

國立新竹女子高級中學 103 學年度第 1 學期第 2 次教師甄試 英文科試題

I. Vocabulary: (40%)

1. The kids are very excited because we are going on a camping holiday to give them a taste of the wh_____e outdoor life.
2. Since you are too noisy in the library, I am afraid I have no al_____e but to ask you to leave.
3. It is important to have an um_____e who is impartial to either team at a sports competition.
This way we can make sure that the rules are obeyed and fair judgments are made.
4. The witness told the police that he didn't have any wine all evening so he was completely so_____r and quite sure about the whole accident.
5. A stubborn person like him always speaks with such certainty that it seems impossible to re_____e his argument.
6. Much to our disappointment, the government was filled with br_____y and corruption.
7. Higher education can be costly. You have to pay for board and lodging, ex_____e of tuition.
8. It is common to hear students gr_____e about too many exams to deal with.
9. You can save a lot of time by making a shopping list in advance because you will find mi_____s goods in the supermarket. Sometimes the shopping experience can be overwhelming.
10. Your essay should be as clear and co_____e as possible so you have to prune down the redundant words.
11. The country was thrown into turmoil after its president was as_____ted by a group of militant army officers.
12. An eleventh grader was sent to a nearby mental as_____m after attacking five innocent people on campus, including two young girls and one physically handicapped teacher.
13. Some people relieve the bo_____m of a long flight by reading while others make such a long journey a bit delightful by watching some thrilling movies.
14. The gas stove explosion in this restaurant caused heavy ca_____ties with ten killed and over twenty badly wounded.
15. After the revolution, the country once ruled by a military di_____r is now enjoying democracy.
16. The little girl stared at the reflection of her own face in confusion as it was di_____ted in the broken mirror.
17. Tens of thousands of soldiers lost their lives in fierce battles against gu_____as due to the fact that the unofficial military forces grew stronger with the support of the country's enemies.
18. The unique cultural he_____e of the old town attracts many tourists, who are eager to experience its unusual tradition.
19. Honor killing is an ancient practice, in which men kill female relatives in the name of family honor. Sadly enough, it is still ob_____d by some conservative groups today.
20. Posters of the controversial Beijing's White Paper, which stressed that Hong Kong does not have "full au_____y" and comes under Beijing's control, were taped to the ground along the

protest route for marchers to trample underfoot.

II. Cloze (20%) (請忽視大小寫)

(A) to	(B) grain	(C) then	(D) movements	(E) which
(F) since	(G) soured	(H) nearly	(I) thus	(J) landscape
(K) genocide	(L) mostly	(M) promoted	(N) from	(O) produce

The Great Famine was a period of mass starvation, disease and emigration in Ireland between 1845 and 1852. It is sometimes referred to, 21 outside Ireland, as the Irish Potato Famine because one-third of the population was 22 solely reliant on this cheap crop for a number of historical reasons. During the famine, approximately 1 million people died and a million more emigrated 23 Ireland, causing the island's population to fall by between 20% and 25%. The proximate cause of famine was a potato disease commonly known as potato blight.

Although the potato crop failed, the country was still producing and exporting more than enough 24 crops to feed the population. Records show during the period Ireland was exporting approximately thirty to fifty shiploads per day of food 25. As a consequence of these exports and a number of other factors such as land acquisition, absentee landlords and the effect of the 1690 penal laws, the Great Famine today is viewed by a number of historical academics as a form of either direct or indirect 26.

The famine was a watershed in the history of Ireland. Its effects permanently changed the island's demographic, political and cultural 27. For both the native Irish and those in the resulting diaspora, the famine entered folk memory and became a rallying point for various Home rule and United Ireland 28, as the whole island was then part of the United Kingdom of Great Britain and Ireland. The massive famine 29 the already strained relations between many of the Irish people and the British Crown, heightening Irish republicanism, 30 eventually led to Irish independence in the next century.

