

國立臺中教育大學 96 學年度研究所碩士班招生考試

科學教育概論 科試題

科學教育碩士班 用

一、解釋下列名詞。(20%)

- (一) Schema theory of learning (5%)
- (二) Formative assessment (5%)
- (三) Argument (5%)
- (四) Argumentation (5%)

二、您認為今日的科學教育應培養學生具有哪些方面的科學素養？試舉例說明在課室教學中應如何培養之，請針對某一單元為例，重點陳述教學目標、教學流程，並加以說明培養學生哪些方面的科學素養？(20%)

三、(20%)

(一) 請以中文寫出下句英文主要意思。

Any education in science must attempt to communicate not only *what* is worth knowing but *how* such knowledge relates to other events, *why* it is important and *how* it came to be.

(二) 試由科學教育的觀點，申論此句之意涵，以及其在科學教育之啟示。

四、試設計一個「操作活動」，讓學生進行觀測並記錄太陽的位置變化。(15%)

五、試述 STS 的理念與教學特色為何？(10%)

六、試寫出五項「科學本質」，並簡述其意涵。(15%)

國立臺中教育大學 96 學年度研究所碩士班考試

語文：國文及英文 科試題

科學教育碩士班、特殊教育學系碩士班、美術學系碩士班
早期療育研究所、數位內容科技學系碩士班、體育學系碩士班 用
音樂學系碩士班、幼兒教育學系碩士班、社會科教育學系碩士班

一、翻譯題。(每題 5%，共 10%)

只須將「」中的詩句翻譯為白話。

(一) 文天祥〈過零丁洋〉：

「**辛苦遭逢起一經，千戈寥落四周星。**」

山河破碎風飄絮，身世浮沉雨打萍。

惶恐灘頭說惶恐，零丁洋裏嘆零丁。

人生自古誰無死，留取丹心照汗青。

(二) 陸游〈書憤〉

早歲那知世事艱，中原北望氣如山。

「**樓船夜雪瓜洲渡，鐵馬秋風大散關。**」

塞上長城空自許，鏡中衰鬢已先斑。

出師一表真名世，千載誰堪伯仲間。

二、單一選擇題。(每題 1%，共 20%)

1. 下列「」內各字讀音皆正確的選項是：甲、龍「**熬**」帝后：ㄉㄠˊ 乙、刀「**俎**」：ㄉㄠˊ 丙、「**勛**」勉：ㄉㄠˊ 丁、參「**差**」：ㄉㄠˊ 戊、曲「**肱**」：ㄉㄠˊ 己、「**隘**」口：ㄉㄠˊ 庚、「**檄**」文：ㄉㄠˊ
- (A) 甲乙丙 (B) 乙丙戊 (C) 丁戊己 (D) 丁己庚

2. 平起格、七律、平聲韻的第七句平仄律為：

(A) 平平仄仄平平仄 (B) 仄仄平平平仄仄

(C) 仄仄平平仄仄平 (D) 平平仄仄仄平平

3. 下列「」內的兩個字，何者和其他三組的修辭不同？

(A) 知「**能能**」而不能所不能(《莊子·知北遊》)

(B) 聖人不病，以其「**病病**」(《老子》七十一章)

(C) 安得萬丈梯，為君「**上上**」頭(杜甫〈鳳凰台〉)

(D) 民之所「**好好**」之(《禮記·大學》)

