医学部 ［一般・学士］～第１次試験～ 英語

試験時間	70分

注意事項
1. この科目の問題用紙は12ページ，解答用紙はマークカード１枚である。
2. 解答用紙(マークカード)に，氏名・フリガナ・受験番号の記入および受験番号のマークを忘れないこと。
3. マークはHBの鉛筆で，はっきりとマークすること。
4. マークを消す場合，消しゴムで完全に消し，消しくずを残さないこと。
5. 解答用紙(マークカード)は折り曲げたり，メモやチェックなどで汚したりしないように注意すること。
6. 各問題の選択肢のうち質問に適した答えを１つだけ選びマークすること。１問に２つ以上解答した場合は誤りとする。
7. 問題用紙は解答用紙(マークカード)とともに机上に置いて退出すること。持ち帰ってはいけない。

I 次の英文を読み，下記の設問に答えなさい。

Scientists have long known that specific genes are associated with a number of serious diseases and birth defects. Scientists have used this knowledge to develop tests to identify defective genes, which are the result of mutation: a natural process that alters genetic material. Researchers have identified a large number of genes that are responsible for life-threatening conditions, such as cystic fibrosis*1 and Huntington's disease*2. (　1　) these genes are identified, genetic tests for many such diseases become available. These tests can indicate if a person has a specific defective gene. By 2011, researchers had developed more than 2,000 genetic tests, which allow doctors to inform patients if they have inherited these genes and if they risk passing them on to their children.

This testing is a significant milestone in genetic research, because these tests provide people who have genetic defects (　2　) important information. However, the tests also introduce complex ethical issues. If patients find out that they have a dangerous genetic defect, they may not know what to do. Their decision will depend on several factors. First, in some cases, identification of the gene only suggests the likelihood that the patient will develop the disease associated with that gene. For example, women who have inherited the harmful BRCA gene mutation*3 have a much higher chance of developing breast cancer than other women do. (　3　), it is likely that women with the genetic mutation will develop cancer, but it is not certain. A second important factor in the decision is whether there is a treatment, and if so, what kind of treatment. In the case of BRCA gene mutation, a frequent treatment is major surgery before the cancer develops. Women who test positive for the mutation must decide between this treatment and the possibility of dying of cancer.

Unfortunately, for some genetic diseases, there is no treatment, which gives rise to (6) even more complex ethical issues. Would patients want to know that they are going to die young or become very sick if there is no treatment? Some may want to know so that they can prepare themselves. If there is a chance they could pass the disease to their future children, they may decide not to have children. For others, however, the news could ruin their lives. They might prefer not to know about their condition and enjoy their lives while they are healthy. So, they may decide not to get genetic tests at all.

Most researchers expect that the next step will be gene therapy that repairs or replaces the defective gene. This would mean, for example, that BRCA patients could receive a treatment that actually changes their genetic material. If that came true, most people would probably decide to take genetic tests.

At the end of the 20th century, researchers began to develop treatments for a variety of life-threatening genetic diseases. The early results seemed very encouraging (7), and, consequently, people with genetic diseases became hopeful that they would soon see a cure. In 2000, for example, French doctors treated babies with a rare genetic disorder, commonly referred to as (8) "bubble boy disease*4," that affected their immune systems. They injected the babies with a healthy replacement gene. Ten months later, the children's immune systems appeared completely normal.

To these early achievements, however, considerable problems and limitations were attached. Results were (　4　); success occurred in only a small number of patients with rare conditions. Sometimes the therapy caused more problems than it solved. For example, in the French case, several of the children developed leukemia*5, one of whom died. In addition, enthusiastic researchers sometimes underestimated (9) the time it would take for discoveries in the laboratory to become practical therapies, a difficulty that persists today, often leading to disappointment and a lack of confidence in the field of gene therapy.

In spite of these (　5　), many scientists pursued their research in gene therapy. They believed this form of treatment still held great potential. However, three basic technical challenges stood in the way of (10) their progress. First, gene therapy is not like other kinds of treatments in which a patient can take a pill that sends medicine throughout the body. It must be introduced into specific genes. Second, scientists need a way to deliver the therapy directly into a cell. In many cases, they have used a virus to do this, but they have to be sure that the virus will not harm the patient. Finally, they have to be sure that the new or repaired gene will not "turn off" after it is introduced into the cell.

After years of research and trials, scientists had made considerable progress in solving these problems. In the first years of the 21st century, positive results began to emerge, arousing renewed interest in the field. In a small clinical trial in 2007, patients with Parkinson's disease*6 received genes for production of an important protein that they lacked. All 12 patients experienced an improvement in their condition with no negative effects. In 2011, researchers successfully treated patients with hemophilia*7, a disease that impairs the body's ability to clot blood, by injecting them with the healthy form of a defective gene. These were major achievements, but they are particularly exciting because the treatments are for major diseases that affect large numbers of people.