(A) in place	(B) associated	(C) frantic	(D) species	(E) instead
(F) sweeps	(G) within	(H) against	(I) flaccid	(J) sophisticated
(K) due to	(L) similar	(M) results in	(N) located	(O) like

Perhaps the most familiar plant movement belongs to one 31 of mimosa called the sensitive plant. 32 seconds, it can lower its leaves and make its tiny leaflets close up 33 folding chairs. This movement is thought to be initiated by electrical impulses remarkably 34 to nerve signals in animals. But without the animals' 35 motion machinery, the mimosa has had to be creative in devising a way to move.

For motion, the plant depends on tiny, bulb-shaped organs 36 at the base of each leaf stalk and leaflet. Called pulvini, these organs hold the plants 37. When the mimosa is stimulated—say, by a crawling insect or a sudden change in temperature—an electrical impulse 38 through the plant. This causes potassium and then water to be shifted from certain cells in the pulvini to others, quickly turning one side of the organs 39. Because the pulvini can no longer support the leaves and leaflets, this shift 40 a corresponding change in their position.

III. Correction: (20%) (在每句中, 請選出一項錯誤, 並更正)

41. Beyond regulatory hurdle, car companies could be taking on a huge liability in
(A) (B) (C)
selling robotic cars.
(D)
42. The truth that children often have far more sense than the olders was
(A) (B)
demonstrated rather dramatically during a civil defense exercise in Canada.
(C) (D)
43. At 2470 meters, the Great St Bernard Pass is the highest mountain pass in Europe, a
(A) (B)
mile away from it lies the famous monastery of St Bernard, founded in the eleventh
(C) (D)
century.
44. Two hundred years ago, boxers fought with bare fists for prize money. Despite this, they
(A) (B) (C)
were known as "prize-fighters."
(D)
45. Jeffrey Sachs has obsessed with the eradication of world poverty since he traveled
(A) (B)
to sub-Saharan Africa for the first time in 1995.
(C) (D)
46. The contrast between those who believe human ingenuity can solve the world's
(A)
problems with those who foresee imminent doom reflects the deepening
(B) (C)
polarization over environmental issues.
(D)
47. Normal lightning occurred when clouds pregnant with positive negative charges
(A) (B) (C)
build up and create an electric field.
(D)

48. Because of the improvements in high-performance digital technologies, researchers
 (A)
 can use literally all the data available in their areas of interest rather than relying on
 (B) (C)
 smaller samples sets.
 (D)
49. Motivation can help you get started with something, but it is discipline that will
 (A) (B)
 keep you going over the long haul. Be disciplined, as well as motivated.
 (C) (D)
50. Had it not been for his support, I wouldn't have been what I am now.
 (A) (B) (C) (D)

IV. Sentence Pattern: (10%) (請依提示改寫句子)

51. Though he is a child, he acts very maturely. (請用 as 改寫)
 = _____, he acts very maturely.
52. I would rather stay at home than go out on such a hot day. (...prefer...to...)
 = _____
53. He had hardly arrived in Taipei when he visited his old friends.
 = No sooner _____
54. I have 60 books and you have 20 books. (請用...the + N + of...改寫.)
 = _____
55. It is said that he was a well-paid computer engineer before he was laid off.
 = He _____

V. 英文寫作：(10%) 請根據題目寫一篇約 200 字的文章

Topic: The Essential Elements of Being a Good English Teacher

國立新竹女子高級中學 103 學年度第一學期第 2 次教師甄選數學科測驗題

※答案請勿以次方、!、C、P、H 等記號表示

一、填充題：(每格 6 分，共 84 分)

1. 設 $\omega = \cos \frac{2\pi}{5} + i \sin \frac{2\pi}{5}$ ，若 $A(1)$ ， $B(\omega)$ ， $C(\omega^2)$ ， $D(\omega^3)$ ， $E(\omega^4)$ 為複數平面上五點，試求 $\overline{AB} \times \overline{AC} \times \overline{AD} \times \overline{AE}$ 之值 = _____。

