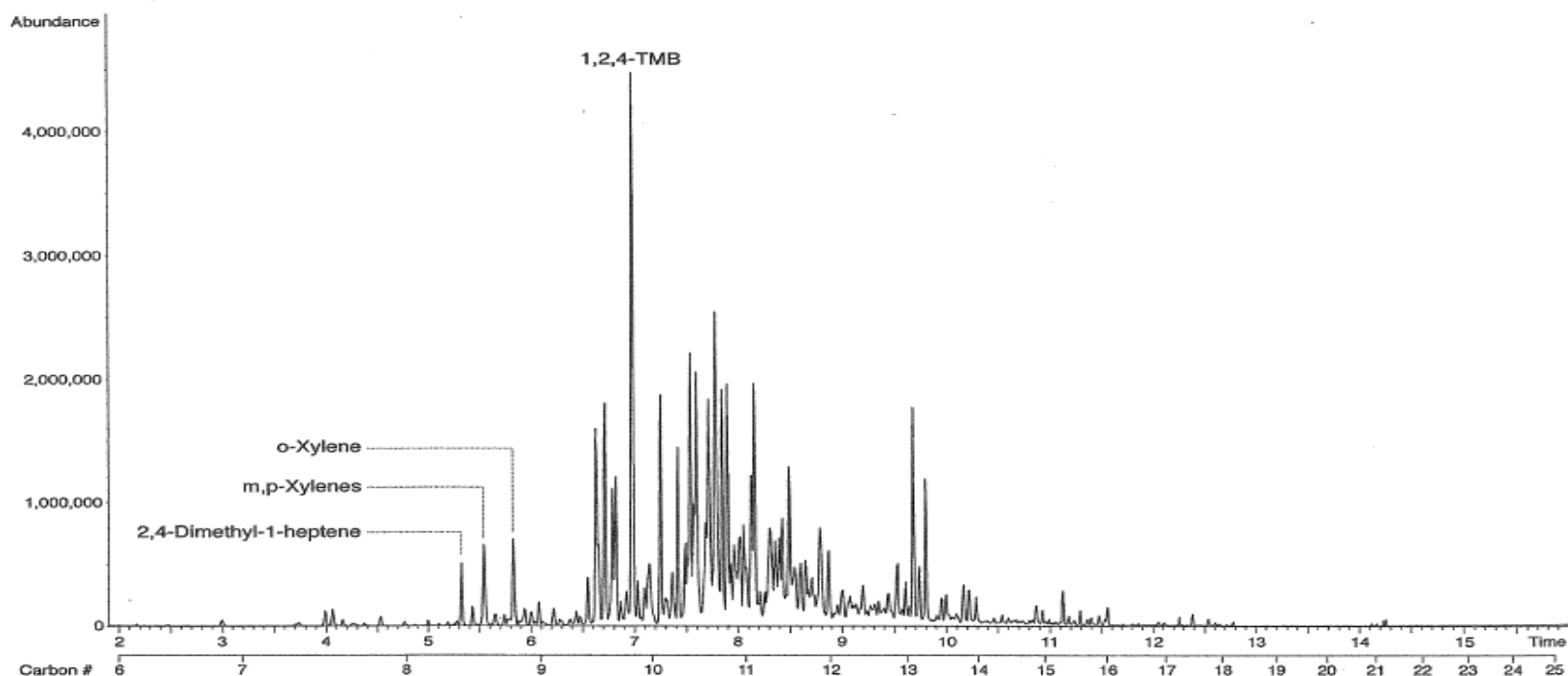
圖 A、火災殘跡證物經活性碳片萃取及二硫化碳脫附後，經氣相層析質譜儀分析所得之 TIC 圖譜（1,2,4-TMB: 1,2,4-trimethylbenzene）
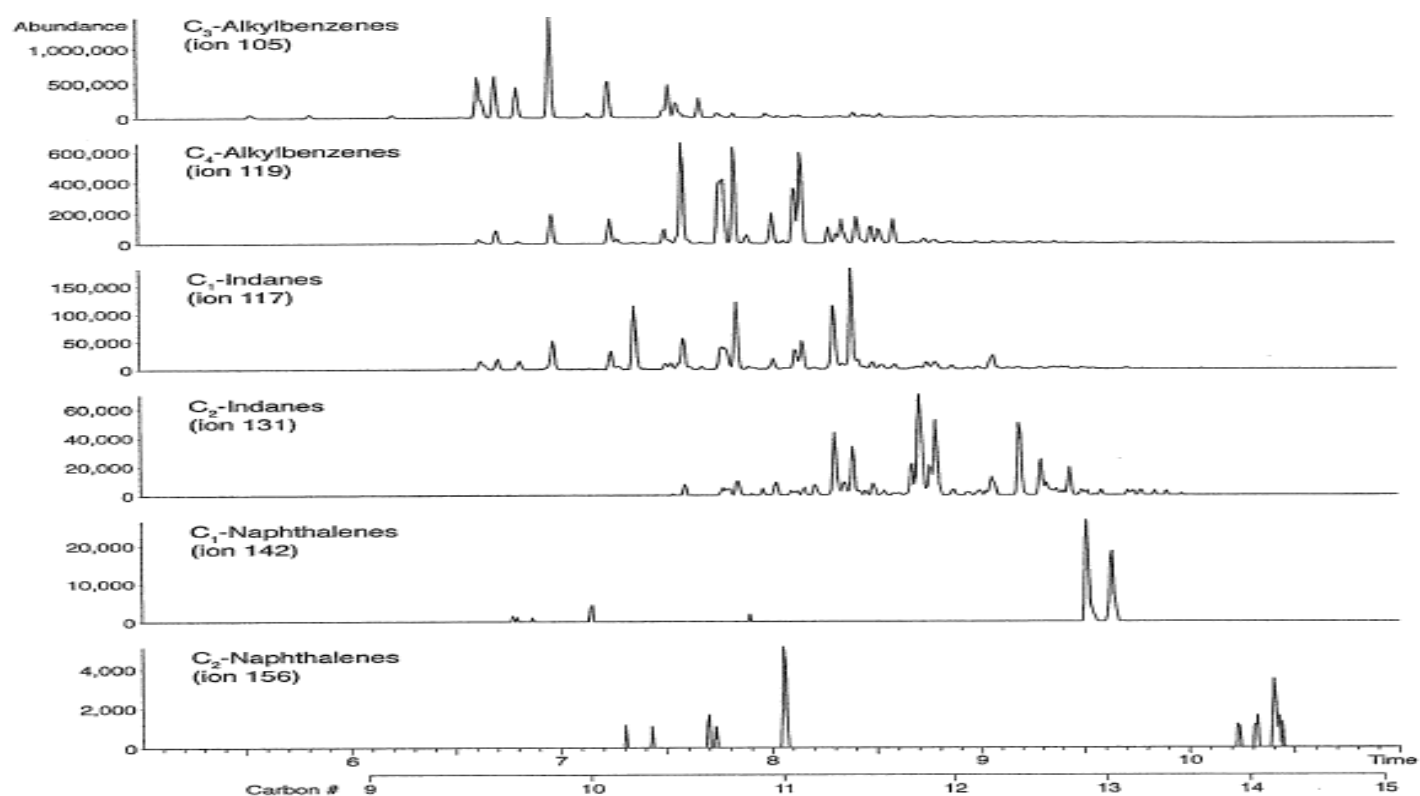
