

Global Evaluation System for Health Professions

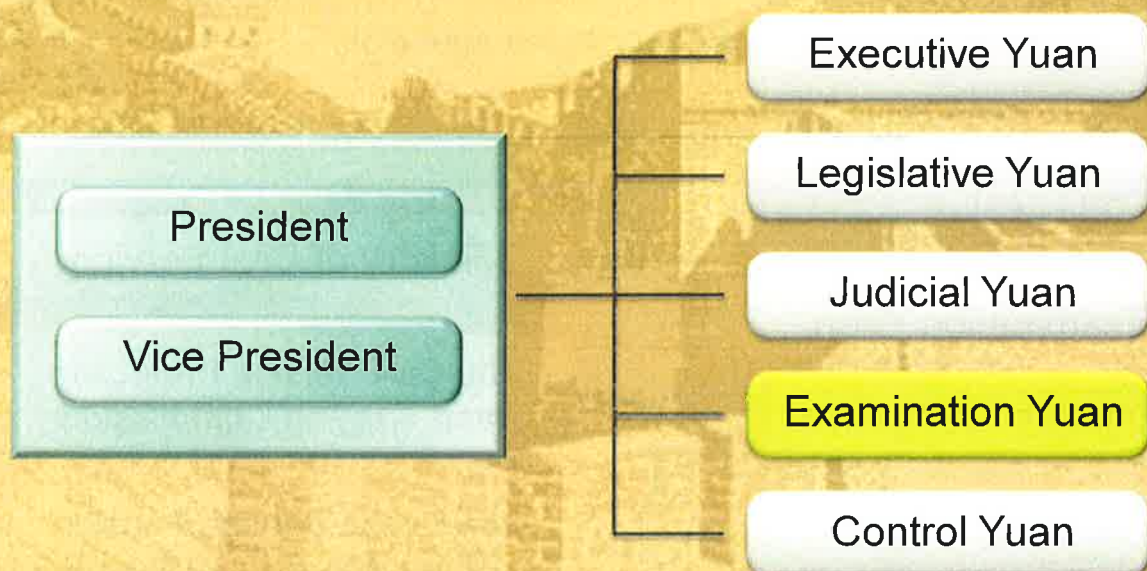
Taiwan's Computerized Test Methods and Applications

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Former Minister without Portfolio, Examination Yuan

23rd Anniversary Conference, National Health Personnel Licensing Examination Board
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The Organization of the Central Government, R.O.C.



* 5 Independent Branches

The Examination Yuan

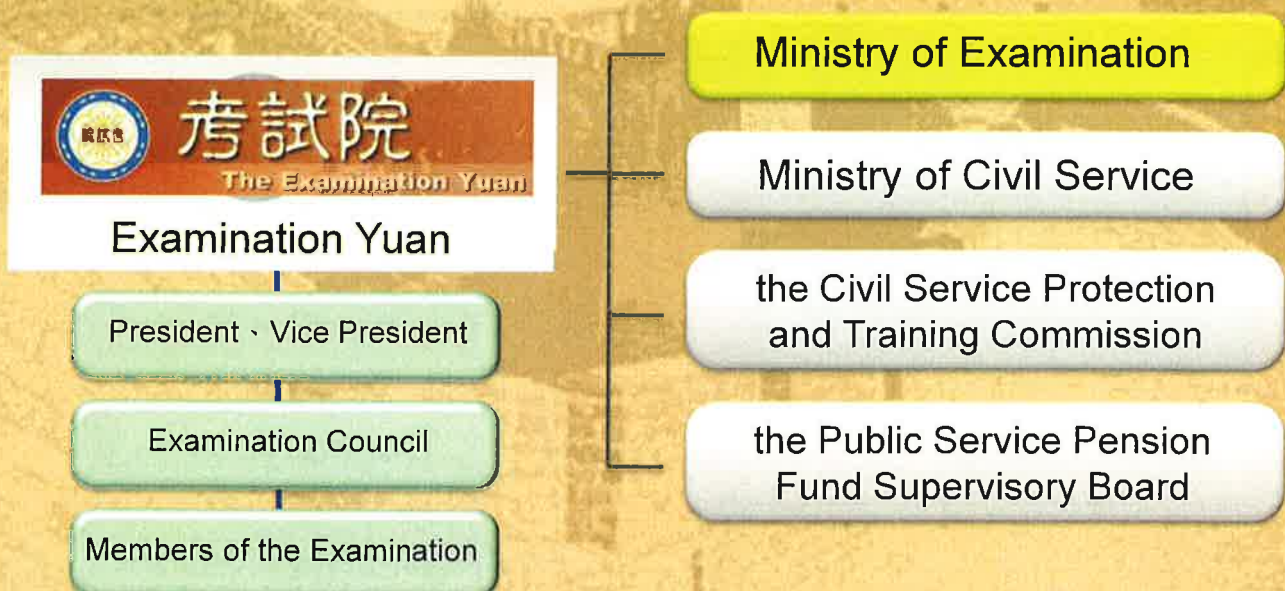


- Examination Yuan (branch), is the highest and independent examination authority.
- Responsible for the examination and management of all civil service personnel.
- Overseeing the certification of all professional and Technical personnel, the practice in professional and technical profession shall be determined and registered through examination by the Examination Yuan.

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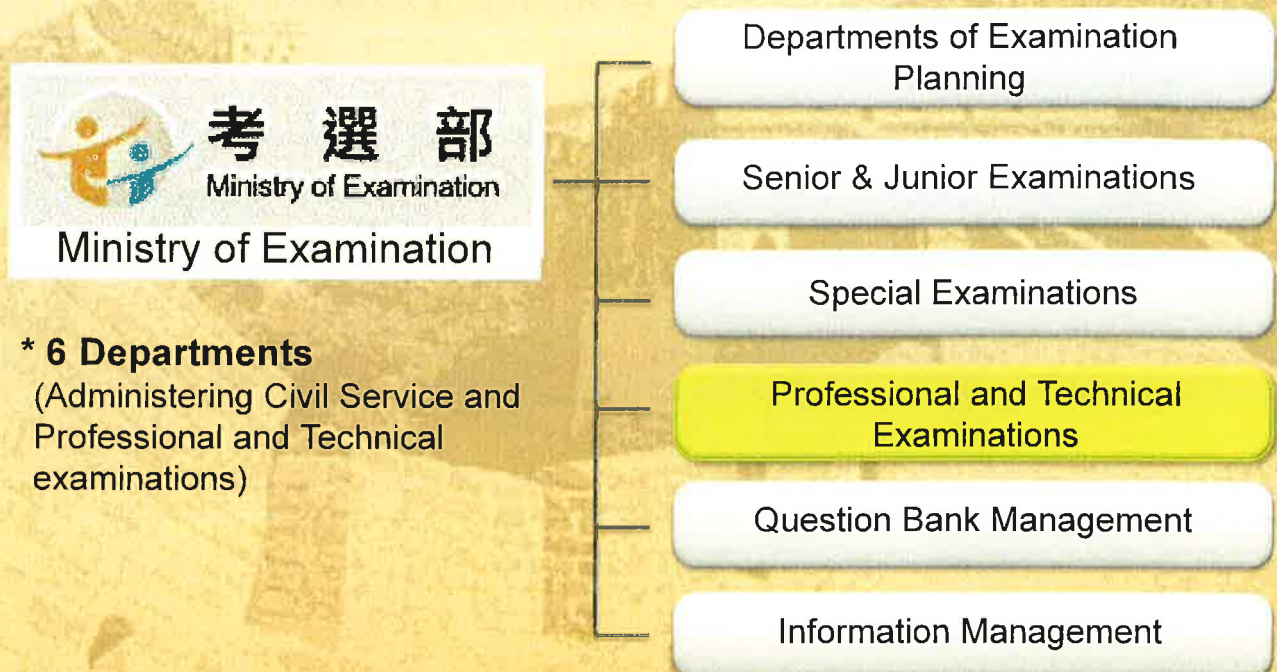
The Organization of the Examination Yuan