All of these positive results have revived the public's interest in gene therapy. Many researchers and scientists have renewed their belief in the prospect of its enormous potential to treat killer diseases like cancer, diabetes, cystic fibrosis, etc. However, they are now more careful to caution patients and society that many effective genetic therapies may still be years, or decades, in the future.

注：*1cystic fibrosis　「嚢胞性線維症」肺，膵臓，消化管，汗腺などの外分泌腺の機能が損なわれる遺伝性疾患
*2Huntington's disease　「ハンチントン病」常染色体優性遺伝によって発病する神経変性疾患
*3BRCA gene mutation　「がん抑制遺伝子変異」BRCA gene = breast cancer (susceptibility) gene
*4bubble boy disease　「バブルボーイ症候群，重症複合免疫不全症」アデノシンデアミナーゼという酵素の欠損に起因する免疫不全疾患
*5leukemia　「白血病」血球を作る細胞(幹細胞)が，骨髄中でがん化して無制限に増殖し続ける病気
*6Parkinson's disease　「パーキンソン病」中脳黒質にあるドーパミン神経細胞が脱落することによる中枢神経系疾患
*7hemophilia　「血友病」止血に必要な凝固因子が不足するため，いったん出血すると血が止まりにくい病気

問１ 本文中の(１)～(５)の空欄に入る最も適切なものを，それぞれ①～⑤の中から一つずつ選びなさい。

(１)	① Hence	② In order that	③ Once
	④ Unless	⑤ Whereas	
(２)	① against	② for	③ into
	④ off	⑤ with	
(３)	① Besides	② Instead	③ Nevertheless
	④ Otherwise	⑤ Thus	
(４)	① cost-effective	② mixed	③ punctual
	④ reflective	⑤ reluctant	
(５)	① advances	② emissions	③ praises
	④ setbacks	⑤ utilities	

問 2　本文中の下線部(6)～(10)の語(句)に最も近い意味のものを，それぞれ①～⑤の中から一つずつ選びなさい。

(6)　gives rise to
① brings about　② cuts down　③ speeds up
④ takes the place of　⑤ turns away

(7)　encouraging
① absurd　② constant　③ depressing
④ promising　⑤ unfavorable

(8)　referred to as
① called　② prejudiced　③ regulated
④ unpredictable　⑤ worsened

(9)　underestimated
① held high　② incorrectly judged　③ put emphasis on
④ took pride in　⑤ thought twice about

(10)　stood in the way of
① turned from　② ensured　③ paralleled
④ relied on　⑤ blocked

問 3　下記の(11)～(15)の各問に対する答えとして最も適切なものを，それぞれ①～⑤の中から一つずつ選びなさい。

(11)　According to the reading, what is the final target of developing gene therapies?
① Permanent repair or replacement of defective genes.
② Identification of defective genes.
③ Development of genetic tests to identify people with defective genes.
④ Development of a delivery system in which no viruses are used.
⑤ Development of a pill that sends medicine throughout the body.

(12)　According to the reading, which is an example of how genetic tests can be helpful?
① By enhancing people's immune systems.
② By protecting normal genes.
③ By causing complex ethical problems.
④ By preventing people from knowing whether or not they will have genetic diseases.
⑤ By helping people make informed decisions about having children.

(13)　Which of the following (A) to (E) are described in the reading as the practical challenges that genetic researchers face in developing therapies?　Choose all of the three options which apply.
(A) They have to find a good way to introduce the therapy into the cell.
(B) They have to make sure that the new or repaired genes remain active.
(C) They have to make sure that the patient's blood is able to clot after injuries.
(D) They have to be sure that the viruses to be used for the therapy are not harmful.
(E) They have to convince more medical practitioners to take part in the therapy.
① (A), (B), and (C)　② (A), (B), and (D)　③ (A), (B), and (E)
④ (B), (C), and (D)　⑤ (B), (D), and (E)

(14)　Which of the following is in accordance with the reading?
① Women who have inherited the BRCA gene mutation are less likely to develop breast cancer than those who haven't.
② Several French children suffering from a rare genetic disease were injected with a healthy replacement gene in 2000 but none of them survived the treatment.
③ Neither side effects nor unexpected fatal accidents have happened as the results of gene therapy.
④ The time associated with developing practical gene therapies is a problem that has not yet been completely overcome.
⑤ It was proven that patients with hemophilia would not benefit from gene therapy because the disease has no relation to their genes.