圖 B、上述火災殘跡證物經活性碳片萃取及二硫化碳脫附後，經氣相層析質譜儀分析所得芳香族化合物（aromatic）之 EIC 圖譜
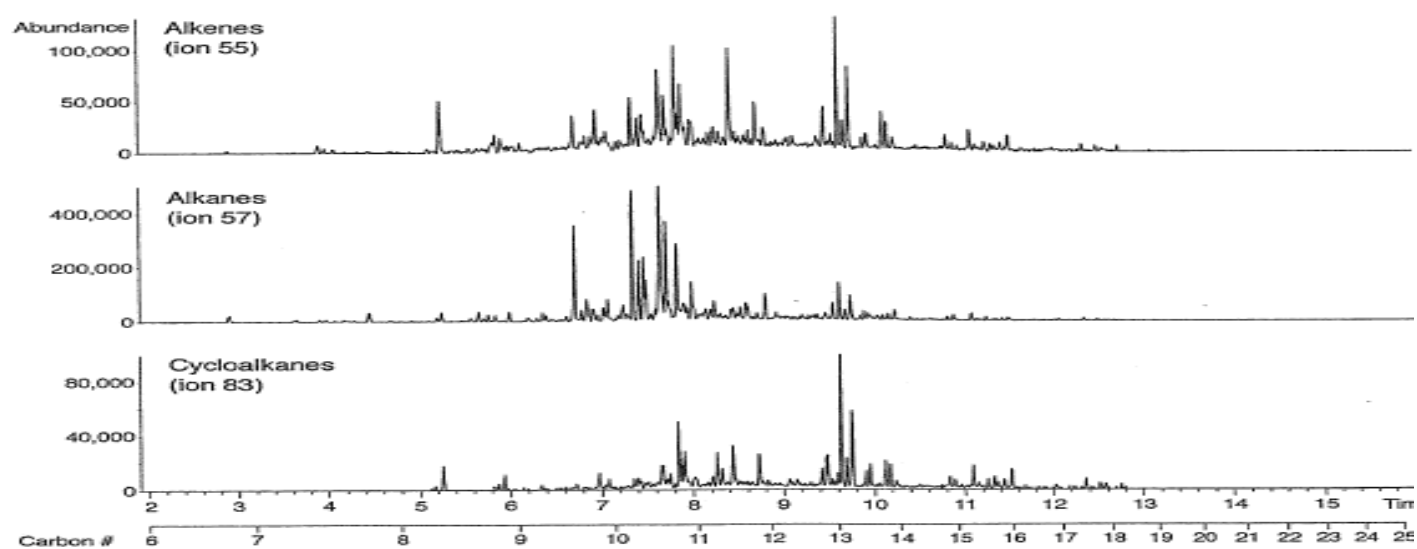
圖 C、上述火災殘跡證物經活性碳片萃取及二硫化碳脫附後，經氣相層析質譜儀分析所得脂肪族化合物（aliphatic）之 EIC 圖譜