The Examination Yuan has 4 subordinate agencies.



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The Organization of the Ministry of Examination



The Examinations for Professional and Technical Personnel

■ Senior Examinations :

- 1) Attorney 、 Certified Public Accountant
- 2) Architect 、 Various Engineer 、 Various Technologist
- 3) Medical Personnel
- 4) Veterinarian
- 5) Social Worker
- 6) Realty Appraiser
- 7) Insurance Personnel
- 8) Forensic Medical Examiner 、 Notary Public
- 9) Ship Surveyor 、 Marine Personnel
- 10) Patent Agent

The Examinations for Professional and Technical Personnel

■ Junior Examinations :

Tour Guide 、 Tour Manager 、 Land Registration Agent 、 Bookkeeper 、
Realtor(Realty Broker) 、 Fire Safety Technician 、 Customs Clearance Agent 、
Insurance Personnel 、 Marine Personnel

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The Examinations for Professional and Technical Personnel

■ Medical Personnel : (17 categories)

- | | |
|-----------------------------------|---------------------------------|
| • Medical doctor | • Chinese medicine practitioner |
| • Dentist | • Clinical psychologist |
| • Pharmacist | • Counseling psychologist |
| • Registered professional nurse | • Respiratory Therapist |
| • Medical technologist | • Dietitian |
| • Medical radiology technologist | • Speech Therapist |
| • Physical therapist | • Audiologist |
| • Occupational therapist | • Dental technologist |
| • Registered professional midwife | |

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Computerized Testing

A. Computer Fixed Test (CFT)

- 1) Simply replace the traditional paper and pencil test into a computerized test administration
- 2) Test delivery method provides the most analogue to paper and pencil testing
- 3) A fixed set of questions, fixed-length, fix-form administered to all examinees without adaptive item selection.
- 4) Allow to review and revise their item responses

B. Computer Adaptive Test (CAT)

- 1) Adapt the test to the examinee's ability level, the question is successively selected to tailor itself to examinee's level of ability
- 2) Different examinees receive quite different tests (Item response theory)
- 3) The ability estimate is updated, based upon all prior answers

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The Advantages of Implementation of Computer Fixed Test

- 1) Heavy examination affairs : Over hundred categories of national examination each year.
- 2) Most of the Professional and Technical examinations are in written test (paper and pencil format) with multiple-choice questions of single-choice answer.
- 3) The paper and pencil test is easily imported into a computerized fixed testing administration software program.
- 4) The computer fixed test is convenient for test preparation, scoring and estimating reliability and validity in comparing with traditional paper and pencil test.
- 5) Elimination of typing , printing, providing, sealing and packing of examination materials, and no need of shipping to various test locations.
- 6) Chaotic sequence of the exam questions and answers for the closely adjacent seats to prevent exam cheating.

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The Advantages of Implementation of Computer Fixed Test

- 7) The facilities and security of computer examination halls and rooms are well evaluated and approved.
- 8) Central surveillance center for drafting test items and monitoring the examination.
- 9) The extensive encryption, restricted access to the test software and protection of password make it impossible to break security in comparing with paper and pencil test.
- 10) The questions and images are easier viewable and more clear and vivid on the computer screen than on the printed copy.
- 11) The answer is recorded directly in the computer response. Scanning answer sheet is eliminated.
- 12) All exam administration and test materials are recorded and stored in computer.

Establishment of Computerized Examination Ministry of Examination

- **2003** Set-up Computerized Examination Hall in the National Examination center (140 seats) .
Client Server – Installation and test of Computer one by one
- **2004** Implementation of marine personnel examination
Web registration 440 seats
- **2007** Dentist 、Registered Professional Midwife 、Occupational Therapist 、Respiratory Therapist 、Veterinarian
- **2009** Set-up online tutorial for practice.
Refinement of computerized examination system (facilities)
Website Server, more efficiency, increase examination seats
Approval of new computerized examination halls, increase 4 halls (north part, middle part, south part of Taiwan)
Set-up central control (surveillance) center in the National Examination Hall
Electronic question bank

Establishment of Computerized Examination Ministry of Examination

- **2013** Increase safety of examination environment.
Increase computerized examination halls
Medical radiology therapist, Physical therapist, Pharmacist, Medical Technologist examinations.
2077 seats increased to 5283 seats
Increase efficiency and reduce costs
- **2015** Medical doctor examination, Total 14 categories
Increase seats to 5602
Provide computerized examinations for 15,400 examinees every year.

