國立臺中教育大學 104 學年度教師專業碩士學位學程招生考試
英文試題

I. Vocabulary (20%)

1. Apple Watch, in combination with the iPhone, can be a key **conduit** for two-way delivery of health care information, sending data about a person's metabolism to researchers while also reminding wearers to take their medicine or go exercise.
   (A) medium
   (B) message
   (C) member
   (D) memory

2. Some Hawaii residents have been suffering from **respiratory** and other chronic diseases after long-term exposure to the spread of chemicals sprayed on the herbicide and pesticide resistant crop developed by agrochemical firms over the past few years.
   (A) rescue
   (B) breathing
   (C) illness
   (D) recreation

3. Syrian troops and pro-government militias launched an **offensive** last month in an attempt to besiege rebel-held parts of Aleppo.
   (A) defensive
   (B) opening
   (C) attack
   (D) intensive

4. Millet was actually Asia's **staple** grain before rice more than 10,000 years ago.
   (A) rich
   (B) small
   (C) better
   (D) main

5. Dogs are better able to complete certain tasks than their ancestor, the grey wolf, even when the wolf is brought up in a **domesticated** setting.
   (A) wild
   (B) housebroken
   (C) natural
   (D) similar

6. Some body fat is essential to stay healthy, with a range **stretching** up to 25 percent of body weight for women and around 15 percent for men.
   (A) reaching
   (B) springing
   (C) amazing
   (D) searching

7. It is **imperative** that no matter whom you interact with, you must act with the utmost professionalism.
   (A) important
   (B) impressive
   (C) impossible
   (D) imagining

8. Studies have shown that taking time off from work can improve **cardiovascular** health, mental health, and sleep patterns.
   (A) physical
   (B) heart
   (C) lung
   (D) mind

9. Based on your experience and good work **ethic** you will be assigned specific position to manage some works of the organization.
   (A) partner
   (B) principle
   (C) relationship
   (D) environment

10. Joining an **apprenticeship** program will help a person to get the necessary skills to get this job.
    (A) internship
    (B) intensive
    (C) interesting
    (D) individual

II. Grammar (20%)

11. Greenhouse gases (GHGs) are causing global warming, _____ rising sea level and climate change.
    (A) ascribing to
    (B) attributing to

(C) resulting in

(D) causing to

12. Hence, the Conferences of the Parties to the UN Framework Convention on Climate Change have set up the mechanism of _____ greenhouse gases emissions.

(A) reducing

(B) reduction

(C) to reduce

(D) reduce

13. All nations have shown their resolve to expect to reduce the amount of GHGs to 17% _____ 40% of the levels of previous years.

(A) in

(B) to

(C) of

(D) at

14. In recent years, _____ increasing number of Taiwanese students who studied abroad has chosen to study in Hong Kong due to two major appealing reasons as internationalization and cheaper tuitions than those in the US.

(A) a

(B) the

(C) these

(D) an

15. In Hong Kong, classes are a constant collision of cultures, which the divergence of opinions _____ encountered. Besides, college is to equip students with adaptability for future job market and functional knowledge.

(A) can

(B) be

(C) is

(D) meet

16. International society has been keeping an eye _____ the long-muted country, Myanmar, these recent years since its liberalization began due to its abundant natural resources (petroleum, natural gas, and minerals), low labor cost, and low crime rates.

(A) of

(B) on

(C) with

(D) at

17. However, the law of the jungle of doing business in Myanmar can be incomprehensible for outsiders, and there are many tricks for the trade. Numerous Taiwan-based businesspeople in Myanmar, who are known for their adventure spirit, _____ knocking around.
   (A) have been
   (B) has been
   (C) will have been
   (D) being

18. _____ from October 2, 2012, Taiwan has been accorded visa-free courteous by the US after a screening of high threshold including the country's records in illegal immigration, illegal employment, passport forgery, and border control.
   (A) Coming
   (B) Since
   (C) Begin
   (D) Starting

19. However, the fact that Taiwan has no official diplomatic tie with the US but being granted visa-free treatment _____ that Taiwanese passport holders could benefit from indirect official protection and endorsement of their travel documents.
   (A) introduce
   (B) implies
   (C) simplifies
   (D) meaning