中央警察大學 104 學年度碩士班入學考試試題

所　別：消防科學研究所
科　目：消防實務

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一、桃園新屋保齡球館大型鐵皮屋火災造成 6 名消防人員殉職，如何確保消防人員生命安全，又成了各界關注之議題；如果你是奉命趕赴現場，搶救非耐火構造鐵皮屋的第一梯次火場指揮官，請分就途中情報蒐集、現場車輛部署、資訊調查、任務指派及作戰編組，說明前述場所需考量之火災搶救原則與救助安全注意事項。

二、鐵皮屋基於成本考量及搭蓋容易，多數有違法與違規使用狀況，部分又做為廠房倉庫使用，更可能存放大量可燃物，致火災發生時，釋放出濃煙及高溫；試說明常見違法與違規案例（10 分）。為釐清責任，請分就消防檢查、協助查報及行政指導等管理手段，說明消防機關應有的作為。（15 分）

三、居室空間內的微小火源，引起火災時，會有長時間的局部悶燒高溫和牆際效應、牆邊效應與牆角效應。此時的煙和開口大小是相當重要的因素。請根據以上情況回答下列問題：
（一）若以明火引燃垃圾桶的紙張，是否足以模擬菸蒂火災？為什麼？（10 分）
（二）若將垃圾桶遠離牆壁一段距離，且只蓋三面牆壁，不蓋屋頂，並以菸蒂模擬無焰起燃垃圾桶內之紙張，造成沒有延燃之結果。以上再現實驗是否足以證明垃圾桶火災不會引燃一般居室之火災？為什麼？（15 分）

四、試回答下列問題：
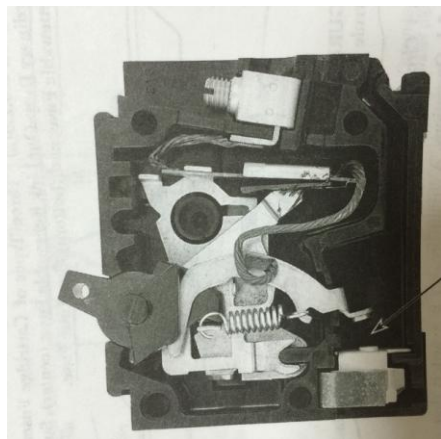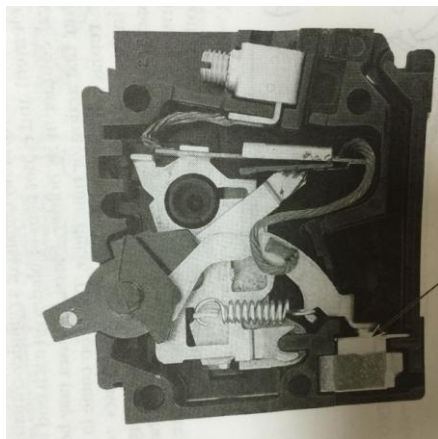
圖 1　　　　　　　　　　圖 2　　　　　　　　　　圖 3