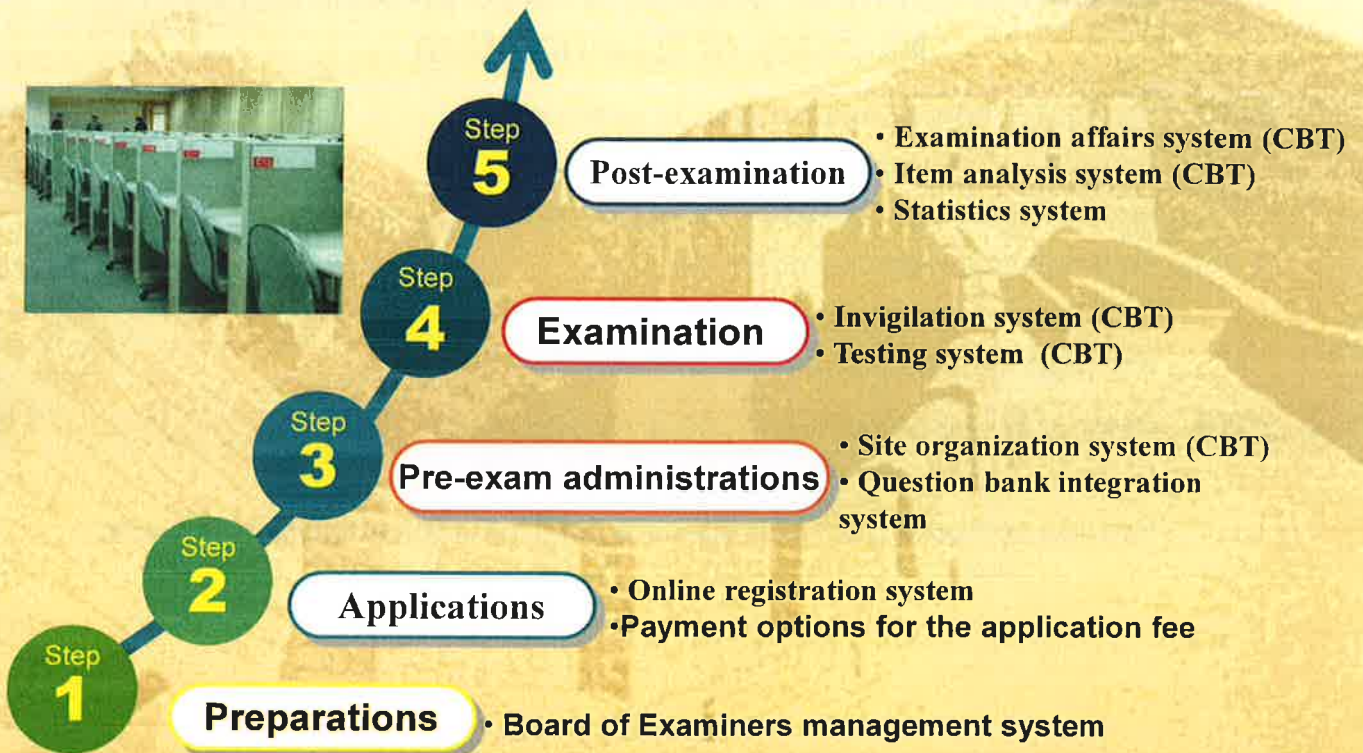
13

Computerized Examination Halls (May, 2014)

Taipei area	4 sites	1546 sears
Taichung area	4 sites	1880 seats
Tainan area	2 sites	739 seats
Kaohsiung area	3sites	1437 seats
Total	13 sites	5602 seats

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Computerization process of the National Examinations



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Testing System

Friendly interface

Immediate test results

Instant notification

Online mock exams

16

Management of accidental events in Computerized examination

- 1) Compensation of delayed time should be given when delayed start of examination due to computer abnormalities, but not due to examinee's reason.
- 2) Additional points shall be given when the computer abnormally interrupts for answers. The additional points shall accord to the duration of delay.
- 3) When the computer screen fails to show the test items clearly, spare seat with normal screen is available or a paper copy of test items shall be available as soon as possible.

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Security and Fraud Prevention: Incident Responses

- ◆ 10%-20% backup seats in case of computer breakdown.



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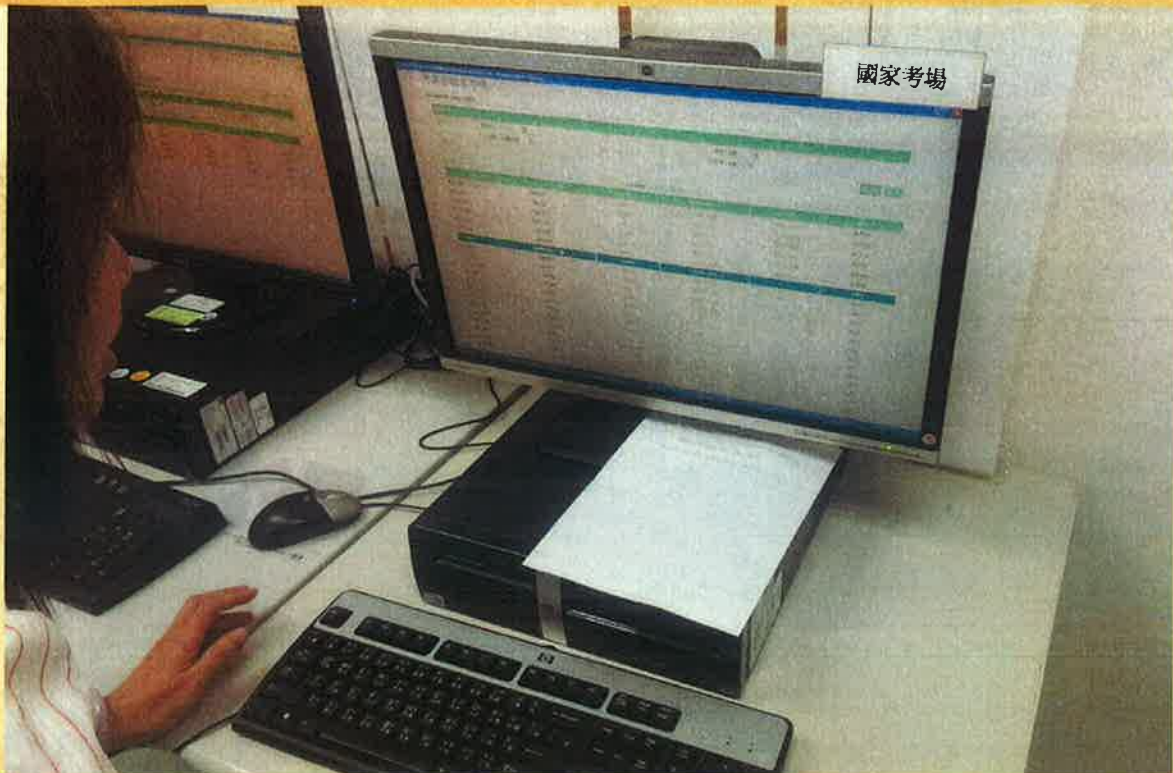


