

**Part I.** Question 1 to 10, you should choose the answer closest in meaning to the underlined word or phrase. **One answer only.** 2 points for each.

- When they heard the good news about the court's decision, the angry crowd cheered and then began to disperse.  
A. roar B. get upset C. get excited D. scatter E. gather
- Because their fundamental difference, they would never get to like each other.  
A. disparity B. contradictory C. hatred D. delinquency E. intensity
- No one suspected that Jerry was a spy. On the surface he behaved like any normal citizen. When his covert activity was discovered and announced to the world, we were all shocked.  
A. friendly B. helpful C. loud D. stimulating E. hidden
- Michael is an ardent supporter of his presidential candidate. That became obvious to me when I found out how much time he's donated to the campaign.  
A. old B. intelligent C. foolish D. very strong E. stubborn
- Kathy was looking for a strong but light material to use for making her water jugs. Unfortunately, she chose noodelite. It proved too porous to hold jelly.  
A. good for holding things B. protective C. permeable D. necessary E. luscious
- Based on what is known, the term pulsar is used to describe the phenomenon of short, precisely timed radio bursts that are emitted from somewhere in space.  
A. released B. jumped C. revolved D. received E. wandered
- This replica fooled a lot of experts and was considered a valuable work of art.  
A. a dishonest act B. something ugly C. anything that has no value D. a copy E. an evil act
- The status quo of the country remains a debated issue among people.  
A. future B. current situation C. crisis D. benefit E. changing situation
- These results support the hypothesis that individuals are willing to pay more in order to live in communities that provide high-quality services.  
A. angle B. experiment C. theory D. benefit E. evidence
- The examiners soon realized that this student came to the oral defense for his thesis off the cuff.  
A. on time B. in a hurry C. with careful observation D. enthusiastically E. without preparation

**Part II.** Question 11-15, please choose the answer that best completes the sentence. Question 16-25 you should choose the best answer to fill each of the numbered blanks in the passage. **One answer only.** 2 points for each.

- They said they had their equipment \_\_\_\_\_ yesterday.  
A. to be shipped B. shipped C. shipping D. ship E. was being shipped.
- The ability to identify and exploit opportunities is the key \_\_\_\_\_ business product.  
A. to B. of C. for D. toward E. in
- \_\_\_\_\_ the size of urban populations in the world is the most urgent problem many countries face.  
A. Rising B. Rise with C. The rise of D. Being Risen by E. Rise in
- \_\_\_\_\_ incidents of Ebola virus outbreaks have been isolated incidents.  
A. The most B. Mostly C. Most D. Most of E. The most of
- \_\_\_\_\_ the difficulty and expense of working on an isolated island, construction took nearly a decade.  
A. Due to B. Because C. Despite D. Although E. Regarding

**Question 16-18**

America's 78 million credit cardholders carried an average balance of \$7,564 last year. The cost 16 interest and fees amounted to more than \$1,000 for the typical budget. If you just said, "Budget - what budget?," you know what I mean. Truth is, most of us go on spending sprees from time to time.

But, when power shopping creates the illusion of success, even 17, it has become a weakness. Some obvious

signs that spending is out of control include making minimum payments on your credit cards, late fees, 18, lack of a budget and loss of sleep over money worries.

16. A. on B. in C. with D. by E. of  
 17. A. with debts spiral out of control B. which debts spiraled out of control  
 C. because debts spiraling out of control D. as debts spiral out of control  
 E. when debts being spiral out of control  
 18. A. bouncing checks B. bounce checks C. check bounces D. bounce of checks E. bounced checks

**Question 19 to 22**

Freeze-drying is a technique that can help to provide food for astronauts. But it also has other applications nearer home. Freeze-drying is like suspended animation for food; you can store a 19 for years, and then, when you're finally ready to eat it, you can completely revitalise it with a little hot water. Even after several years, the original foodstuff will be virtually unchanged.

The technique basically involves completely removing the water from some material, such as food, while 20. The main reason for doing this is either to preserve the food 21 reduce its weight. Removing the water from food keeps it from spoiling, because the microorganisms such as bacteria that cause spoiling cannot survive without it. Similarly, the enzymes which occur naturally in food cannot cause ripening without water, so 22 from food will also stop the ripening process.