- 4.下列「」中，何者和其他三者的修辭不同？
- (A)潤之以「風雨」(《周易·繫辭》)
- (B)夫藩籬之鷄豈能與之料「天地」之高哉(宋玉〈對楚王問〉)
- (C)四海之內皆「兄弟」也(《論語·顏淵》)
- (D)晝夜勤「作息」，伶俜縈苦辛(〈孔雀東南飛〉)
- 5.下列何者屬於「雙關」？
- (A)往後的日子，兒子開始在下課後被留下來，開始了他自己說的「留學」生涯。理由是字寫得太醜了，留下來繼續學寫字
- (B)穿會呼吸的皮鞋，「足下」沒煩惱！
- (C)我在四川獨居無聊，一斤花生，一罐茅台當做晚飯，朋友們笑我吃「花酒」
- (D)男：服役時每天都吃「滿漢全席」！女：怎麼可能？男：真的，滿桌都是彪形大漢！
- 6.下列選項那一組「」中的字義相近？
- (A)性非和順，「地」實寒微 / 公等或居漢「地」，或叶周親
- (B)三窟已「就」，君姑高枕為樂矣 / 功成名「就」，衣錦還鄉
- (C)「微」管仲，吾其披髮左衽矣 / 具體而「微」
- (D)一個晴好的五月「向」晚 / 淒淒不似「向」前聲
- 7.下列文字，「」中成語使用正確的選項是：
- (A)那人死後「屍居餘氣」，臉上彷彿留有遭受冤屈的憤恨之色
- (B)電視新聞中，落網的殺人犯橫眉豎目，「頭角崢嶸」，令人望之不寒而慄
- (C)細心體會人事萬物的變化，自能靈思泉源不斷，醞釀出「跌宕多姿」的佳作
- (D)新落成的公園裡，只有幾株初植的樹，「枝葉扶疏」，遊客稀少，景象十分冷清
- 8.(甲)老「聃」：音ㄉㄢˇ (乙)「蓑」弘：音ㄕㄨㄛ (丙)「潛」然：音ㄑㄧㄢˊ (丁)門衰「作」薄：音ㄅㄨˋ (戊)「噤」不敢發聲：音ㄐㄧㄣˋ (己)「謫」守：音ㄓㄨˋ (庚)舒眉「頷」首：音ㄉㄢˋ。以上注音錯誤的有：
- (A) 一個 (B) 二個 (C) 三個 (D) 四個。
- 9.「今人奢靡成性，其有清約者，便遭□□□□之譏。」缺空的詞語是
- (A)小宛詩人 (B)公孫布被
- (C)每下愈況 (D)隨俗雅化

10. 下列引號中的字，作動詞使用的是：
- (A) 江出西陵，始得平地，其「流」奔放肆大
(B) 搢紳之士，「充」然無復廉恥之色者皆是也
(C) 戴珠纓寶飾之帽，「腰」白玉之環
(D) 吾不能早用子，「急」而求子，是寡人之過也。
11. 儒家者流，蓋出於「司徒之官」：
- (A) 古代掌教化之官 (B) 古代掌音樂之官
(C) 古代掌騎射之官 (D) 古代掌皇室禮儀之官
12. 《詩經》十五國風，沒有哪一種？
- (A) 邶風 (B) 唐風 (C) 王風 (D) 韓風
13. 下列何者不屬於漢賦四大家？
- (A) 張衡 (B) 班固 (C) 司馬遷 (D) 揚雄
14. 《說文》對「形聲」所下的定義為何？
- (A) 本無其字，依聲託事 (B) 建類一首，同意相受
(C) 視而可識，察而見意 (D) 以事為名，取譬相成
15. 下列部首何者的注音有誤？
- (A) 疒—ㄏㄨㄛˋ ✓ (B) 广—ㄍㄨㄤˇ ✓
(C) 采—ㄘㄞˇ ✓ (D) 夂—ㄉㄛˇ
16. 下列是一節新詩，請依照文意選出排列順序最恰當的選項：
- 「這次我離開你，是風，是雨，是夜晚
你笑了笑，我擺一擺手
而我風雨的歸程還正長(甲)
一條寂寞的路便展向兩頭了(乙)
念此際你已回到濱河的家居(丙)
想你在梳理長髮或是整理濕了的外衣(丁)
山退得很遠，平蕪拓得更大
哎，這世界，怕黑暗已真的成形了……」
- (A) 甲乙丙丁 (B) 乙丙丁甲 (C) 丙丁甲乙 (D) 丁甲乙丙。
17. 下列詩句所描寫的季节，與其他三首不同的選項是：
- (A) 江雨霏霏江草齊，六朝如夢鳥空啼。無情最是臺城柳，依舊煙籠十里隄
(B) 月落烏啼霜滿天，江楓漁火對愁眠。姑蘇城外寒山寺，夜半鐘聲到客船
(C) 古道西風瘦馬，夕陽西下，斷腸人在天涯
(D) 遙夜泛清瑟，西風生翠蘿。殘螢棲玉露，早雁拂金河。

18.書信中不適用於老師的提稱語是：

- (A)函丈 (B)壇席 (C)尊前 (D)如晤。

19.下列含有「夢」字的詩句，表達久別重逢時似真似幻、悲喜相參之情的選項是：

- (A)高樓誰與上，長記秋晴望。往事已成空，還如一夢中
(B)故人江海別，幾度隔山川。乍見翻疑夢，相悲各問年
(C)故國神遊，多情應笑我，早生華髮。人生如夢，一尊還酹江月
(D)紅燭背，繡簾垂。夢長君不知。

20.「信義行於君子，而刑戮施於小人。」(縱囚論)意謂

- (A)君子要用信義去約束，而小人一定要接受刑戮
(B)對君子才能講求信義，而小人一定要用刑戮去約束
(C)信義掌握在君子手裡，而刑戮則操縱在小人手中
(D)信義要讓君子去施行，而讓小人知道刑戮的厲害。