Main Servers in National Examination Hall

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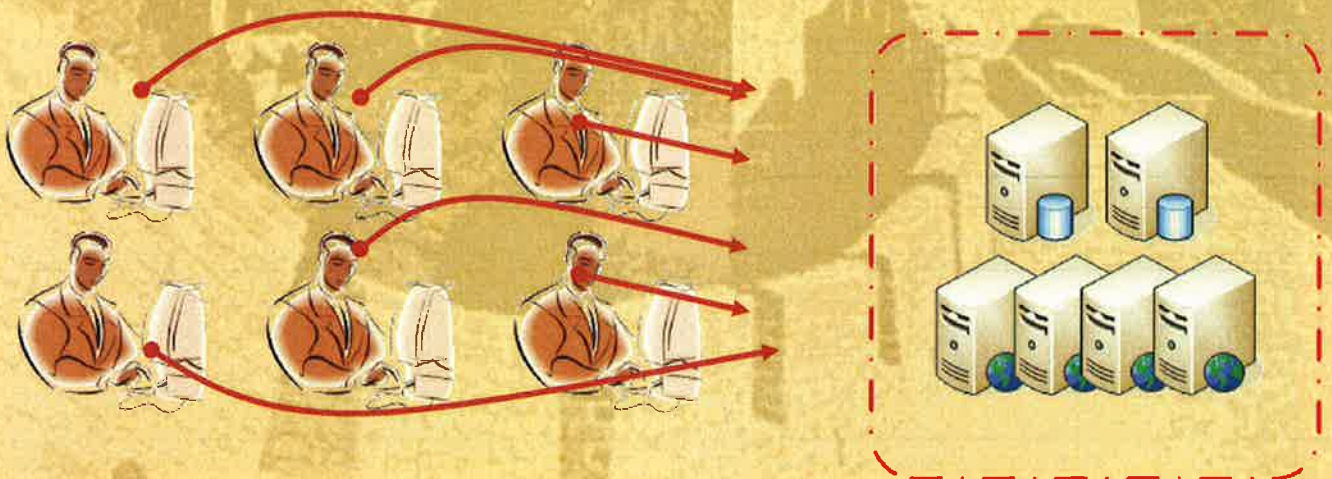


Monitoring National Examination Hall

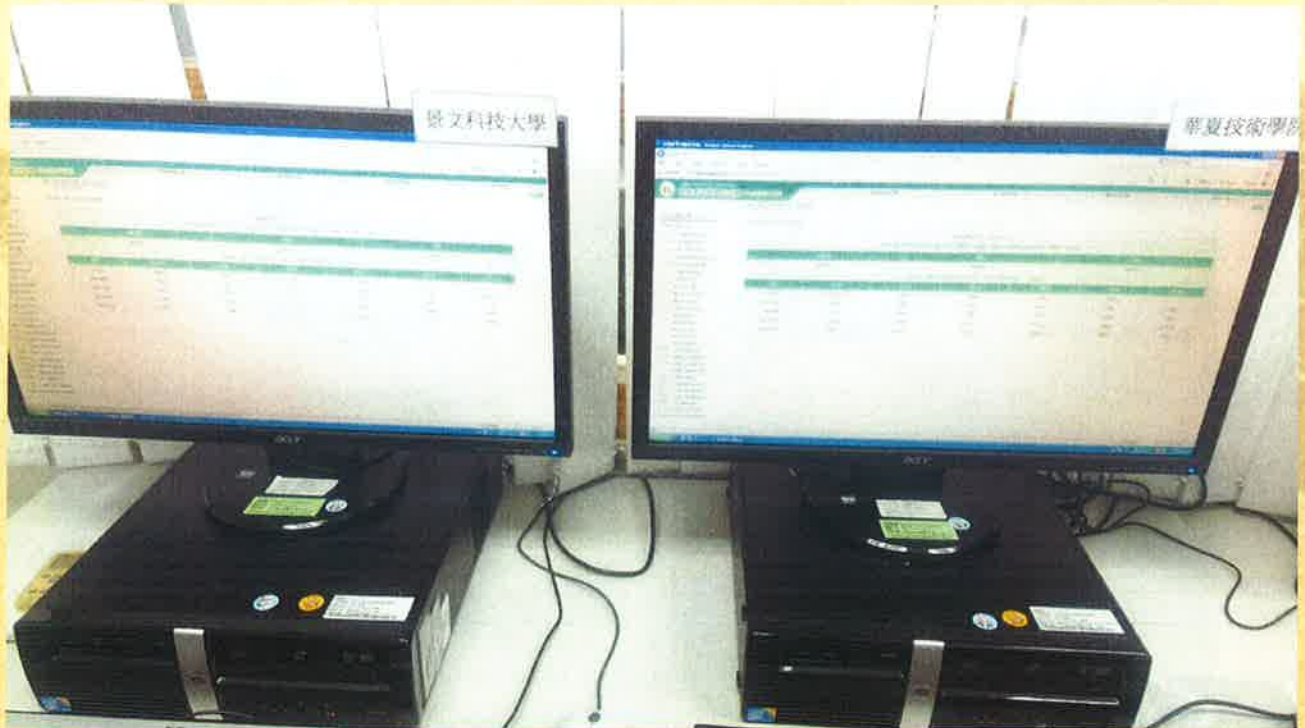
21

Security and Fraud Prevention: Incident Responses

- The server records answers and results in real time for continuous online backup, keeping exam information secure.