20. Prices for daily consumer products in Taiwan are relatively high. Plus, prices for residential housing or real estate have even _____ 10 times in the past two years, leading to the Government's measures to slow down the rise in housing prices.
   (A) doubled
   (B) remained
   (C) skyrocketed
   (D) stood

III. Cloze (20%)

The fact __21__ syllables are important units is __22__ by the history of writing. Many writing systems have one symbol for each syllable, a well-known present-day example __23__ Japanese. But only once in the history of mankind __24__ anybody __25__ an alphabetic writing system __26__ syllables were systematically __27__ their components. About three thousand years ago, the Greeks modified the Semitic

syllabary __28__ represent consonants and vowels by separate symbols. It seems that everybody finds syllables comparatively easy units to __29__. But people who have not been educated in an alphabetic writing system find it much more difficult to consider syllables __30__ made up of segments.

21. (A) why   (B) that   (C) of   (D) in which
22. (A) executed   (B) caused   (C) painted   (D) illustrated
23. (A) that is   (B) was   (C) being   (D) is
24. (A) why   (B) has   (C) because   (D) is
25. (A) devised   (B) divided   (C) deducted   (D) duplicated
26. (A) why   (B) because   (C) in which   (D) when
27. (A) divided by   (B) invented by   (C) taken by   (D) split into
28. (A) due to   (B) so as to   (C) thus   (D) owing to
29. (A) teach   (B) feel   (C) write   (D) identify
30. (A) as being   (B) for being   (C) as to   (D) in order to

IV. Reading Comprehension (20%)

Music was an important ingredient in the lives of Americans at the end of the nineteenth century. From formal concerts and balls to weddings, funerals, and holiday fairs, music was an important part of everyone's life. At that time, in African American communities, music was a means of expressing joy, of taking pleasures, within a broader context of repression and confinement. At the end of the nineteenth century in America, folk music could be found in every state. However, it was in New Orleans that a new folk music known as jazz started to flourish. A defining mark of this New Orleans jazz was an ensemble of musicians **improvising** their notes in changing chords around a specific melodic line. This **improvising** music within the constrains of a common agreement upon melody requires a highly developed musical sense and also a familiarity with the musical thinking of one's companions. The new folk music is a community effort with a high degree of individualism.

31. What is the main idea of the passage?
   (A) life ingredients
   (B) jazz in New Orleans
   (C) American ball games
   (D) history of the African Americans

32. What main points might be included in the following paragraphs?
   (A) Music in Africa
   (B) Types of classical music

(C) Musicians of pop music

(D) History of American jazz

33. What does the word **improvising** mean in the above passage?

(A) Compose music while playing

(B) Playing music while singing

(C) Tune up the instruments before playing

(D) Hum music while thinking

34. According to the passage, what type of persons suits playing at a jazz ensemble?

(A) A soloist who is more used to playing alone

(B) A musician who is easily tuned to others

(C) A violinist who is able to strictly follow the scores

(D) A conductor of a classical orchestra

35. Why was the music important to the lives of African Americans in the 19th century?

(A) Because music was a means of gaining fames and money for African Americans at that time.

(B) Because African Americans were born to be talented singers and musicians.

(C) Because African Americans were prone to being lazy and taking pleasures.

(D) Because music was a means of expressing joy within a broader context of repression and confinement.

There is a theory widely believed by students of history that geography determines history. This can be applied to the development of technology and its effects on cultures. As with animals, humans were first hunters and gatherers. They hunted animals for food and clothing. They gathered wild plants for food, clothing, weapons and building materials. When an area no longer had the animals to hunt and the plants to gather, humans had to move to another location.

Humans certainly understood that one man without weapons had little chance against most animals, so they had to use their biggest advantage, their brains. As humans developed better weapons by using rocks, teeth and claws from animals, and sharpened wood and stone, they became more efficient hunters and less likely to starve to death. The discovery of metal in certain locations gave humans from that area an even stronger advantage over animals and also over other humans who didn't have the technology. Other things being equal, armies armed with bronze weapons could defeat armies with stone weapons. Armies with iron weapons could defeat armies with bronze weapons and armies with steel weapons could defeat armies with iron weapons. Each advance in technology changed the balance of power.