19. A. freeze-dried meal B. freeze-drying meal C. meal with freeze dry  
 D. meal in freeze drying E. frozen dry meal  
 20. A. it leaves the rest of material virtually being intact B. leaving the rest of the material virtually intact  
 C. leave the rest of the material virtually intact D. leave the rest of the material virtually being intact  
 E. left the rest of the material virtually intact  
 21. A. to B. but C. and to D. or to E. also to  
 22. A. to remove water B. remove water C. have water removed  
 D. that remove water E. removing water

**Question 23 to 25**

Dolphins are often the star attractions at zoos, aquariums and aquatic theme parks. They jump on command through fiery hoops and 23 other dolphins. They seem delighted to perform their tricks and side up to their human handlers, content with the applause of their audience, a pat on the head and a gift of some raw fish now and then 24. Dolphins have a darker side. Dolphins have an unusual ability: to plot with others, communicate plans and execute them effectively. This indicates intelligence and communicative skills beyond 25. Dolphins, porpoises and whales are often thought of as fish since they live in the water. However, they are aquatic mammals. They cannot live indefinitely under water and must come to the surface periodically for air. They have "blowholes" at the top of their skulls to exhale air, even under water. Their young are born alive and are suckled by the parents.

23. A. synchronized with B. in synchronization with C. synchronizing with  
 D. having synchronization with E. that have synchronized  
 24. A. However B. Therefore C. Consequently D. For example E. Comparatively  
 25. A. that most other animals are possessing B. other animals possess C. possessed by other animals  
 D. which other animals have possessed E. what most other animals possess

**Part III. Reading Comprehension.** In this part, you will read several passages. Each one is followed by one question or a number of questions about it (them). Question 26-40, you should choose the **ONE** best answer to each question. 2 points each.

the future will be able to learn from experience. They will be smart, strong, and untiring workers whose only goal will

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Turner almost wished that he hadn't listened to the radio. He went to the closet and grabbed his umbrella. He would feel silly carrying it to the bus stop on such a sunny morning.

18. We will be able to talk to these mechanical helpers and they will be able to respond in kind.  
26. Which probably happened?  
A. Turner realized that he had an unnatural fear of falling radio parts.  
B. Turner had promised himself to do something silly that morning.  
C. Turner had heard a weather forecast that predicted rain.  
D. Turner planned to trade his umbrella for a bus ride.  
E. Turner planned to take a taxi.

Someday we will all have robots that will be our personal servants. They will look and behave much like real humans. We will be able to talk to these mechanical helpers and they will be able to respond in kind. Amazingly, the robots of the future will be able to learn from experience. They will be smart, strong, and untiring workers whose only goal will be to make our lives easier.

27. Which sentence from the paragraph expresses the main idea?

- A. Someday we will all have robots that will be our personal servants.  
B. We will be able to talk to these mechanical helpers and they will be able to respond in kind.  
C. They will be smart, strong and untiring workers.  
D. Amazingly, the robots of the future will be able to learn from experience.  
E. They will look and behave much like real humans.

The success of fluoride in combating dental decay is well established and, without a doubt, socially beneficial. However, fluoride's toxic properties have been known for a century. In humans excessive intake (for adults, over 4 milligrams per day) over many years can lead to skeletal fluorosis, a well-defined skeletal disorder, and in some plant species, fluoride is more toxic than ozone, sulfur dioxide, or pesticides.

3. Some important questions remain. For example, the precise lower limit at which the fluoride content of bone becomes toxic is still undetermined. And while fluoride intake from water and air can be evaluated relatively easily, it is much harder to estimate how much a given population ingests from foodstuffs because of the wide variations in individual eating habits and in fluoride concentrations in foodstuffs. These difficulties suggest that we should be wary of indiscriminately using fluoride, even in the form of fluoride-containing dental products.

28. The passage suggests which of the following about the effect of fluoride on humans?

- A. The effect is more easily measured than is the effect of exposure to pesticides.  
B. The effect of fluoride intake from water and air is relatively difficult to monitor.  
C. In general the effect is not likely to be as harmful as the effect of exposure to sulfur dioxide.  
D. An intake of 4 milligrams over a long period of time usually leads to a skeletal disorder in humans.  
E. An intake of slightly more than 4 milligrams for only a few months is not likely to be life-threatening.

29. The paragraph following these passages is mostly likely about  
A. how to use fluoride carefully.  
B. diseases caused by ingesting too much fluoride.  
C. interesting results of experiment by some dental scientists.  
D. an analysis of fluoride in its use in other industries.  
E. scientific evidence provided by orthopedic specialists.