三、多重選擇題(答案為複選；每題 2%，共 10%)

1.下列「」內的詞語是生活中常用的祝頌語，請選出用法正確的選項：

- (A)「宜室宜家」用於賀新婚 (B)「弄瓦徵祥」用於賀生男
(C)「里人為美」用於賀遷居 (D)「杏林春暖」用於賀學校落成

2.論語中蘊藏豐富的生活智慧，歷久彌新，下列有關論語文意的闡釋，那些選項切合原意？

- (A)「人不知而不慍，不亦君子乎？」意謂名聲不必強求
(B)「毋意，毋必，毋固，毋我」意謂為人處世不應任意專斷，固執私見
(C)「君子和而不同，小人同而不和。」意謂君子與人為善，以他人意見為意見；小人則否
(D)「視其所以，觀其所由，察其所安，人焉廋哉？人焉廋哉？」意謂從行為、動機心理三方面觀察，可洞見一個人的善惡。

3.下列有關詩、文、小說的敘述，不正確的選項是：

- (A)章回小說起於唐，成於宋，盛行於元明，衰竭於清
(B)晚明小品重性靈，貴獨創，歸有光為其代表作家
(C)詩、詞、曲皆為韻文，詩為整齊句，詞曲為長短句，故詞曲的形式與格律均較詩為自由
(D)古體詩產生於兩漢，發展於魏晉，句數可以不拘，亦不刻意求對仗，無論平仄、用韻皆較近體詩自由。

4.文學史上有許多文學改革運動，其中的參與者也多有其文學革新的主張。下列人物中提倡文學改革，有其文學革新主張的人物是：
(A)韓愈 (B)胡適 (C)白居易 (D)歐陽修

5.關於小說演變何者正確？

- (A)上古多神話寓言故事
- (B)漢魏六朝小說多為零星記事，分志人與志怪的筆記小說
- (C)宋代小說稱「傳奇」多存於太平廣記中
- (D)清代開始發展章回小說，人物刻劃生動，情節豐富多變。

四、閱讀測驗（單選題；每題 2%，共 10%）

吾生也有涯，而知也無涯。以有涯隨無涯，殆已；已而為知者，殆而已矣！為善无近名，為惡无近刑。緣督以為經，可以保身，可以全生，可以養親，可以盡年（節錄自《莊子·養生主》）

1.何謂「養生主」？：

- (A)人生於世，應力求身體養生以延年
- (B)人生於世，應保養純厚自由的天性
- (C)人應努力追求學識，以盡為人的責任
- (D)人應看破紅塵，辭親斷愛

2.有關作者莊子之敘述，下列何者為誤？

- (A)春秋時人
- (B)相傳楚威王聞其賢，厚幣以迎，許以為相，但莊子辭而不就
- (C)《莊子》一書旨在發揮老子順應自然的思想
- (D)喜採寓言方式表達哲理

3.為善无近名：

- (A)人應為善
- (B)人應心存善念
- (C)人為無善無惡的存在
- (D)為善無乃近於求名

4.緣督以為經：

- (A)應督導自己的內心
- (B)以內心想法為依歸
- (C)循虛而行，以為常法
- (D)嚴以律己，寬以待人

5.可以養親：

- (A)可以孝養雙親
- (B)可以貽養精神
- (C)可以善待親人
- (D)可以善盡父母之責

五、Vocabulary and Grammar: (每題 2% , 共 20%)

1. The can opener seems to be very complicated; _____ , it is a relatively simple device.
(A) and (B) but (C) nevertheless (D) furthermore

2. An obsession _____ the brand-name bags and shoes makes her a credit card slave.
(A) with (B) for (C) of (D) in

3. The Love River, which is now the most famous _____ in Kaohsiung, used to be seriously polluted in the past decade.
(A) milestone (B) landmark (C) trademark (D) landmine

4. The view of The Pinnacles in Australia is _____!
(A) amazed (B) spectacle (C) spectacular (D) magnificence

5. History says Leonardao Da Vinci did not even name any of his particular painting. None of his works, including Mona Lisa, was _____ by him.
(A) entitling (B) titling (C) naming (D) titled

6. We have new kitchen _____, including a stove, fridge, dish washer, and microwave oven. Now, we can start cooking our meals at home.
(A) goods (B) cargos (C) hardware (D) appliances