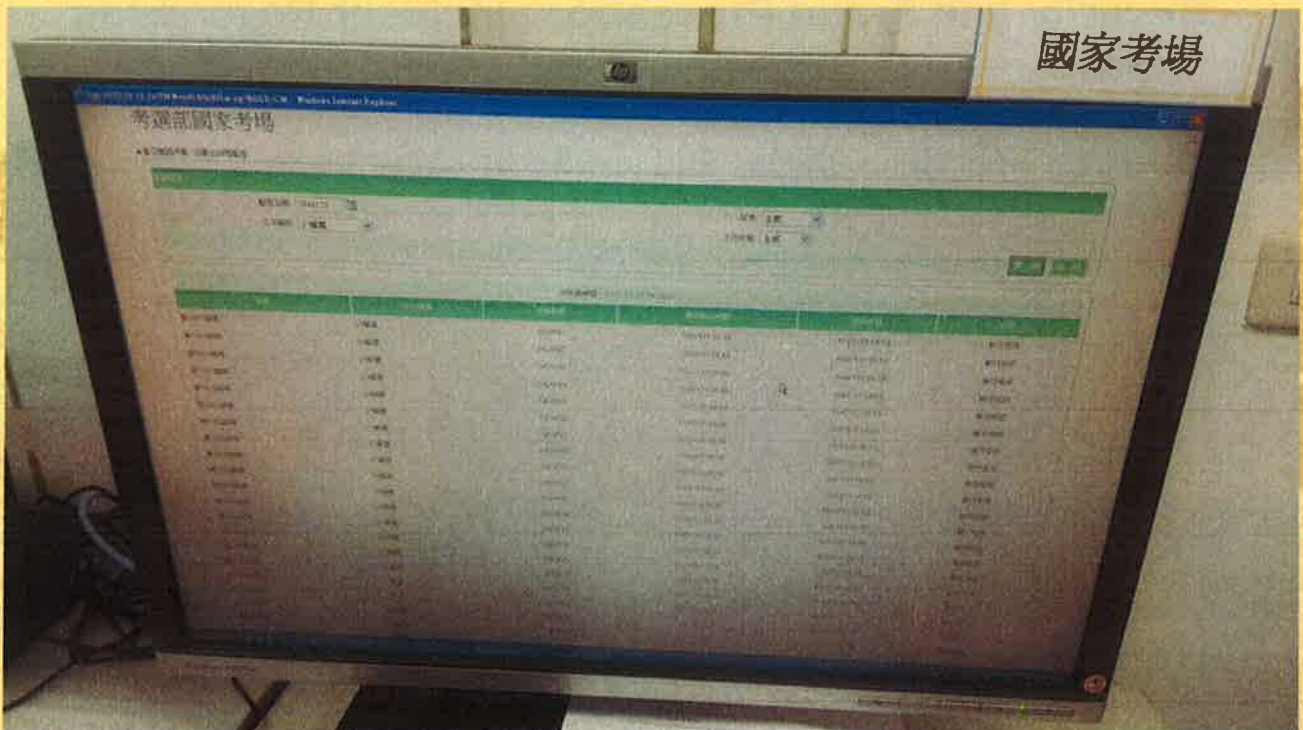


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Monitoring for each examination site

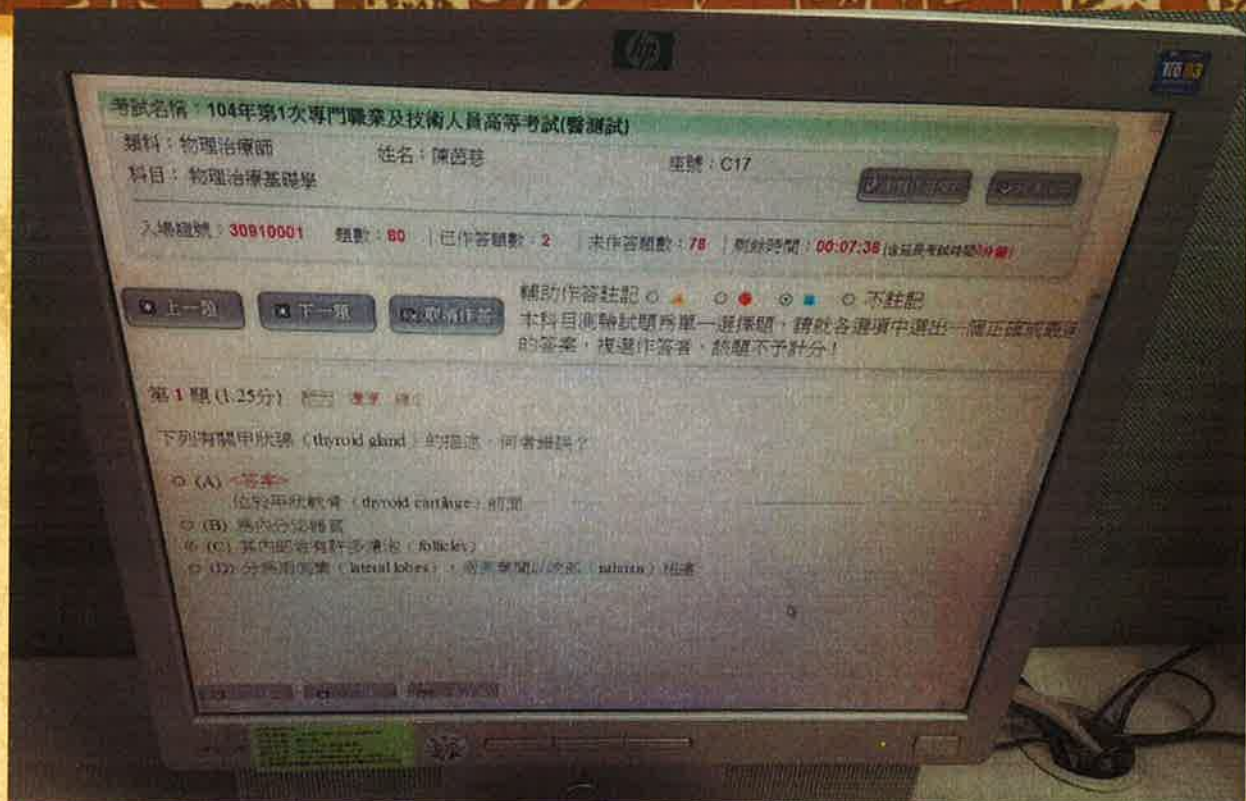
23



Monitoring Examination schedule

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◆ Real time examination monitoring



Showing number of questions answered

Testing System: Friendly Interface

- Multiple-choice questions
- Answer by mouse click
- Table, symbol, color photos
- Friendly interface

考試名稱: 103年第1次專門職業及技術人員高等考試(醫測試)
 類科: 呼吸治療師 姓名: 王0明 座號: F08
 科目: 呼吸治療學

入場證號: 30610001 題數: 80 | 已作答題數: 11 未作答題數: 69 剩餘時間: 00:58:56 (含延長考試時間0分鐘)

輔助作答註記: 本科目測驗試題為單一選擇題, 請就各選項中選出一個正確或最適當。目前在第 [12] 題的答案, 標選作答者, 該題不予計分!

第 12 題 (1.25分) 放大 還原

下列ECG是那一種心律不整?

☐ (A) Paroxysmal supraventricular tachycardia
☐ (B) Ventricular tachycardia
☐ (C) Atrial fibrillation
☐ (D) Ventricular fibrillation

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Testing System: Friendly Interface

考試名稱: 103年第1次專門職業及技術人員高等考試(醫測試)
 類科: 呼吸治療師 姓名: 王0明 座號: F08
 科目: 心肺基礎醫學(包括解剖學、生理學、藥理學)

入場證號: 30610001 題數: 80 | 已作答題數: 11 未作答題數: 69 剩餘時間: 00:55:41 (含延長考試時間0分鐘)

Reminder label

題號	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
答案	A	B	C	D	A	A	B	B	C	D
題號	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
答案	D	B	A	A	C	D				
題號	[21]	[22]	[23]	[24]	[25]	[26]				
答案										
題號	[31]	[32]	[33]	[34]	[35]	[36]	[37]	[38]	[39]	[40]
答案										
題號	[41]	[42]	[43]	[44]	[45]	[46]	[47]	[48]	[49]	[50]
答案										
題號	[51]	[52]	[53]	[54]	[55]	[56]	[57]	[58]	[59]	[60]
答案										

Already answered

Unanswered

There are three labeling marks under the testing system that help examinees quickly identify test questions that need to be reviewed.