2. 有編號 $1, 2, 3, \dots, n$ 的 n 個盒子，在第 k 號盒子內裝有 $n+k$ 個紅球和 $n-k$ 個白球。已知每個盒子被取到的機會均等，現任取一個盒子，並由此盒子內每次隨機取一個球，取後放回，共取 3 次。若此 3 個球均為紅球的機率為 P_n ，則 $\lim_{n \rightarrow \infty} P_n =$ _____。

3. x^6 除以 $(x-2)^3$ 得餘式為 $f(x)$ ，求 $f(1) =$ _____。

4. 設數列 $\langle a_n \rangle$ 的遞迴定義式為 $\begin{cases} a_1 = 3, a_2 = 5 \\ a_{n+2} = \frac{1}{3}a_{n+1} + \frac{2}{3}a_n, n \in \mathbb{N} \end{cases}$ ，試求一般項 $a_n =$ _____。

5. 袋中有 3 個黃球、2 個白球、5 個黑球，每次取一球，取後不放回，取完為止，則黃球最先取完的機率為 _____。

6. 老師欲以三種食物：包子、蛋糕、粽子祝福班上同學考試順利，若將全班分成 A, B, C, D, E, F, G 共 7 組，並請每一組在一張卡片上寫下想吃哪幾種食物。結果：選擇 1 種及 2 種食物的各有 3 組，有 1 組都不想吃，沒有任何 2 組想吃的食物完全相同。則任取 3 張卡片，3 張卡片包含 3 種食物的機率 = _____。

7. 試求 $\int_0^2 \lim_{n \rightarrow \infty} \frac{(2-x)(x+x^n)}{1+x^n} dx =$ _____。

8. 設點 $(3,0)$ 及 $(0,a)$ 為橢圓 Γ 之兩焦點，且 $2x+y=1$ 和 $2x+y=16$ 為橢圓 Γ 之兩切線，試求橢圓之短軸長為 _____。

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9. 設 $f(x) = \frac{\pi}{16}(x-3)(x-9) + \frac{\pi}{48}(x-3)(x-1) - \frac{\sqrt{2}}{12} \times (x-1)(x-9)$ ，試求 $f(x)$ 之最小值為_____

10. 求 $\sum_{k=1}^{400} \frac{1}{\sqrt{k}}$ 之整數部份為_____

11. $\sum_{k=1}^{10} k^2 C_k^{10} \left(\frac{1}{3}\right)^k \left(\frac{2}{3}\right)^{10-k} =$ _____

12. 求滿足 $(x-2\cos\theta)^2 + (y-2\sin\theta)^2 = 9$ 之點 $P(x,y)$ 所形成之區域面積為_____

13. 已知直線 $L: y = \sqrt{3}x$ ，圓 $O: (x-40)^2 + (y-30)^2 = 100$ ， $A、B、C$ 三點依序在 x 軸、直線 L 及圓 O 上，試求出 $\triangle ABC$ 周長的最小值=_____。

14. 設 $a、b、c$ 為三相異正數，且 $a、b、c$ 皆不為 1。若 $a、b、c$ 成等比數列，且 $\log_a b, \log_b c, \log_c a$ 成等差數列，求此公差為_____

國立新竹女子高級中學 103 學年度第一學期第 2 次教師甄選數學科測驗題答案

※答案請勿以次方、!、C、P、H 等記號表示

一、填充題：(每格 6 分，共 84 分)

1. 5	2. $\frac{15}{32}$	3. 112	4. $\frac{21}{5} - \frac{6}{5} \times \left(-\frac{2}{3}\right)^{n-1}$
5. $\frac{13}{40}$	6. $\frac{23}{35}$	7. $\frac{7}{6}$	8. $2\sqrt{10}$
9. $\frac{4\sqrt{2} - \pi}{3}$	10. 38	11. $\frac{40}{3}$	12. 24π
13. $40\sqrt{3}$	14. $-\frac{3}{2}$		

一、選擇題 (70% · 35 題 · 每題 2 分 · 請在答案卷上作答)

