

자연계열(영어+수학)(영어 20문항 + 수학 10문항, 60분)

2013학년도 수시 재외국민과 외국인 특별전형

● 지망학부(과) : _____ 수험번호 : _____ 성명 : _____

● 유의사항

1. 문제지와 OMR 답안지에 지망학부(과), 성명, 수험번호를 정확히 쓰고, 수험번호를 마킹하시오.
2. OMR 답안지는 컴퓨터용 사인펜으로 마킹하고, 답 이외에는 어떠한 표기도 하지 마시오.
3. OMR 답안지의 위에 있는 응시과목의 첫 번째 칸 “영어+수학” 이라고 표시된 곳에 마킹하시오.
4. OMR 답안지의 1번 ~ 30번 란에 정답을 표시하시오.
5. 시험 종료 후 OMR 답안지와 문제지를 모두 제출하시오.

I. 다음 빈 칸에 들어갈 가장 적당한 표현을 고르시오.
(1-6)

1. The assumption has been that the poor, often black, children living in some of the world's biggest and richest cities such as New York, Los Angeles and London _____ too many challenges to learn.
 ① faced ② faces
 ③ face ④ had faced
2. _____ by the euphoria in financial markets and among many commentators, the answer seems to be yes.
 ① Judge ② Being judged
 ③ To judge ④ Judging
3. They are publicly funded, but largely independent _____ the local educational bureaucracies and the teachers' unions that live in unhealthy symbiosis with them.
 ① from ② in
 ③ with ④ of
4. Publicity exerts an enormous influence and is a political phenomenon of great importance. But its offer is as _____ as its references are wide.
 ① narrow ② broad
 ③ significant ④ insignificant
5. Under its influence, the tender heart became stone, and the lamb-like disposition gave way to one of tiger-like _____.
 ① quickness ② gesture
 ③ appearance ④ fierceness

6. One day, rushing into the office of a magazine I was writing for with a deadline story in hand, I was mistaken for _____. The office manager called security.
 ① a reporter ② a policeman
 ③ a burglar ④ a philanthropist

II. 다음 밑줄 친 부분 중 가장 어색한 표현을 고르시오. (7-12)

7. Slavery proved as ①injuriously to my mistress ②than it ③did ④to me.
8. I shall disdain to cull my phrases ①or polish my style; I aim at ②be useful, and sincerity ③will make ④me unaffected.
9. ①As a boy, I saw countless tough guys ②lock away; I have ③since buried ④several, too.
10. A set of limited ①and contingent promises is much better than ②anything, but it hardly adds up ③to a sturdy new foundation ④for the euro's future.
11. It was ①predicted in 1964 by Peter Higgs, a British physicist who ②was trying to fix a niggler in quantum theory, and independently, in various ③guise, by five ④other researchers.
12. ①More controversial still are proposals contained in the draft Communications Data bill ②published on June 14th, which grants intelligence agencies the right ③to intercept and store information ④against almost any correspondence.

III. 다음 밑줄 친 부분의 의미와 가장 가까운 표현을 고르시오. (13-17)

13. Last month the government promised to make it easier for citizens to pursue web users who libel them anonymously.

- ① stalk ② name
③ laud ④ defame

14. They will be expected to foot colossal bills for their parents' pension and health costs.

- ① diminutive ② unexpected
③ enormous ④ complicated

15. This work was long in coming. During the time that I was preparing its elephantine birth, other works and responsibilities commanded my attention.

- ① clumsy ② gigantic
③ slow ④ easy

16. Related by Christianity, our Greco-Roman heritage has depended on three key factors: tradition, religion, and authority.

- ① main ② interesting
③ inessential ④ lofty

17. Elizabeth knew what it was like to be shunned by the other students in the class.

- ① ignored ② outpaced
③ selected ④ shut

IV. 다음 글을 읽고 물음에 답하십시오. (18-20)

As amazing as it may seem, chocolate is poisonous for dogs and should never be given to them. According to veterinarians, canine chocolate poisoning is all too common because pet owners simply don't know that chocolate contains a substance that is highly toxic for dogs. Chocolate contains a variety of chemical compounds that are completely harmless for humans, but one of them is quite poisonous for dogs. The chemical theobromine, a toxic alkaloid compound found in chocolate, is rapidly metabolized by human beings, rendering it harmless. However, dogs take much longer to metabolize this damaging compound. If they consume too much theobromine, within just a few hours the terrible result could be serious illness or even death.

Theobromine is found naturally in the theobroma cacao plant - the plant that produces cocoa beans. The substance theobromine is found in both the beans and the hulls around the beans. (Horses that eat the hulls of the shelled beans have also been known to sicken or die; they, like dogs, are unable to rapidly metabolize theobromine.) Since chocolate is made from cocoa beans, it also contains theobromine.