The discovery of metals also helped agriculture. Sharper and harder tools helped plant the seeds and harvest the crops. Planting and harvesting allowed humans to abandon the hunter-gatherer life style and settle in one place for long periods of time. The old divisions of labor had been men were the hunters and women were the gatherers. Now with farming, the whole family helped. While the hunter-gatherer life style could support only limited numbers of people, farming required many people, and large families became helpful even necessary.

Farming areas vary widely too in terms of rainfall, soil, temperature and the types of crops that can be grown. Farmers in favorable areas could grow a lot more crops. More crops can feed more people who then yield more workers and also larger armies. Some areas don't allow for much agriculture so the people do other things such as herding to survive. Herder populations are smaller but hardier since life is harder.

Farming also led to a surplus of food which could be traded for other things. This led to the rise of villages and then cities with markets. Trade is made easier by certain geographic locations such as on rivers or on the seacoast. So, people who turned to farming earlier than their neighbors would develop a larger population, have more goods to trade, and become wealthier. This would give them an advantage over their neighbors in any war or economic competition.

36. What thing gave men the biggest advantage over animals?
    (A) the discovery of metal
    (B) weapons of rock and bone and sharpened wood and bone
    (C) superior intelligence
    (D) living in certain locations

37. Why is a surplus of food important?
    (A) People could leave the hunter-gatherer life style.
    (B) It gives opportunities for trade.
    (C) People don't have to move from place to place.
    (D) Weather is not very important.

38. The passage implies that battle and wars are won by…
    (A) better technology
    (B) better fed soldiers
    (C) armies with more soldiers
    (D) geographical location

39. What is the main idea of this passage?
    (A) Farming is better than hunting.
    (B) Using metal was a great advantage for humans.

(C) Farming leads to the rise of villages and cities.

(D) Where people live determines their lives.

40. What is the greatest advantage that geography can give?

(A) more animals to hunt

(B) metal to be used for technology

(C) locations on rivers or sea coasts

(D) no nearby enemies

V. Writing (20%)

Please write a short essay in English explaining why you would like to become a teacher.

國立臺中教育大學 104 學年度教師專業碩士學位學程招生考試

國文試題

一、選擇題（46%，每題 2%）

1、下列哪一項區別性特徵可用來區分「機」與「妻」的聲母？
    (A)清濁
    (B)摩擦
    (C)送氣
    (D)聲帶振動

2、下列哪一組中的聲母發音方法（塞音、塞擦音、擦音、鼻音、邊音）不同？
    (A)兔、戶
    (B)福、弧
    (C)思、析
    (D)逆、幕

3、下列選項何者用字正確？
    (A)唾手可得
    (B)歸根究柢
    (C)平添鄉愁
    (D)應接不遐

4、下列何者並未使用譬喻修辭？
    (A)多情卻似總無情
    (B)世事浮雲何足問
    (C)日子是石塊／砌深了井圍
    (D)只有翅翼／而無身軀的鳥／在哭與笑之間／不斷飛翔

5、下列各選項「」中的文字，何者不屬於「借代」？
    (A)放眼校園「哈台」不少。（哈台指胖子）
    (B)「黃巾」為害，萍浮南北。（黃巾指黃巾賊）
    (C)老人家吃了中飯就「車馬炮」。（車馬炮指象棋）
    (D)生若有，雞酒香；生若無，「四塊板」。（四塊板指死亡）

6、下列題辭何者用於祝壽？
    (A)功深澤遠
    (B)齒德俱尊
    (C)設帨徵祥
    (D)鳳振高岡

7、下列各選項的對聯，何者適用場所錯誤？
    (A)養心莫善寡欲，溫故乃能知新。（書房）
    (B)聚來千畝雪，化作萬家春。（棉花店）
    (C)必有事焉，然後敢入；其為氣也，惟恐又聞。（廚房）
    (D)風落孟嘉，不妨捨舊；雨逢郭泰，大好更新。（帽店）

8、「懼匏瓜之徒懸兮，畏□□□□□。」（〈登樓賦〉）□□□□□應填入下列哪一個選項？
    (A)王道之難行
    (B)井渫之莫食
    (C)江山之孌佞
    (D)浮雲之蔽日