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考選部 Ministry of Examination

國家考試電腦化測驗系統

是否於每節考試結束後，顯示該節成績？

是 ☐ 否 ☐

當次考試結束後，顯示各科成績？

是 ☐ 否 ☐

提醒您！

*1.如果選擇不顯示考試成績，事後不得要求補印！

*2.正式考試成績將由考選部於指示後寄發！

確定

Request for showing score or not

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Testing System: Immediate Test Results

- Test results are calculated immediately after each exam session.
- Penalty marks are deducted.
- The official results are posted after the grades have been published.



考選部 Ministry of Examination

國家考試電腦化測驗系統

姓名 王0明
考試名稱 103年第1次專門職業及技術人員高等考試(醫測試)
類科 呼吸治療師
座號 F08
入場證號 30610001

科目	總題數	答對題數	答錯題數	未作答題數	應試結果
心肺基礎醫學	80	40	40	0	50.0000
基礎呼吸治療學	80	80	0	0	100.0000
呼吸治療儀器設備學	80	80	0	0	100.0000
呼吸器原理及應用	80	80	0	0	100.0000
重症呼吸治療學	80	80	0	0	100.0000
呼吸疾病學	80	80	0	0	100.0000

以上成績結果僅供參考。

正式成績以標示後考選部寄發之成績及結果通知書為準。

結束成績顯示

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Testing System: Immediate Test Results

◆ Examinees can select whether or not to display results

1st

考選部 Ministry of Examination
國家考試電腦化測驗系統

姓名: 王明
考試名稱: 103年第1次專門職業及技術人員高等考試(醫測試)
類科: 呼吸治療師
座號: F08
入場證號: 30610001

all

科目	總題數	答對題數	答錯題數	未作答題數	應試結果
心肺基礎醫學	80	40	40	0	50.0000
基礎呼吸治療學	80	80	0	0	100.0000
呼吸治療儀器與學	80	80	0	0	100.0000
呼吸器原理及應用	80	80	0	0	100.0000
重症呼吸治療學	80	80	0	0	100.0000
呼吸疾病學	80	80	0	0	100.0000

以上成績結果僅供參考。
正式成績請以本系統考場顯示之成績及結果通知書為準。

結束成績顯示

6th

考選部 Ministry of Examination
國家考試電腦化測驗系統

姓名: 王明
考試名稱: 103年第1次專門職業及技術人員高等考試(醫測試)
類科: 呼吸治療師
座號: F08
入場證號: 30610001

是

科目	總題數	答對題數	答錯題數	未作答題數	應試結果
呼吸疾病學	80	80	0	0	100.0000

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Testing System: Instant Notification

◆ Examinees are alerted in real time

考試名稱: 103年第1次專門職業及技術人員高等考試(醫測試)

類科: 呼吸治療師 姓名: 王明 座號: F08

科目: 呼吸疾病學

入場證號: 30610001 題數: 80 已作答題數: 80 未作答題數: 0 剩餘時間: 00:40:22 (含延長考試時間0分鐘)

重要訊息

COPD病人有時會自我發展出一種特殊的呼吸模式，病人吐氣時會縮小嘴唇，鼓起雙頰，慢慢把氣吐出，這種呼吸模式，稱之為什麼？

A. Pursed-lip breathing
B. Kussmaul's respiration
C. Periodical respiration
D. Paradoxical respiration

修正題目

輔助作答註記: 本科目測驗試題為單一選擇題，請就各選項中選出一個正確或最適當 的答案，複選作答者，該題不予計分！

第1題 (1.25分) 放大 還原 縮小

COPD病人有時會自我發展出一種特殊的呼吸模式，病人吐氣時會縮小嘴唇，鼓起雙頰，慢慢把氣吐出，這種呼吸模式，稱之為什麼？

(A) Paradoxical respiration
(B) Periodical respiration
(C) Kussmaul's respiration
(D) Pursed-lip breathing

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Testing System: Online Mock Exams

◆ <http://www.moex.gov.tw>

考試名稱：考選部電腦化測驗模擬考試

類科：藥師 姓名：應考人小姐 座號：A01

科目：綜合科目

入場證號：10100001 題數：80 已作答題數：0 未作答題數：80 剩餘時間：00:59:03 (含延長考試時間0分鐘)

輔助作答註記 ☐ 不註記

本科目測驗試題為單一選擇題，請就各選項中選出一個正確或最適當的答案，複選作答者，該題不予計分！

第1題 (125分) 放大 還原

Aspirin ($pK_a = 3.5$) 為一弱酸性藥物，有一孩童誤服此藥過量中毒時，則下列敘述何者正確？

☐ (A) 胃中之游離態aspirin比小腸中多

☐ (B) 胃中之游離態aspirin比血液中多

☐ (C) 可給予 NH_4Cl 以加速aspirin由尿中排除

☐ (D) 可給予 $NaHCO_3$ 以加速aspirin由尿中排除

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Testing System: Online Mock Exams