（一）一般無熔絲開關會有三種狀態，請說明圖 1 至圖 3 的狀態分屬於何種狀態？

　　　（10 分）

（二）在火災調查的實務上，這三種狀態的意義為何？（15 分）

中央警察大學 100 學年度碩士班入學考試試題

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一、試就現行法規及工程實務，申論二氧化碳滅火設備依法是否可設計
　　安裝在醫院病歷室及圖書館書庫？
二、試申論醫院重症病房面對深夜發生於下方樓層的火警，其平時應建
　　立的避難策略為何？為達成保障病人安全與提升醫療品質的防護目
　　標，應強化或改善哪些消防設計？
三、日本福島核電廠事件引起世界之關注，核能安全議題再度浮上檯面，
　　事件中多次發生氫氣火災，試問核電廠消防安全設備之設計原則為
　　何？又核電廠此類火災之因應之道為何？
四、台北市白雪旅社火災燒出了小旅館所存在的火災隱憂，針對此類小
　　旅館的特性，消防署於 99 年修訂消防法，規定此類對象物應設置住
　　宅用火災警報器，請問該火災警報器之裝置規定為何？

中央警察大學 101 學年度碩士班入學考試試題

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一、試申論如何透過 Heat Release Rate 與時間的比對關係，在所選用的火警探測器連動作用下，及時啟動之滅火設備才能達成預擬的消防安全目標。(25 分)

二、試比對感知撒水頭與一般型滅火用密閉式撒水頭之安裝高度限制，並申論其理由與依據。(25 分)

三、97 年間中部某醫學中心附設停車塔地下室，因檢修二氧化碳系統，誤將放射區之二氧化碳鋼瓶釋放，造成檢修人員陷入昏迷狀態；試就前項系統採集中鋼瓶方式，以電磁閥啟動鋼瓶來設計兩空間全區防護，請以前述設計方式繪製概念系統圖，並依所繪製系統圖構件，說明檢修時之作業程序。(25 分)

四、試就現行防火安全工程實務，針對"各類場所消防安全設備設置標準"，有關滅火、警報、避難及消防搶救必要設備等設置，列舉四項以上合於規範要求，但不是合理設計而難以達到設備預期功能之案例。(25 分)

中央警察大學 102 學年度碩士班入學考試試題

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一、國內依各類場所消防安全設備設置標準第 18 條而設置之全區放射式 CO_2 滅火設備到處可見，也曾發生誤動作而致人傷亡之災例；為防護此類既存合法 CO_2 滅火設備之人命安全目標，在世界性之消防工程實務上，有哪些可行之補強措施？試申論之。

二、核能發電廠內存有各種發電作業相關之機房設施與作業空間，試問針對電廠內專門用來存放活性碳材質之作業空間，依境況需求與防護目標，應選用具有何種性能之火警探測器？理由何在？

三、化學系統滅火設備中的海龍替代藥劑系統，基於滿足建築物安全設計目標及世界性工程基準 NFPA 2001 的規定，試分析在表面火災和深層火災(deep seated fires)在滅火需求之特性上，若適用場所採全區放射方式規劃時，請討論其藥劑濃度適當量設計考量原則為何？目前內政部消防署潔淨藥劑滅火設備（通案）申請審核認可注意事項為何？請以 INERGEN 系統為例，試繪出化學系統滅火設備昇位圖、流程圖及列出所需藥劑量之計算公式？其探測偵知連動放射藥劑的火警探測器種類型式及回路設計方式以何者為佳？試申論說明之。

四、公共危險物品之製造、儲存或處理場所依其面積、儲存量、場所特性及物品所具燃燒或爆炸之性質，考量其操作溫度及閃火點等明訂「顯著滅火困難場所」之範圍，請說明何謂「各類場所消防安全設備設置標準」所規定之「顯著滅火困難場所」？若以室外儲槽儲存閃火點在攝氏四十度以下之第四類公共危險物品之顯著滅火困難場所者，且設於岸壁、碼頭或其他類似之地區，並連接輸送設備者，