9、「越有魄力的作家，越是要帶著腳鐐跳舞才跳得痛快，跳得好。」此主張強調新詩文采聲情等格律，提出者是誰？
    (A)嘗試期詩人劉半農
    (B)新月派詩人聞一多
    (C)象徵派詩人戴望舒
    (D)現代派詩人鄭愁予

10、下列作家與其作品的組合，何者有誤？
    (A)王文興—《家變》
    (B)張愛玲—《半生緣》
    (C)陳映真—《相思月娘》
    (D)白先勇—《樹猶如此》

11、有關古詩十九首的敘述，哪些是正確的？
    （甲）東漢前期五言詩之冠冕
    （乙）大率逐臣棄妻，朋友闊絕，死生新故之感

（丙）言情不盡，清和平遠，是其特色

（丁）以敘事詩為主體

(A)甲乙

(B)乙丙

(C)丙丁

(D)甲丁

12、下列文學常識的敘述，何者錯誤？

(A)駢體文重視音韻和對仗，堪稱我國文學美感的代表文體之一。

(B)宋詞在寫作上並不太注重平仄，平仄互換的情況明顯，寫作上比近體詩
容易。

(C)晚明小品文重視個人生活情趣的描寫，因此篇章大多短小，文字流利。

(D)臺灣越來越多作家關懷鄉土，寫了很多對於土地家鄉的事蹟，使人讀來
倍感親切。

13、「臺灣無文也，斯庵來而始有文矣。」（《諸羅志・藝文志》）謂「斯庵」是中
國文化在臺灣的第一個傳播者，也被譽為「臺灣古典文學之祖」。所謂「斯庵」
指的是下列何人？

(A)鄭成功

(B)洪棄生

(C)丘逢甲

(D)沈光文

14、下列選項「」中的詞語，何者不適合用來形容人非常生氣的樣子？

(A)眾將聽說劉禪已投降，個個「咬牙切齒」，拔刀砍石。

(B)看完那部有關日本侵略中國的紀錄片，大家無不「動心駭目」。

(C)「怒髮衝冠」，憑欄處，瀟瀟雨歇。抬望眼，仰天長嘯，壯懷激烈。

(D)他聽到這個壞消息後，僵立在原地，「目眥盡裂」，全身不停的顫抖。

15、「其一無所不取以交于上官，子吏卒而賓富民，則不待三年，舉而任諸綱紀
之司，雖百姓亦稱其善，不亦怪哉！」（劉基《郁離子・蜀賈》）其中「子吏
卒」是什麼意思？

(A)你的吏卒

(B)兒子是吏卒

(C)對待吏卒如兒子

(D)把兒子當成吏卒

16、「東陽馬生君則，在太學已二年，流輩甚稱其賢。」(宋濂〈送東陽馬生序〉)
其中「流輩」是什麼意思？
(A)長輩
(B)同輩
(C)晚輩
(D)不分輩分

17、「蓋儒者所爭，尤在於名實。名實已明，而天下之理得矣。今君實所以見教
者，以為侵官、生事、征利、拒諫，以致天下怨謗也。某則以謂受命於人主，
議法度而修之於朝廷，以授之於有司，不為侵官；舉先王之政，以興利除弊，
不為生事；為天下理財，不為征利；辟邪說，難壬人，不為拒諫。至於怨誹
之多，則固前知其如此也。人習於苟且非一日，士大夫多以不恤國事、同俗、
自媚於眾為善，上乃欲變此，而某不量敵之眾寡，欲出力助上以抗之，則眾
何為而不洶洶然？」(王安石〈答司馬諫議書〉)
下列選項何者錯誤？
(A)「上」乃欲變此(「上」指皇上)
(B)而「某」不量敵之眾寡(「某」指王安石)
(C)難「壬人」不為拒諫(「壬人」指奸佞之人)
(D)今「君實」所以見教者(「君」指你，實指真心實在)

18、「未幾，賈餘慶等以祈請使詣北。北驅予並往，而不在使者之目。予分當引
決，然而隱忍以行。昔人云：「將以有為也。」至京口，得間奔真州，即具以
北虛實告東西二閫，約以連兵大舉。中興機會，庶幾在此。」(文天祥《指南
錄‧後序》)下列選項對詞義的解說，何者錯誤？
(A)得「間」奔真州(「間」指空隙)
(B)不在使者之「目」(「目」指眼中)
(C)予分當「引決」(「引決」指自殺)
(D)賈餘慶等以祈請使「詣」北(「詣」指前往)