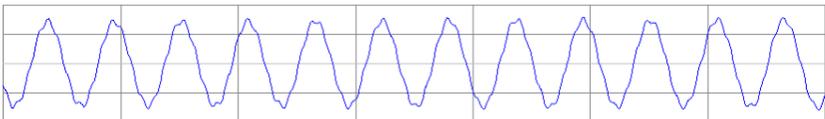
1. 台北悠遊卡是結合下列何項技術？
(1) 健保 IC 卡 (2) 無線射頻辨識 (3) 紅外線數據傳輸 (4) 衛星數據傳輸
2. 招生考試中，將考生以 2B 鉛筆劃記的答案卡輸入電腦以計算成績的方式，是屬於下列哪種輸入辨識方式？
(1) 光學記號辨識 (2) 條碼辨識 (3) 磁性墨水字元辨識 (4) 手寫辨識
3. 一張 3600×2700 像素的影像，以 600DPI 解析度的印表機列印時，印出的影像寬度及高度各為多少英寸？
(1) 36×27 (2) 6×4.5 (3) 3.6×2.7 (4) 60×45
4. 若某作品上標示有授權圖案，則應如何使用該項授權作品，才不會違法？
(1) 可改作，但不能用於商業行為 (2) 使用時，可不標示作者姓名
(3) 不能修改，且需標示作者姓名，但可用於商業行為 (4) 可自由改作，但需標示作者姓名
5. 前蘋果公司執行長賈伯斯是眾所皆知的簡報天才，他所製作的簡報都是少字、圖多。若他想將簡報列印出來，以便在演講時，可觀看簡報的備註內容，他應該選擇下列哪一種簡報列印模式？
(1) 備忘稿模式 (2) 講義模式 (3) 投影片模式 (4) 大綱模式
6. 執行下列 VB 程式後，訊息交談窗顯示的結果為何？
Function f (ByRef y As Integer)
 y = y + 3 : f = y
End Function
Private Sub Form1_Activated (...) ...
 Dim A(10), x As Integer
 For i = 10 To 1 Step -2
 A(i) = 8 * i
 Next
 x = 2
 MsgBox (A (f(x) + x))
End Sub
(1) 20 (2) 18 (3) 16 (4) 80
7. VB 程式碼，運算式「 47.3 \ 6.8 + 47.3 Mod 6.8 」之結果為？
(1) 11 (2) 12 (3) 5 (4) 4
8. VB 程式碼「 a * = Math.Sign(a) 」的執行結果與下列何者相同？
(1) Fix(a) (2) CInt(a) (3) Math.Sqrt(a) (4) Math.Abs(a)
9. 下列 VB 程式碼的執行結果，何者正確？
Private Sub Form1_Load(...) Handles MyBase.Load
 Dim A=2, B=1
 Debug.Print(F(A, F(A, B)))
End Sub
Function F(ByVal X, ByVal Y)
 F=X^2+Y^2
End Function
(1) 10 (2) 13 (3) 29 (4) 20
10. 下列 VB 程式碼執行後，T 的值為何？
T = 0 : U = 0
Do While U < 30
 If U Mod 2 = 1 Then T = T + U
 U = U + 1
Loop
(1) 256 (2) 240 (3) 196 (4) 225
11. 下列何者不是入侵他人網站的方式？
(1) 偽冒 IP 位址 (2) 耗盡資源式攻擊法 (3) 社交工程 (4) 暴力破解法
12. 為防止駭客入侵企業內部網路竊取資料，下列何項是常用的預防措施？
(1) 每日將資料進行備份並儲存於可抽取式硬碟中 (2) 在每部個人電腦加裝合法的掃毒軟體並定期更新版本
(3) 禁止員工上網並定期更換使用者密碼 (4) 在企業內部網路與外部網路間建構防火牆
13. 將朋友的姓名、生日等個人資料公開在網站上，可能會侵犯了下列何者？
(1) 資訊存取權 (2) 財產權 (3) 隱私權 (4) 工作權
14. 如果要製作具有互動效果的 Flash 動畫，須使用下列哪一種程式語言來撰寫程式？
(1) Action Script (2) Java Script (3) Asp.Net (4) PHP
15. 不同進位法的換算，若 (1001)_x = (3214)₆，則 x 之值為何？
(1) 7 (2) 8 (3) 9 (4) 10
16. 電腦硬體結構可分成五大單元：輸入單元 (IU)、輸出單元 (OU)、記憶單元 (MU)、算術與邏輯單元 (ALU) 及控制單元 (CU)，下列哪一個單元以匯流排 (bus) 與其他四個單元直接連接？
(1) 算術與邏輯單元 (2) 記憶單元 (3) 輸出單元 (4) 輸入單元
17. 內建於 OFFICE 系列軟體中的共通巨集語言是下列何者？
(1) VBA (2) C (3) JAVA (4) Action Script
18. 在 Windows 系統中的命令提示字元視窗中，鍵入 ipconfig 指令，有何用途？
(1) 可追蹤兩部主機之間通過的各個節點通訊狀況 (2) 可列出本機網路介面和外界網路連線狀態
(3) 可用來作為 IP 與主機名稱對應的檢查 (4) 用來控制網路連線的命令列工具