Superconductivity is the ability of certain materials to conduct electrical current with no resistance and extremely low losses. This ability to carry large amounts of current can be applied to electric power devices such as motors and generators, and to electricity transmission in power lines. For example, superconductors can carry as much as 100

times the amount of electricity of ordinary copper or aluminum wires of the same size.

Scientists had been intrigued with the concept of superconductivity since its discovery in the early 1900s, but the extreme low temperatures the phenomenon required was a barrier to practical and low-cost applications. This all changed in 1986, when a new class of ceramic superconductors was discovered that "superconducted" at higher temperatures. The science of high-temperature superconductivity (HTS) was born, and along with it came the prospect for an elegant technology that promises to "supercharge" the way energy is generated, delivered, and used.

30. In which of the following publication types would this article most likely appear in?

- A. A scholarly journal read by specialists and scientists who work directly with superconductivity
- B. A modern science magazine intended for leisure reading.
- C. A book chapter in an advanced chemistry textbook
- D. A magazine intended to be dispersed at home craft fair
- E. A trade show magazine which focuses on super-cooled refrigeration units

31. What is the barrier to superconductivity at the early stage of its discovery?

- A. high resistance
- B. technology that supercharge the way energy is used
- C. low-cost application
- D. its capacity to carry electricity
- E. low temperature

Those who criticize the United States government today for not providing health care to all citizens equate health care provision with medical insurance coverage. By this standard, seventeenth- and eighteenth-century America lacked any significant conception of public health law. However, despite the general paucity of bureaucratic organization in pre-industrial America, the vast extent of health regulation and provision stands out as remarkable.

Of course the public role in the protection and regulation of eighteenth-century health was carried out in ways quite different from those today. Organizations responsible for health regulation were less stable than modern bureaucracies, tending to appear in crises and wither away in periods of calm. The focus was on epidemics which were seen as unnatural and warranting a response, not to the many endemic and chronic conditions which were accepted as part and parcel of daily life. Additionally, religious influence was significant, especially in the seventeenth century. Finally, in an era which lacked sharp demarcations between private and governmental bodies, many public responsibilities were carried out by what we would now consider private associations. Nevertheless, the extent of public health regulation long before the dawn of the welfare state is remarkable and suggests that the founding generation's assumptions about the relationship between government and health were more complex than is commonly assumed.

32. Among the following statements about the United States government's role in the provision of health care, which finds the LEAST support in the passage?

- A. The government today addresses health concerns that formerly were not considered serious enough to warrant government involvement.
- B. What were once public health-care functions are now served by the private sector.
- C. Philosophical considerations play a less significant role today in the formulation of public health-care policies than in previous centuries.
- D. Public health care today is guided largely by secular rather than religious values.
- E. Modern public health-care agencies are typically established not as temporary measures but rather as permanent establishments.

33. Which of the following best expresses the author's point of contention with "those who criticize the United States government for not providing health care to all citizens" (lines 1)?

- A. Their standard for measuring such provision is too narrow.
- B. They underestimate the role that insurance plays in the provision of health care today.
- C. They fail to recognize that government plays a more significant role today in health care than in previous eras.
- D. They misunderstand the intent of the founding generation with respect to the proper role of the government in the

area of health care.

E. They lack any significant conception of public health law.

34. Which of the following best expresses the main point of the passage?

A. The government's role in health care has not expanded over time to the extent that many critics have asserted.

B. The government should limit its involvement in health care to epidemiological problems.

C. Health problems plaguing pre-industrial America resulted largely from inadequate public health care.

D. History suggests that the United States government has properly played a significant role in provision of health care.

E. Private insurance is an inadequate solution to the problem of health care.

Graffiti is a general term for wall writing, perhaps humankind's earliest art form. The crude wall writings of prehistoric times and the highly stylized street art of today's inner-city youths share one common feature: Each stems from a basic human need to communicate with others. For youths who may not be able to express themselves through other media, such as prose or music, graffiti represents an easily accessible and effective way to communicate with a large audience. Anyone can obtain a can of spray paint and "make their mark" on a highway overpass or the side of a building.

Modern graffiti generally falls into one of three categories—junk graffiti, gang graffiti, and tagging. Junk graffiti messages are not gang-related but often involve obscene, racist, or threatening themes. The line separating gang graffiti and tagging to more threatening gang activities, is now considered an entry level offense that can lead to more serious crimes, including burglary and assault.