◆ <http://www.moex.gov.tw>

Flash for introducing the attention events and interface of testing system

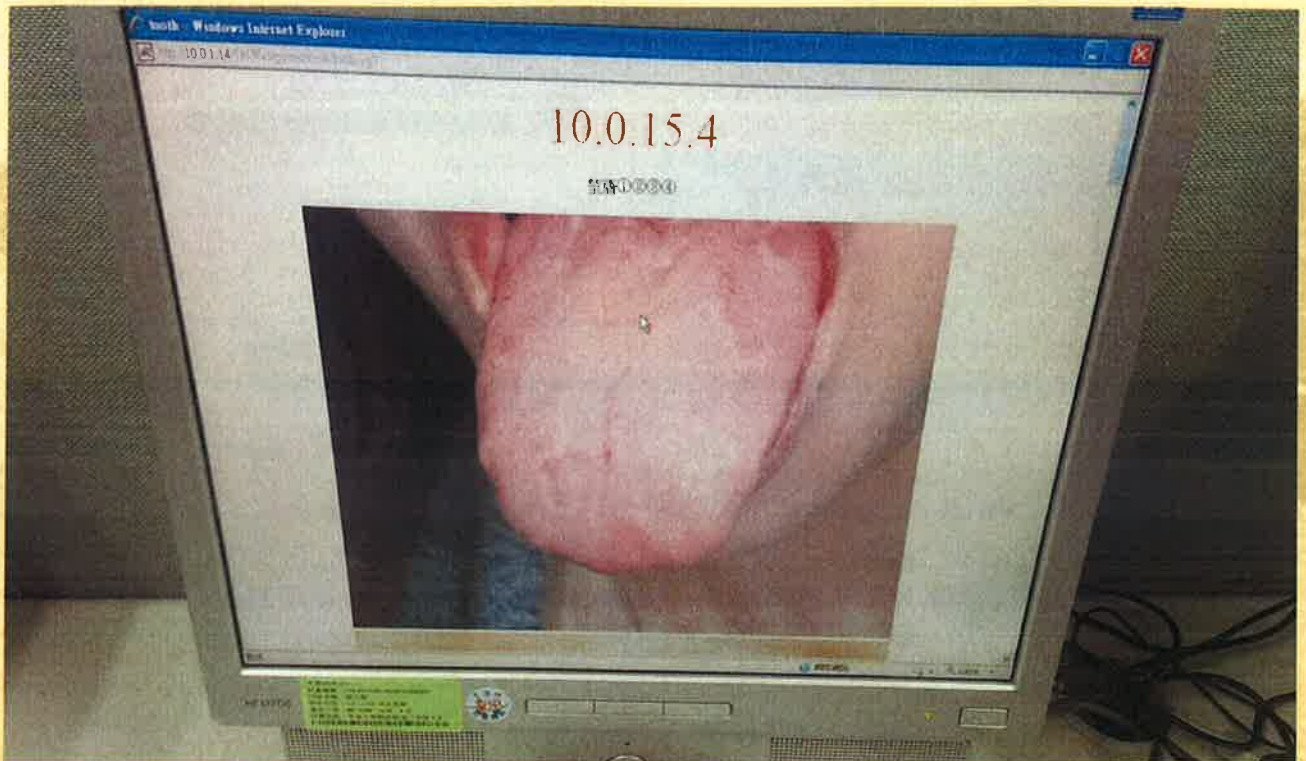
遲到違規之處置

(1) 應考人應於每節考試預備鈴聲響時依座號就座，並準時應試。規定考試時間開始後，每天第一節15分鐘內，其餘各節3分鐘內，得准入場應試，逾時不得應試。但持有身心障礙手冊或證明，且經考選部核准之身心障礙應考人，每節考試開始15分鐘內，得准入場應試，逾時不得應試。

若選於「當次考試結束後，顯示各科成績」選項中點選「是」，則於最後一節考試結束後，顯示所有科目成績。

科目	選擇題	非選擇題	合計	備註
國文	30	10	40	30.0000
數學	40	10	50	17.5000
自然	40	10	50	17.5000
社會	40	10	50	17.5000
英語	40	10	50	17.5000
合計	200	50	250	85.0000

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Tongue appearance

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X-ray Image

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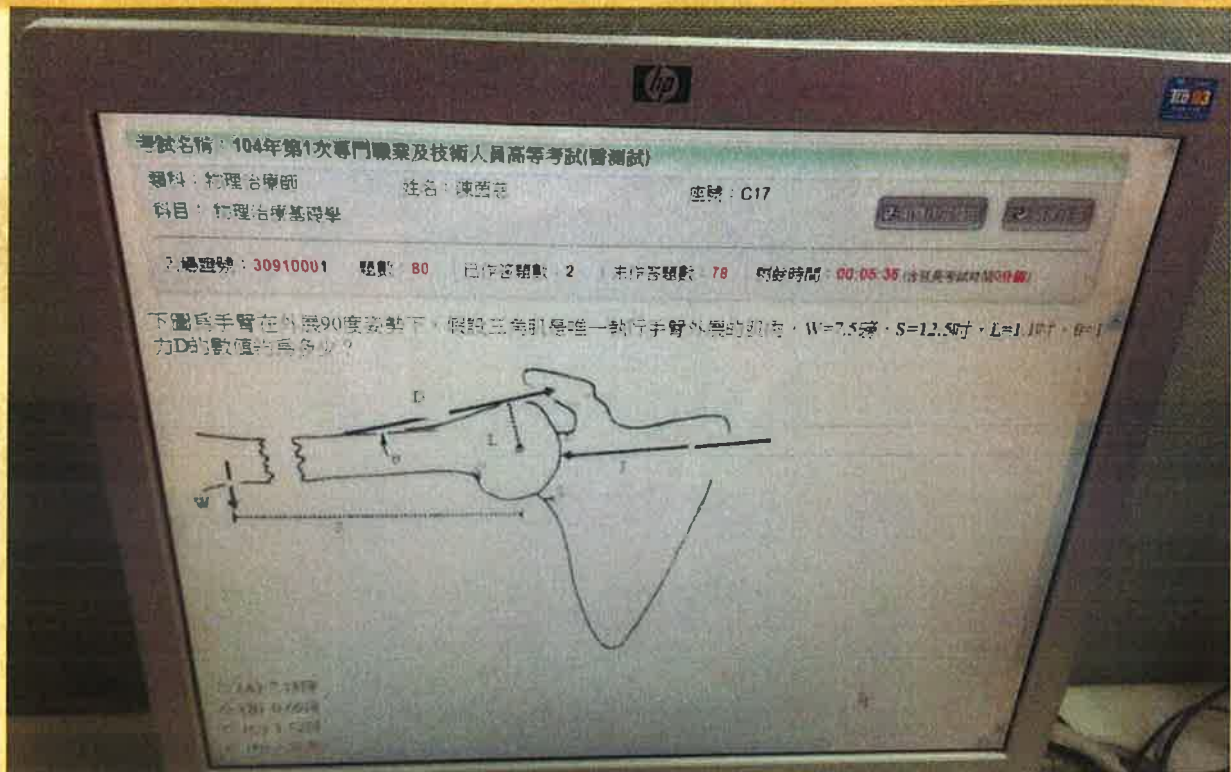


Image magnification

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Approval of Computer Examination Hall
 Pu-Yin University of Science and Technology (South Taiwan)

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Kun-Sun University of Science and Technology (South Taiwan)

39



Hwa-Hsia University of Technology (New Taipei City)

40

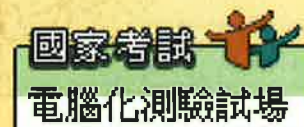
Characteristics of CBT: Computerized Examination Site Certification



Site certification logo

Strict qualification procedures :

- Public announcement
- Applications accepted
- Preliminary evaluation
- Onsite evaluation
- System building and HR training
- Onsite review