19. 將高階語言的原始程式轉換為目的程式的是下列何者？
 (1) Loader (2) Compiler (3) Linker (4) Interpreter
20. 在公開金鑰密碼系統中，要讓資料在網路上傳送的過程中是以亂碼呈現，其他人員無法竊看到資料內容，而且還要讓傳送者無法否認曾經傳送過此訊息，需要以哪兩個金鑰同時加密才能達成？
 (1) 使用接收者的公鑰及傳送者的私鑰加密 (2) 使用傳送者及接收者的私鑰加密
 (3) 用傳送者及接收者的公鑰加密 (4) 使用接收者的私鑰及傳送者的公鑰加密
21. 下列那一種電腦病毒會破壞硬碟的檔案分割表 (partition table) ？
 (1) 巨集型病毒 (2) 檔案型病毒 (3) 木馬程式 (4) 開機型病毒
22. 下列那一個形式是數位簽章？
 (1) 甲傳給乙資料以乙之私人鑰匙加密 (2) 甲傳給乙資料以甲之公開鑰匙加密
 (3) 甲傳給乙資料以甲之私人鑰匙加密 (4) 甲傳給乙資料以乙之公開鑰匙加密
23. 下列何者符合程式多工處理 (Multiprogramming) 的工作原理？
 (1) 電腦同時段內可處理多件工作 (2) 同時段內處理所有工作的輸出入動作 (I/O operation)
 (3) 處理完一件工作後，才處理下一件工作 (4) 電腦一次可以處理多個工作 (process)，但同一時段內只處理一件工作中的一部分
24. 何人提出了內儲程式的觀念，影響後來電腦的操作方式？
 (1) Blaise Pascal (2) Donald Ervin Knuth (3) John von Neumann (4) Alan Mathison Turing
25. 443 port 的公認用途為何？
 (1) https (2) ftp (3) ssh (4) telnet
26. 下列何種資料結構不是線性結構？
 (1) Stack (2) Tree (3) Queue (4) Array
27. 下列何者可以產生 11 到 50 的整數亂數？
 (1) $\text{Int}(\text{Rnd}() * 11) + 38$ (2) $\text{Int}(\text{Rnd}() * 11) + 39$ (3) $\text{Int}(\text{Rnd}() * 38) + 11$ (4) $\text{Int}(\text{Rnd}() * 39) + 11$
28. 在 windows 中設定網路 ip 上網，請問何者不是必要的？
 (1) DNS (2) Default Gateway (3) Router (4) SubNetwork Mask
29. 作業系統 UNIX 是屬於下列哪種類型的系統？
 (1) 單人單工 (2) 多人多工 (3) 多人單工 (4) 單人多工
30. 下列哪個連接埠的傳輸速度最高？
 (1) 序列埠 (2) PS/2 (3) USB2.0 (4) 平行埠
31. 下列有關網路設備的敘述，何者正確？
 (1) 交換器是用來轉換數位訊號與類比訊號 (2) 橋接器是用來連接同一區域網路內的多部電腦
 (3) 路由器是用來定義電腦在區域網路上的位置 (4) 閘道器是用來連接不同類型的通訊協定
32. 在呼叫副程式時，若不希望傳入的參數被更改，可採用何種呼叫方式？
 (1) call by value (2) call by reference (3) recursive call (4) function call
33. 假如我們學校是使用 B 類位址網路，那麼網路遮罩的設定應為多少？
 (1) 255.0.0.0 (2) 255.255.0.0 (3) 255.255.255.0 (4) 255.255.255.255
34. 下列何者的存取速度最快？
 (1) 快閃記憶體 (2) 隨機存取記憶體 (3) 暫存器 (4) 磁碟機
35. 下列物件導向語言的特性中，哪一種特性是指每一個物件都包含許多不同「屬性」及眾多針對不同「事件」而回應的「方法」？
 (1) 繼承性 (inheritance) (2) 包裝性 (encapsulation) (3) 多型性 (polymorphism) (4) 抽象性 (abstraction)