35. According to these two passages, what is the common feature of Graffiti?

A. To threaten others    B. To make their mark    C. To communicate with others as a human need

D. To vandalize the landscape    E. To challenge the public

36. Paragraphs following these passages are most like about

A. detailed description of three categories of graffiti.

B. how to punish those who make graffiti.

C. why youths need to express themselves through such an urban crime.

D. other ways to communicate with people through other art forms.

E. the development of earlier graffiti.

Most cultures set an age at which its young people become adults in the eyes of the law. This age is called the age of majority. When people reach this age, usually 18, they become entitled to certain inalienable rights from which they were precluded as minors, such as the right to vote. Before becoming adults, minors are not able to enter into legal contracts. This is seen as being for their own protection. They are also protected from statutory rape, from being exploited in the labor market, and from having to go through the same penal system as adults.

37. Which of the following would be an example of a protection specifically to minors?

A. The right to vote    B. The right to a fair trial    C. Child labor laws

D. Separate penal system    E. Legal contracts

38. Which of the following would be an example of a right denied to minors?

A. The right to vote    B. The right to a fair trial    C. Child labor laws

D. Separate penal system    E. Going to court

39. The word "statutory" in the passage is closest in meaning to

A. part of a statue    B. punishable under the law    C. said or stated    D. serious    E. casual

40. In which of the following publication types would this article most likely appear in?
- A. A scholarly journal read by sociologists.    B. A modern magazine intended for leisure reading.  
C. A book chapter in a textbook about law and life    D. A newsletter intended to be dispersed at court  
E. A scholarly journal read by lawyers.

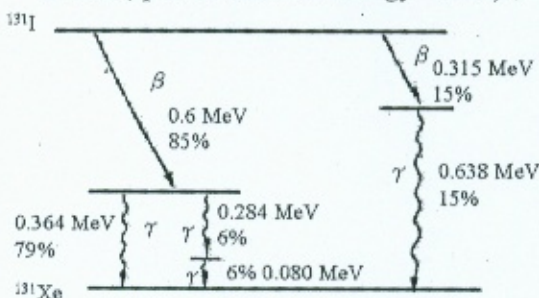
**Part IV. Essay. 20 points.**

The world's climate scientists recently reported unequivocally that the Earth's climate system is increasingly heating up and that it likely has not been this warm for at least 1300 years. We all must begin reducing global warming, and fortunately there is much to do. **Please write an essay in about 150 words about how you can help to reduce global warming.**

醫學物理學(包括放射物理學與輻射安全)

問答題與計算題，每題 7 分，可用計算機

- 光子的能量  $E$  為 1 MeV，通量率  $\phi$  為  $10^{10}/\text{cm}^2\cdot\text{s}$ ，光子與空氣作用的能量吸收係數為  $\mu_{en}=3.3\times 10^{-5}/\text{cm}$ ，而空氣的密度為  $0.001293\text{g}/\text{cm}^3$ 。試求空氣的吸收劑量率等於多少 mGy/h？
- 一游離腔之腔壁材料為鋁，腔中空氣的體積為  $10\text{ cm}^3$ ，腔壁對於空氣的質量阻擋本領比 (relative mass stopping power) 為 1.3。今將游離腔置入加馬輻射場中，測得  $10^{10}$  個離子對 (ion pairs)。請問利用 Bragg-Gray 原理，求得的腔壁吸收劑量等於多少 Gy？
- 何謂弱穿輻射 (weekly penetrating) 與強穿輻射 (strongly penetrating)？
- 克馬 (kerma, K) 與能通量 (energy fluence) 的關係為何？
- 從  $^{99}\text{Mo}$  的射源中萃取出 1 mCi 的  $^{99\text{m}}\text{Tc}$ 。一年後將此  $^{99\text{m}}\text{Tc}$  排放至環境，請問  $^{99\text{m}}\text{Tc}$  的子核  $^{99}\text{Tc}$  的活度為何？ [ $^{99}\text{Mo}$  之半化期  $t_{1/2}=66\text{h}$ ； $^{99\text{m}}\text{Tc}$ ： $t_{1/2}=6\text{h}$ ； $^{99}\text{Tc}$ ： $t_{1/2}=2.13\times 10^5\text{y}$ ]
- 當 1 mg 的  $^{137}\text{Cs}$  與  $^{137\text{m}}\text{Ba}$  平衡時有多少克的  $^{137\text{m}}\text{Ba}$  會產生？( $^{137}\text{Cs}\rightarrow^{137\text{m}}\text{Ba}\rightarrow^{137}\text{Ba}$ ； $^{137}\text{Cs}$  之半化期  $t_{1/2}=30\text{ yr}$ ； $^{137\text{m}}\text{Ba}$ ： $t_{1/2}=2.6\text{ min}$ )
- 某一輻射計測系統，度量 10 分鐘後，其百分標準差為 3%，試問另需再計測多少時間，其百分標準差可減少為 1%？
- 核種  $^{131}\text{I}$  的蛻變圖如下。病人服用 50 mCi  $^{131}\text{I}$  後，假設甲狀腺質量為 20 g， $^{131}\text{I}$  均勻分布於甲狀腺中，且  $\beta^-$  射線完全被甲狀腺吸收，試求病人之甲狀腺的  $\beta^-$  有效能量比度 (specific effective energy, SEE)？