※請閱讀下列短文後，回答第 19-20 題

萬曆間，宮中有鼠，大與貓等，為害甚劇。偏求民間佳貓捕制之，輒被啗食。
適異國來貢獅貓，毛白如雪。抱投鼠屋，闔其扉，潛窺之。貓蹲良久，鼠逡巡自
穴中出，見貓，怒奔之。貓避登几上，鼠亦登，貓則躍下。如此往復，不啻百次。
眾咸謂貓怯，以為是無能為者。既而鼠跳擲漸遲，碩腹似喘，蹲地上少休。貓即
疾下，爪掬頂毛，口齕首領，輾轉爭持，貓聲嗚嗚，鼠聲啾啾。啟扉急視，則鼠

首已嚼碎矣。然後知貓之避，非怯也，待其惰也。「彼出則歸，彼歸則復」，用此智耳。噫！匹夫按劍，何異鼠乎！（蒲松齡〈大鼠〉）

19、文末云：「匹夫按劍，何異鼠乎！」可知作者有意批判什麼？
(A)暴虎馮河
(B)虛張聲勢
(C)以暴易暴
(D)虎頭蛇尾

20、下列選項何者解說正確？
(A)口「齕」首領（「齕」是指用牙齒咬）
(B)「適」異國來貢獅貓（「適」指前往）
(C)「萬曆」中（「萬曆」是清朝皇帝年號）
(D)鼠「逡巡」自穴中出（「逡巡」是指大搖大擺）

※請閱讀下列短文後，回答第 21-23 題

童寄者，郴州蕘牧兒也。行牧且蕘，二豪賊劫持，反接，布囊其口，去逾四十里，之虛所賣之。寄偽兒啼，恐慄，為兒恆狀。賊易之，對飲酒，醉。一人去為市；一人臥，植刃道上。童微伺其睡，以縛背刃，力下上，得絕；因取刃殺之。逃未及遠，市者還，得童，大駭，將殺童。遽曰：「為兩郎僮，孰若為一郎僮邪？彼不我恩也；郎誠見完與恩，無所不可。」市者良久計曰：「與其殺是僮，孰若賣之？與其賣而分，孰若吾得專焉？幸而殺彼，甚善！」即藏其尸，持童抵主人所，愈束縛牢甚。夜半，童自轉，以縛即爐火燒絕之，雖瘡手勿憚；復取刃殺市者。因大號。一虛皆驚。童曰：「我區氏兒也，不當為僮。賊二人得我，我幸皆殺之矣。願以聞於官。」虛吏白州。州白大府。大府召視兒，幼愿耳。刺史顏証奇之，留為小吏，不肯。與衣裳，吏護還之鄉。鄉之行劫縛者，側目莫敢過其門，皆曰：「是兒少秦武陽二歲，而討殺二豪，豈可近邪？」（柳宗元〈童區寄傳〉）