二、名詞解釋題 (10% ， 5 題、每題 2 分，請在答案卷上作答)

1. jQuery
2. CSS
3. Scratch
4. NFC
5. 4G

三、簡答題 (20% ， 4 題、每題 5 分，請在答案卷上作答)

1. 利用電腦進行錄音，麥克風可將聲音轉換為音訊而進入音效卡，音效卡則以很快的取樣頻率 (通常為 44100Hz)，紀錄著麥克風輸入的音訊在瞬間的電壓值，將某一小段繪出就像右圖所示的波形。目前用來分析聲音頻率的方法有 ACF、AMDF、FFT、HPS 等，請問您認為分析聲音頻率的程式可以怎麼設計？ (簡述即可)
- 
2. 當您在上資訊科技概論課程時，請學生操作電腦使用瀏覽器連接某網站，有學生向您反映無法連接該網站，但其他同學的電腦均可正常連接，請問您認為可能發生了哪些問題，及該如何排解問題？ (簡述即可)
 3. 雲端運算通常包括了三種層次的服務：IaaS (Infrastructure-as-a-Service 基礎設施即服務)、PaaS (Platform-as-a-Service 平台即服務)、SaaS (Software-as-a-Service 軟體即服務)，請簡述此三種服務。
 4. 人類的視覺很神奇，能夠自動修正因光線變化而改變的物體顏色，例如黃昏時看到的白鴿，雖然正常來說應該是有點偏黃，但是看久了，大腦還是覺得白鴿是白色的。數位相機的感光元件卻不具有這樣的特性，必須加入白平衡的功能，才可模擬人眼維持色彩恆常的特性。聰明的您，請問在沒有儀器的輔助下，將影像色偏移除的程式 (自動白平衡程式) 大概是怎麼寫的？ (簡述即可)
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國立新竹女子高級中學 103 學年度第 1 學期第 2 次教師甄試資訊科技概論科答案

准考證號： _____
 姓 名： _____

-----彌-----封-----線-----

一、選擇題 (70% · 每題 2 分 · 共 35 題)

1	2	2	1	3	2	4	3	5	1	6	4	7	送分	8	4	9	3	10	4
11	2	12	4	13	3	14	1	15	3	16	2	17	1	18	4	19	2	20	1
21	4	22	3	23	4	24	3	25	1	26	2	27	送分	28	3	29	2	30	3
31	4	32	1	33	2	34	3	35	2										

二、名詞解釋題 (10% · 每題 2 分 · 共 5 題)

1	jQuery			4	NFC		
2	CSS			5	4G		
3	Scratch						

三、簡答題 (20% · 每題 5 分 · 共 4 題)

1. 利用電腦進行錄音，麥克風可將聲音轉換為音訊而進入音效卡，音效卡則以很快的取樣頻率 (通常為 44100Hz)，紀錄著麥克風輸入的音訊在瞬間的電壓值，將某一小段繪出就像右圖所示的波形。目前用來分析聲音頻率的方法有 ACF、AMDF、FFT、HPS 等，請問您認為分析聲音頻率的程式可以怎麼設計？ (簡述即可)



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