有關設置固定式泡沫滅火設備及泡沫射水槍滅火設備規定內容為何？

有關設置固定式泡沫滅火設備及泡沫射水槍滅火設備規定內容為何？

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一、近年來化學系統消防安全設備因考慮釋放後對環境的影響，致國內
　　消防工程使用潔淨藥劑滅火設備案件越來越多，試求：

（一）請列舉三種現常被選用鹵化烷化合物系列或惰性氣體等潔淨藥劑
　　　　之化學式及滅火原理，並繪製其系統動作設計流程圖、平面圖。

（二）若擬於電氣設備室（使用電壓超過 480V 通電狀態下）或檔案室、
　　　　圖書館書庫、醫院病歷室等（有可能發生深層火災(deep seated
　　　　fires)場所）設置潔淨藥劑滅火設備時，為能有效撲滅火災，其
　　　　依據法規、設計濃度、氣密措施等配套條件為何？試申論之。

（三）當送內政部消防署申請潔淨藥劑滅火設備個案審核認可時，應檢
　　　　附審核資料內容及審查注意事項為何？

（四）於驗收或消防檢查時，如何進行測試以確保火災發生時，系統能
　　　　達到真正滅火之功效？並說明氣密測試（Enclosure Integrity
　　　　Testing）方法及在藥劑設計濃度下，判定氣密測試合格之條件為
　　　　何？

二、某棟建築物於特別安全梯排煙室與緊急昇降機間設置排煙、進風風
　　管兼用機械式排煙設備，試問該居室及排煙室之排煙設備的進氣量
　　及排煙量各為多少立方公尺？並自行舉一例繪製特別安全梯與緊急
　　昇降機間共用排煙室之建築平面圖及消防安全設備設計圖來說明設
　　計理念、目的、法令依據與功用？上述建築物如由機械排煙改為自
　　然排煙，請問應符合規定為何？請說明檢測時所需的器材與方式？
　　在消防實務上經常發現既設的系統排煙量不足，可能有哪些原因所
　　產生？

三、消防法及其相關子法規定之第二種室內消防栓設備，為何在台灣的安裝實例非常少見？請評論其理由及提出有效推動之可行方案。

四、火警自動警報設備可區分為"探測監視"與"音響警報"兩個重要部分，試問在消防審勘查作業上，對此兩部分緊急電源之供電容量時限上，有何不同的查核要求？

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一、若建築物高度為 250 公尺，有關水系統滅火設備加壓送水裝置及連結送水管
　　設置設計，現行常見的方式有哪些？試以消防安全設備配管昇位圖及幫浦容
　　量之計算式例來說明之。為達到建商使用最大化、消防設備師依法設計並解
　　決消防車之車齡及送水揚程等問題，請申論並探討高層建築物設有自動撒水
　　設備之樓層其中繼幫浦、中繼水箱設置位置之理由、依據、合理可行性。

二、試就現行消防機關執行消防法第六條第二項消防安全設備之列管檢查、第九
　　條檢修申報複查工作中，有關檢查不合格之營業場所及製造、儲存或處理公
　　共危險物品達管制量以上未滿三十倍之場所，現行消防安全檢查之種類及實
　　施方式、流程圖、專責檢查小組之人員配置與遴選考量如何？試述之。以近
　　年來桃園市新屋違建保齡球館及高雄市前鎮地區氣爆等所發生重大火災事
　　故案例，深入研析現行檢查問題及火災風險潛在隱憂，並找出有關解決因應
　　之對策。

三、試以風險因子負面相依性（Interdependency）之概念，申論目前各縣市消防
　　局推動每戶致贈一只住宅火災警報器（簡稱住警器）之政策與執行方案，對
　　獨居老人火災安全防護之功效如何？又美、日對此住警器經驗比我國豐富，
　　他們在實施多年後，有何改進對策？試列述之。

四、地下停車場乃室內停車空間，在建築與消防法規實務，係以「非居室」用途
　　空間認定，因此得免設排煙設備；在建管單位的審圖作業上，相關防火避難
　　設施也都因此法規上之見解而得以放寬。試就臺北大巨蛋此一用途空間附設
　　之地下停車場之使用特性與火災境況，申論上述非居室用途認定之合法性與
　　合理性。