21、下列選項「」中文字，何者不是動詞？
(A)布「囊」其口
(B)「植」刃道上
(C)彼不我「恩」也
(D)「是」兒少秦武陽二歲

22、文中主角區寄當時幾歲？
(A)10 歲
(B)11 歲

(C)12 歲

(D)13 歲

23、下列選項何者與本文的敘述內容<u>不符</u>？

    (A)區寄被綁架勒贖

    (B)區寄假裝害怕，讓綁匪掉以輕心

    (C)區寄因其智勇表現令其他綁匪害怕

    (D)區寄抓住綁匪自私、貪婪的特點來遊說，讓自己免去被殺的命運

二、摘要分析（18%）

    請閱讀下列文章後，以 100 字左右摘錄朱光潛〈我們對於一棵古松的三種態度〉之重點；並以 100 字左右寫出你的看法。

>   誰都知道，一切事物都有幾種看法。你說一件事物是美的或是醜的，這也只是一種看法。換一個看法，你說它是真的或是假的；再換一種看法，你說它是善的或是惡的。同是一件事物，看法有多種，所看出來的現象也就有多種。
>
>   比如園裡那一棵古松，無論是你是我或是任何人一看到它，都說它是古松。但是你從正面看，我從側面看，你以幼年人的心境去看，我以中年人的心境去看，這些情境和性格的差異都能影響到所看到的古松的面目。古松雖只是一件事物，你所看到的和我所看到的古松卻是兩件事。假如你和我各把所得的古松的印象畫成一幅畫或是寫成一首詩，我們倆藝術手腕儘管不分上下，你的詩和畫與我的詩和畫相比較，卻有許多重要的異點。這是什麼緣故呢？這就由於知覺不完全是客觀的，各人所見到的物的形象都帶有幾分主觀的色彩。
>
>   假如你是一位木商，我是一位植物學家，另外一位朋友是畫家，三人同時來看這棵古松。我們三人可以說同時都「知覺」到這一棵樹，可是三人所「知覺」到的卻是三種不同的東西。你脫離不了你的木商的心習，你所知覺到的只是一棵做某事用值幾多錢的木料。我也脫離不了我的植物學家的心習，我所知覺到的只是一棵葉為針狀、果為球狀、四季常青的顯花植物。我們的朋友——畫家什麼事都不管，只管審美，他所知覺到的只是一棵蒼翠勁拔的古樹。

三、評述作文（36%）

    請閱讀下列文章後，以〈父母之道〉為題，寫一篇 4 段以上的議論文。行文時，需兼評述下文的觀點。

>   家有「尼特族」孩子，父母親該怎麼辦？東海大學社工系主任彭懷真感嘆說，尼特族的產生多少是爸媽縱容出來的。
>
>   中國傳統觀念常說，「家裡只不過多一雙筷子」。子女沒工作，依然可以「家

裡蹲」，反正茶來伸手、飯來張口，在父母親的保護傘下，儘管不景氣，「尼特族」也不會捱餓受凍。

「該放手了吧！」這是彭懷真給為人父母的良心建議，他指出，美國年輕人讀大學自己要負擔 50%的開銷，讀研究所時自給自足的比率更提高到 80%，但臺灣父母對子女過度呵護，已造成年輕人不在意教育「成本」，「延畢」問題越來越嚴重，讓大學教授都無奈地說：「大學生變成五專生了！」

不僅大學生跟五專生一樣讀五年才畢業，研究生也是一延再延，讀書不積極，連工讀機會也不放在眼裡，彭懷真說，很多大學教授抱怨請不到人當研究助理，因為父母給的零用錢都比一個月 6000~8000 元的助理費還要多。

彭懷真警告說，「懶惰會變成習慣」，他建議家長要讓孩子從小養成做家事習慣；如果孩子已經長大了、來不及從頭教起，現在跟子女約法三章還是可以亡羊補牢。如果子女想要以「延畢」來逃避進入就業市場，家長要跟孩子商量一個畢業年限，超過此年限就不要再當「衣食父母」；如果孩子大學畢業或退伍後準備考研究所，同樣要設定期限，考不上就得去找工作。

要避免孩子淪為尼特族，彭懷真提出「八分之七定律」給家長參考，在人生第一個工作十年，即 25 歲至 35 歲時，每天清醒時間 16 小時，要有八分之七時間（14 小時）花在工作及交通時間。父母可以據此要求子女作息，不要縱容孩子的懶散，「畢竟父母不可能供養孩子一輩子」。（王彩鸝《聯合晚報‧尼特族　爸媽太呵護「該放手了」》）

國立臺中教育大學 104 學年度教師專業碩士學位學程招生考試

教育學試題

一、教育心理學、測驗與評量（25%）

請說明「檔案評量」(portfolio evaluation)與「漸進式動態評量」(prompted dynamic evaluation)的意義。（10%）檔案評量與漸進式動態評量其各自編製的過程為何，請加以說明並各舉一實例。（15%）

二、教育行政與政策（25%）

何謂「教師領導」？請由意義、特性、內涵加以說明。（10%）教育部推行中學教師專業發展評鑑已經歷多年，請由教師領導的概念切入，論述學校教師與行政人員在教師專業發展評鑑的實施過程中，各能發揮的角色與具體做法。（15%）