$^{131}\text{I}$  蛻變圖

- 阻擋本領 (stopping power)  $S_1$  與限制阻擋本領 (restricted stopping power)  $L_0$  的區別為何？
- 何謂游離腔的曝露校正因數  $N_x$  與游離腔的空腔氣體校正因數  $N_{gas}$ ？
- 水的劑量  $D_{water}$  與介質的吸收劑量  $D_{med}$  之關係式為何？
- 有一  $^{192}\text{Ir}$  點射源之空氣克馬強度 (air kerma strength) 為  $10\ \mu\text{Gy m}^2\cdot\text{h}^{-1}$ ，則相當於多少 mg-Ra eq？(1 mg-Ra eq 在 1 m 處的劑量率  $X=8.25\times 10^{-4}\text{ R/h}$ )

13. 設單次攝入  $6 \times 10^6$  Bq 的某放射性核種，在其後 50 年期間身體的某器官接受了 2mGy 的  $\beta$  射線的劑量、4mGy 的  $\gamma$  射線的劑量和 0.2 mGy 的  $\alpha$  粒子曝露的劑量。該器官的組織加權因數為 0.12。試求這種攝入途徑的年攝入限度(ALI)？
14. 計算 5 mCi 的  $^{131}\text{I}$  (半化期 8.05 天) 及 2mCi 的  $^{32}\text{P}$  (半化期 14.3 天) 要達到相同活度時，所需要的時間為幾天？
15. 請定義描述光子射束的四個物理量。



單選題 (33% , 除第 16,17,18 題每題 1 分外, 其他每題 2 分)

- ( ) 1. 以下有關放射線治療的歷史, 何者錯誤?  
(A) X ray 是德國科學家倫琴先生是 1895 年發現並命名的。  
(B) 鐳是居里先生及其夫人所發現的。  
(C) 貝克因放射線活度 (radioactivity) 的研究而獲得諾貝爾獎。  
(D) 勞倫斯發明的迴旋加速器是最早使用於外部照射的機器。
- ( ) 2. 以下方法可改變放射治療照射野形狀, 除了何者?  
(A) 加金屬合金檔塊 (B) 加楔形體  
(C) 調整多葉準直儀 (D) 以上皆可
- ( ) 3. 由 SAD 為 100 公分調整為 SAD 為 120 公分時, 放射線劑量率改變比率為何? (A) 0.69 (B) 1.44 (C) 0.83 (D) 不變
- ( ) 4. 以下何者的百分劑量深度分佈的最大劑量深度( $D_{max}$ )最大?  
(A) 9 MeV 電子線 (B) 鈷-60 (C) 10 MV X 射線 (D) Orthovoltage X-ray
- ( ) 5. 下列敘述何者不正確?  
(A) 放射線治療的照射野大小因子 (Field Size Factor) 是以 10 x 10 公分大小為比較基準  
(B) 百分劑量深度曲線是以最大劑量( $D_{max}$ )為百分之百做為比較基準  
(C) 放射線幾何照射野 (geometric field size) 的大小是定義在百分之五十的範圍  
(D) 以上皆正確
- ( ) 6. 在電子線治療時的劑量計算, 以下何者不正確?  
(A) 以固定的 SAD (source - axis distance) 為原則  
(B) 以最大劑量的深度為百分之百做劑量運算  
(C) 常使用於深度較淺之腫瘤治療  
(D) 常使用單門不規則照射野
- ( ) 7. 下列何者不適用於放射線劑量的定量測定?  
(A) 熱發光測量計  
(B) 游離腔  
(C) X 光軟片測量  
(D) 液壓偵檢計
- ( ) 8. 以 6 MV X 射線治療用左右相對兩門照射野治療一體厚為 20 公分之病患最大劑量深度會落於:  
(A) 照射野入口及出口處  
(B) 劑量分佈均勻, 並無最大劑量區  
(C) 10 公分處  
(D) 腫瘤區
- ( ) 9. 頭頸癌最常見之病理診斷為何?  
(A) 淋巴瘤  
(B) 鱗狀上皮細胞癌  
(C) 腺細胞癌  
(D) 小細胞癌
- ( ) 10. 頭頸癌接受傳統放射線治療後最常見的長期慢性副作用為何?  
(A) 口腔黏膜炎  
(B) 味覺喪失  
(C) 口乾  
(D) 聽力受損
- ( ) 11. 以下何者是乳癌病患接受術後的放射線治療較少見的副作用?  
(A) 放射線肺炎  
(B) 放射線皮膚炎  
(C) 放射線脊髓炎  
(D) 放射線心肌炎