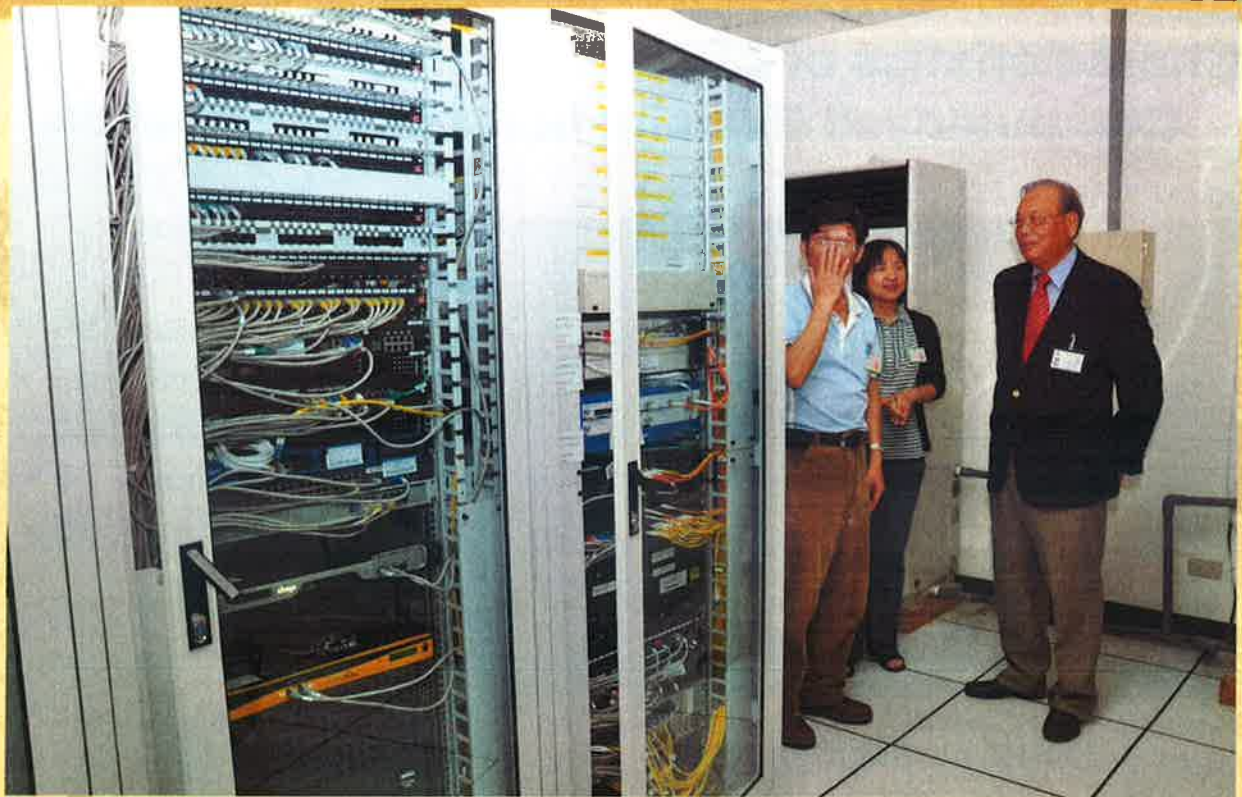


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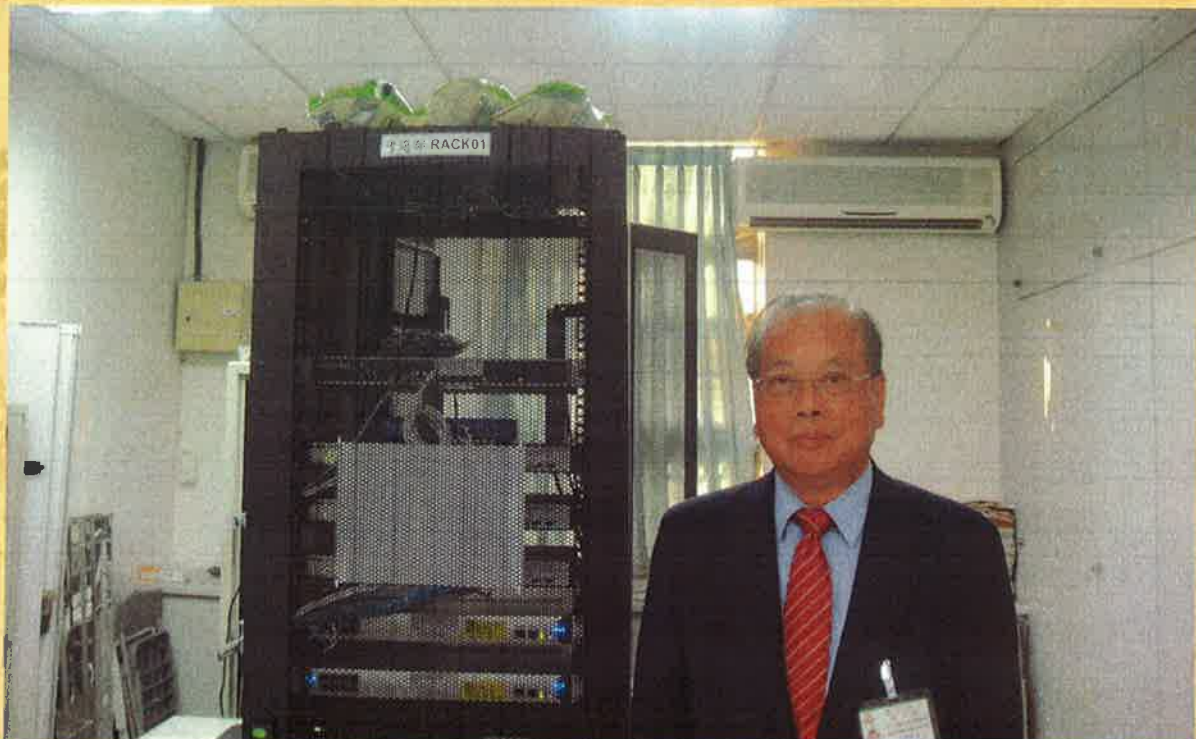
Simple Examination Administration

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Computer Facilities (Server)

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Cookies on the Server to guarantee the security and well function of the server

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Computerized Examination Room
Exam seats without isolation plate rack

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Chaotic sequence of the exam questions and answers to prevent exam cheating for the closely adjacent seats.

46



Computerized Examination Room
Exam seats with isolation plate rack

47



Wheel Chair Ramp for disabled examinee

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TAIPEI NIGHT

Photo by JOE 2004-11-04

**Thank you for your
attention**

A nighttime photograph of the Taipei skyline. The Taipei 101 skyscraper is the central focus on the left side, illuminated with blue and white lights. The rest of the city is a dense collection of smaller buildings, mostly lit with warm yellow and orange lights. The sky is a deep blue, suggesting twilight. The overall scene is a panoramic view from an elevated position.

二、活動照片集錦



韓國延世大學臨床模擬中心模擬教室



高名譽理事長明見與韓國延世大學醫學院 Chung, Hyun-Soo 教授（左）合影



韓國國會議員 Moon, Jeong-Lim 女士於全球保健專業評鑑制度研討會開幕致詞



NHPLEB 執行長 Chung, Myung-Hyun 先生致歡迎詞



全球保健專業評鑑制度研討會開幕合影



高名譽理事長明見向美國 Stapleton 教授提問



高名譽理事長明見與澳洲 Doherty 教授（右）、韓國 Ahn, Ducksun 教授（左）
交換意見



全球保健專業評鑑制度研討會閉幕合影