三、課程與教學（25%）

在〈十二年國民基本教育課程綱要總綱〉中提及：「十二年國民基本教育之課程發展本於全人教育的精神，以『自發』、『互動』及『共好』為理念」。基於此理念，若國小教師嘗試以社區環境與資源為出發點，發展社會行動取向(social action approach)之課程，其課程之定義為何？（5%)有何特色？（5%）主要課程目標為何？（5%）請舉例說明可行之社會行動取向課程與教學活動。（10%）

四、教育社會學（25%）

何謂「社會再製」(social reproduction)？（5%）何謂「文化再製」(cultural reproduction)？（5%）請設計一個情境來說明「社會再製」或「文化再製」的現象。（任選一項概念作答即可，在答題卷上請標明設計的情境是「社會再製」或「文化再製」）（15%）

國立臺中教育大學 104 學年度教師專業碩士學位學程招生考試

數學試題

※請於答案卷作答

一、填充題（80%，每格5%）

1、 若 $x^2 - 2x + a = 1$ 的兩根相等，則 $ax^2 - 3x = 35$ 兩根之積為＿＿＿。

2、 設 $a, b \in R$，若 $|ax + 1| \geq b$ 的解為 $x \leq -1$ 或 $x \geq 7$，則 $a^2 + b^2 =$＿＿＿。

3、 試求 $\log_{16}(\sqrt{21 + 6\sqrt{6}} - \sqrt{5 - \sqrt{24}}) =$＿＿＿。

4、 試求 $2^{logx} \cdot x^{log2} - 3 \cdot x^{log2} - 2^{1+log2} + 4 = 0$ 的解為＿＿＿。

5、 若 $x = \sum_{a=1}^{100} a^5$，則 x 除以 6 的餘數為＿＿＿。

6、 試求 9^{9^9} 末兩位數字的乘積為＿＿＿。

7、 在 ΔABC 中，若 $\cos A = \frac{4}{5}$、$\cos B = \frac{1}{\sqrt{2}}$，則 $\sin C$ 之值為＿＿＿。

8、 設$|\vec{a}|=2$，$|\vec{b}|=1$且$|2\vec{a}+\vec{b}|=\sqrt{23}$，則$|3\vec{a}+2\vec{b}|=$_____。

9、 設 G 為 ΔABC 的重心，已知 $\overline{GA}=2$、$\overline{GB}=3$、$\overline{GC}=2$，則 $\overline{AB}=$_____。

10、 設 $P=\begin{bmatrix} 2 & 1 \\ -5 & -2 \end{bmatrix}$、$Q=\begin{bmatrix} -1 & 4 \\ 1 & -3 \end{bmatrix}$、$R=\begin{bmatrix} 5 & -1 \\ 4 & 2 \end{bmatrix}$ 且二階方陣 M 滿足 $PMQ=R$，則 $M=$_____。

11、 試求 $\displaystyle\sum_{i=1}^{4}\sum_{j=1}^{3}ij=$_____。

12、 若將 $1\frac{1}{3}$、$1\frac{7}{9}$、$2\frac{2}{5}$ 等三個分數同時乘以一個分數，使其乘積皆為正整數。請問，此三個分數所乘的分數最小為_____。

13、 有 A、B、C、D 四個數，兩兩配對可以配成六對。而此六對的平均數分別為 12、13、15、17、19、20，請問原來四個數的平均數為_____。

14、 已知二次函數 $y=(k-3)x^2-2\sqrt{2}x+(k-2)$ 圖形的開口向下，且與 x 軸只有一個交點，則 k 之值為_____。

15、 設 $\{a_n\}$ 為一等比數列，已知 $a_1+a_3+a_5+a_7=4$、$a_2+a_4+a_6+a_8=-16$，則此等比數列的公比為_____。

16、 有一凸多邊形，已知其各內角的度數成一等差數列，且最小內角為 $100°$，最大內角為 $140°$，則此一凸多邊形的邊數為_____。

二、計算證明題（20%，請務必寫出計算或證明過程與結果）

1、 試證：$1\times n+3\times(n-1)+5\times(n-2)+\cdots+(2n-1)\times 1=\dfrac{n(n+1)(2n+1)}{6}$。（8%）

2、 請問 $\log_2 5$ 是有理數還是無理數？並請證明之。（12%）