- ( ) 12. 鼻咽癌放射線治療的劑量限制正常器官或組織，除了以下何者？
  - (A) 頭部脊髓
  - (B) 腦幹
  - (C) 視神經及視交叉
  - (D) 男性之睪丸或女性之卵巢
- ( ) 13. 下列有關強度調控放射線治療 (IMRT) 的描述，何者錯誤？
  - (A) 是一種逆向式治療計劃 (inverse planning)
  - (B) 用手擺式合金鉛檔塊也進行強度調控放射線治療
  - (C) 可順標靶形狀而做出凹型放射線劑量分佈
  - (D) 可更有效降低正常組織的劑量分佈，提高腫瘤的劑量
- ( ) 14. 目前放射線治療的可結合以下何種影像檢查融合重組，以決定照射範圍大小？
 

1. 電子斷層掃描    2. 核磁共振掃描    3. 正子掃描    4. 骨骼同位素掃描

  - (A) 1, 2
  - (B) 1, 3
  - (C) 1, 4
  - (D) 1, 2, 3
- ( ) 15. 下列有關照射野大小的描述，何者錯誤？
  - (A) Mantle 照射常用於腹部淋巴腫瘤的治療
  - (B) 鼻咽癌的治療包括鼻咽原發部位及頸部淋巴結的預防照射
  - (C) 早期聲帶癌之治療不需包括頸部淋巴
  - (D) 在骨髓移植時會進行全身照射以抑制病患之骨髓功能
- ( ) 16. 目前國內使用於近接治療最常用之放射線同位素射源為何？
  - (A) Co-60
  - (B) Cs-137
  - (C) Ir-192
  - (D) I-125
- ( ) 17. 針對頭頸癌之放射線治療，頸部淋巴結預防性放射線治療的劑量為何？
  - (A) 30 戈雷
  - (B) 40 戈雷
  - (C) 50 戈雷
  - (D) 60 戈雷
- ( ) 18. 五個半值層厚度的屏蔽，可將原來放射線的強度減至原來的：
  - (A) 1/5
  - (B) 1/25
  - (C) 1/2
  - (D) 1/32

## 放射技術學

高雄醫學大學 96 學年度碩士班及碩士在職專班招生考試 (包括放射線診斷技術、放射治療技術及核子醫學診療技術) 試題

1. 試敘述 X 光機影像成像之原理(6%)。
2. 試敘述磁振造影影像之成像原理(6%)。
3. 試列舉磁振掃描儀儀器的必備硬體結構(6%)。
4. 試列舉 X 光相關之儀器，並提出其相關必備之結構項目(10%)。
5. 試列舉磁振掃描儀常用之脈衝序列，並簡要說明序列之特點(6%)。

## 放射技術學

高雄醫學大學 96 學年度碩士班及碩士在職專班招生考試 (包括放射線診斷技術、放射治療技術及核子醫學診療技術) 試題

第 頁

## 核子醫學診療技術：問答題

1. 請敘述“核子醫學”。(13%)
2. 單光子射出電腦斷層攝影 (SPECT) 常以經濾波返投射 (filtered backprojection) 法進行影像重組。請簡述其中濾波器 (filter) 的意義並其參數設定的原則。(10%)
3. 請列舉核子醫學在腫瘤學上常用的製劑，並簡述其定位機制。(10%)