The concentration of theobromine in chocolate varies widely, depending upon the type of chocolate product. The unsweetened bars of chocolate used for baking contain a whopping 450 milligrams of theobromine per ounce. A cup of hot chocolate has more than 100 milligrams of the compound. Any of these products can be dangerous for dogs. And obviously, the more chocolate the dog consumes, the greater the concentration of theobromine he is also consuming, thereby increasing the risk to his health.

Veterinarians advise that pet owners should never give chocolate in any form to their dogs. They also suggest that it's a good idea to store chocolate well wrapped in high cupboards out of the reach of any family dogs. According to vets, if a dog does happen to eat some chocolate, and no more than 2 hours have passed, the animal can be treated simply by inducing vomiting. But if the dog consumed the chocolate more than 2 hours ago, he will need urgent care at an emergency veterinary clinic to cure the resulting illness - or to save his life.

18. It can be inferred from the above passage that

- ① in extremely high concentrations, chocolate could conceivably harm human beings.
② people should never given any kind of sweets to their pets.
③ everyday substances that are harmless to humans can sometimes be quite harmful to pets.
④ people should never give chocolate to their cats.

19. In paragraph 3, the author suggests that

- ① artificial chocolate flavoring can be made without using the cocoa plant.
② dogs are not the only animals that can be damaged by theobromine.
③ horses cannot be raised on farms where cocoa plants are grown.
④ the hulls of cocoa beans have more theobromine than the beans themselves.

20. According to the above passage, the substance theobromine contained in chocolate is harmful to dogs because

- ① theobromine can cause dogs to vomit.
- ② dogs can never metabolize theobromine.
- ③ theobromine is alkaloid compound.
- ④ theobromine cannot be metabolized fast enough by dogs.

<수 학>

21. 이차방정식 $2x^2 + 5x - 1 = 0$ 의 두 근을 α, β 라 할 때, α^2, β^2 을 두 근으로 갖는 이차방정식은?

- ① $2x^2 - 27x + 1 = 0$ ② $2x^2 - 29x + 1 = 0$
- ③ $4x^2 - 27x + 1 = 0$ ④ $4x^2 - 29x + 1 = 0$

22. 역행렬이 존재하는 2×2 행렬 A 가 식 $5A^3 + 6A^2 - 2A = 0$ 를 만족할 때, A^{-1} 는?

- ① $\frac{5}{2}A + 3I$ ② $\frac{2}{5}A - \frac{6}{5}I$
- ③ $6A - 2I$ ④ $6A + 5I$

23. $[\log_3 x] + [\log_5 y] = 1$ 을 만족하는 자연수의 쌍 (x, y) 의 개수는? (단, $[a]$ 는 a 보다 크지 않은 최대 정수를 나타낸다).

- ① 20 ② 24
- ③ 60 ④ 64

24. 수열 $\{a_n\}$ 에 대해서 $S_n = \sum_{k=1}^n a_k$ 로 정의한다.

$S_n = n^4 + 2n^3$ 이라면, $\lim_{n \rightarrow \infty} \frac{a_n}{S_n^3}$ 의 값은?

- ① 16 ② 64
- ③ 256 ④ 512

25. 상수 c 가 주어졌을 때, α 를 x 에 대한 이차방정식 $2x^2 - cx - 2 = 0$ 의 양의 실수해라 하자. 무한급수

$\sum_{n=1}^{\infty} \frac{\alpha^n}{3 \cdot 2^n}$ 가 수렴하는 c 의 범위는?

- ① $c < 3$ ② $c > -1$
- ③ $3 < c < 6$ ④ $0 < c < 4$

26. 곡선 $y = x^3 - 3x^2 + 4x - 27$ 의 접선들 중에서 $2x + 3y = 0$ 과 직교하는 것들을 생각한다. 이 접선들이 곡선과 접하는 점점들의 x 좌표의 합은?

- ① 1 ② 2
- ③ 3 ④ 4

27. $-1 \leq x \leq 4$ 에서 함수 $f(x) = |2x^3 - 9x^2 + 7|$ 의 최댓값을 M , 최솟값을 m 이라 하자. 이 때, $M - m$ 의 값은?

- ① 5 ② 11
- ③ 20 ④ 27

28. 직선 $y = -x$ 와 곡선 $3y^2 + 5y = x$ 로 둘러싸인 부분의 면적은?

- ① 4 ② 8
- ③ 12 ④ 16

29. 다항함수 $f(t)$ 가 임의의 x 에 대해서

$\int_{x-1}^{x+1} f(t)dt = 2x^3 - 7$ 을 만족한다고 할 때,

$\int_{-2}^4 f(t)dt$ 는?

- ① 22 ② 33
- ③ 44 ④ 55

30. 주머니에 1부터 50까지의 수가 하나씩 적힌 50개의 공이 들어 있다. 이 주머니에서 두 개의 공을 임의로 골랐을 때, 두 공에 적힌 수의 곱이 짝수일 확률은?

- ① $\frac{12}{49}$ ② $\frac{37}{49}$
- ③ $\frac{11}{50}$ ④ $\frac{39}{50}$