7. He is not a suspect because he has a good _____; He said that he was out of town visiting his sister on the night the robbery took place, and his sister testified to substantiate this.
(A) alibi (B) proof (C) document (D) identification

8. If the dinosaurs came back to Earth, they _____ huge disasters and chaos.
(A) can create (B) do create (C) would create (D) are able to create

9. Although this tale of *Frankenstein* is a _____ version of the original novel, it loses none of the strength and flavor.
(A) shorten (B)shorting (C) shorted (D) shortened

10. *Dracula* is a _____ tale about a vampire who comes to England to find new blood to feed on to widen his circle of vampires.
(A) chill (B) chilled (C) chilling (D) chilly

六、**Reading Comprehension**(每題 2% , 共 20%)

Tales do not merely entertain, but also often provide important themes. Take E. B. White's *Charlotte's Web* as an example. This is a story about a little pig called Wilbur, who is sold to a farm. Young and innocent Wilbur is just starting his life, and is making friends in the barn. He soon learns that as a pig, he will be butchered when the weather turns cool. This news causes Wilbur to fall into a frenzy. Charlotte A. Cavatica, a spider living in the barn, overhears what is going to happen to Wilbur. She decides to lend a hand to Wilbur and promises to save him. She soon comes up with the idea to spin words into her web that describe the pig as "radiant, terrific, and humble." The owners of the farm are stunned upon discovering the words. Soon, as the news spreads of this miracle, many people start to come to see Wilbur. Wilbur becomes famous. In the end, the pig avoids his fate of being killed, but Charlotte is doomed and dies after giving birth. Wilbur brings Charlotte's eggs back to the farm so that the life cycle in the barnyard can be continued. Wilbur never forgets his friend Charlotte. Because of her, Wilbur's life is secured into an old age. This story entertains us through its wisdom, pathos, and beauty. It also portrays what true friendship is.

1. What is the author's main purpose in this passage?
 - (A) To explain how tales can function
 - (B) To explain how tales structure themselves
 - (C) To explain how important an animal tale is
 - (D) To explain how animals can help each other
2. According to this passage, who is the one that most demonstrates wisdom?
 - (A) Wilbur
 - (B) Charlotte
 - (C) The people
 - (D) The owners of the farm
3. According to this passage, how does the story entertain through pathos?
 - (A) Wilbur is an innocent pig.
 - (B) People like to come and see Wilbur.
 - (C) The owner of the farm finds the miraculous words.
 - (D) After Charlotte gives her help to Wilbur, she dies.
4. According to this passage, which of the following statements is **Not True**?
 - (A) The eggs hold Charlotte's children.
 - (B) Wilbur is supposed to be killed in the Fall.
 - (C) Wilbur is given the chance to live longer.
 - (D) Charlotte is a radiant, terrific, and humble spider.
5. Which is the major moral in this passage?
 - (A) Don't be afraid to ask for help.
 - (B) Don't forget to pay back what you receive.
 - (C) The good is rewarded while the evil receives punishment.
 - (D) A true friend will help without expecting anything in return.

An increasingly common phenomenon in the Internet age is the “urban legend,” a type of story spread rapidly via the World Wide Web. Most urban legends share the following characteristics: they are humorous and/or shocking, they claim to be true, and they make a good story. A classic example of this phenomenon is the legend of alligators **inhabiting** the **sewers** underneath New York City. According to the legend, a number of New Yorkers brought back baby alligators from vacations in Florida, but grew tired of their pets and flushed them down the toilet. The alligators survived and bred and there is now a colony of crocodiles living under the city. Most regard the story as total **fiction**, but there are a few who claim it is true.

6. What is the best title for the above paragraph?
(A) A Colony of Crocodiles (B) The Internet Age
(C) The World Wide Web (D) Urban Legend
7. Which one of the following answers is **NOT** a required characteristic of an “urban legend?”
(A) funny (B) astounding (C) with a good plot (D) artistic
8. What does this word “**inhabiting**” mean?
(A) prohibiting (B) exhibiting (C) living in (D) occupying
9. What does this word “**sewers**” mean?
(A) sawing factories (B) sawing machines
(C) outdoor farms (D) underground ditches
10. According to the above passage, which statement is true about the “urban legend?”
(A) The “urban legend” describes life of city people.
(B) The Internet expedites spreading of hoaxes.
(C) Most of the “urban legends” are touching true stories.
(D) Some have really seen the alligators in the sewers of New York City.

七、English Writing (10%)

We are learning everyday and everywhere. We learn from the school and we also learn from outside the school. Compare different knowledge that is gained from school education and from personal experiences outside the school. In your opinion, which type of knowledge is more important? Why?