(15)　According to the reading, which statement best summarizes the state of gene therapy today?
① It has been so successful that any kind of gene therapy has become available anywhere on Earth.
② It is likely that only patients with rare genetic diseases will ever benefit from genetic research.
③ Recent success has allowed people to expect increased availability of genetic treatments in the years to come.
④ There have been enough failures to cause serious doubts about the overall value of gene therapy.
⑤ The age when BRCA patients were forced to decide between major surgery and the possibilities of dying of cancer has already ended.

Ⅱ　次のＡとＢの対話を読み，下記の設問に答えなさい。

出典元の著作権の関係で掲載していません

問 1　本文中の(16)～(23)の空欄に入る最も適切なものを，下の①～⑧の中から，それぞれ一つずつ選びなさい。
① are museums still popular today
② give us some examples of those kinds of specimens that were gathered in these early museums
③ is there now for museums
④ tell us something about the history of museums
⑤ there'll still be museums in 100 years
⑥ what do you think they'll look like
⑦ what sort of people are they
⑧ what you mean by 'knowledge based on evidence'

問 2　対話中のAとBの関係を表すものとして最も適切なものを，下の(24)の①～⑤の中から一つ選びなさい。

(24)　① Patient and Doctor
② Prisoner and Lawyer
③ Interviewer and Expert
④ Customer and Storekeeper
⑤ Bride and Bridegroom

問 3　下記の(25)と(26)の①～⑤の英文の中から，対話中のBの発言内容と一致するものを，それぞれ一つずつ選びなさい。

(25)　① Attendance at museums has declined recently.
② Preschool children are the largest growing age group for museum visitors.
③ It is not preferable to open museums at night.
④ Museums originated in the middle of the nineteenth century.
⑤ Museums helped establish a scientific way of looking at the world.

(26)　① How the function of museums will change in the future is perfectly predictable.
② Museums in the Renaissance only exhibited products of nearby areas.
③ Museums in the digital age should appeal to a few selected elites.
④ Museums are trying to engage people emotionally as well as scientifically.
⑤ Museums will probably have disappeared in 100 years' time.

Ⅲ　次の(27)～(32)の各英文中の空欄に入る最も適切な語(句)を，それぞれ①～⑤の中から一つずつ選びなさい。

(27)　Some people prefer to rent an apartment _____ own a house because they find it more flexible.
① rather　② rather to　③ rather than to
④ too much　⑤ would rather

(28)　_____ it not been for the doctor's timely advice, I would still be suffering from my unhealthy diet.
① As　② Had　③ If　④ Should　⑤ Were

(29)　Mao Asada was second after the short program, but came from _____ to win the championship in the free program.
① against　② around　③ backward　④ behind　⑤ contrary

(30)　The need for _____ care for their grandparents weighed heavily on the family.
① newly　② negligent　③ nursing　④ nursery　⑤ nurtured

(31)　Privacy concerns have grown with the _____ of social networking sites as a form of mass communication.
① expire　② exploratory　③ explore　④ explode　⑤ explosion

(32)　We have to know how to add and _____, multiply and divide, to work out the many problems of arithmetic that may occur in daily life.
① draw　② increase　③ pull　④ subtract　⑤ withdraw

Ⅳ　次の(33)～(38)の各英文の下線部の語(句)に最も近い意味のものを，それぞれ①～⑤の中から一つずつ選びなさい。

(33)　The number of alligators has grown so rapidly that in some places regulated hunts are conducted to limit alligator populations.
① anticipated　② carried out　③ done away with
④ prohibited　⑤ projected

(34)　The baby panda was so small and fragile that he seemed to be more of a kitten than a panda.
① delicate　② fashionable　③ heavy
④ primitive　⑤ sturdy

(35)　Thanksgiving was America's version of the harvest festivals of the ancient Near Eastern tribes.
① holy　② imported　③ planting
④ reaping　⑤ traditional

(36)　The completion of the first transcontinental railway in 1869 had a tangible and immediate significance for most Americans.
① abstract　② concrete　③ enduring
④ fundamental　⑤ optimistic

(37)　The project has not been able to move forward due to a money shortage.
① become excited　② got through　③ become stuck
④ got started　⑤ got ready

(38)　Some countries have tried to get rid of English as their official language as a way of saving their native tongue.
① eliminate　② intensify　③ lend
④ represent　⑤ welcome

Ⅴ　次の(ア)～(オ)の日本語の文の意味を表すように，それぞれ①～⑩の語(句)を並べ替えて英文を完成させ，(39)～(48)の空欄に入るものの番号を答えなさい。ただし，文頭にくる語(句)も小文字の書き出しになっている。

(ア)　メアリー・シェリーの小説『フランケンシュタイン』は，人間が時代にはるかに先駆けて科学を利用することに対して，疑問を呈した最初のＳＦ作品だと主張されてきた。

Mary Shelley's novel *Frankenstein* has been claimed as the first work of science fiction (　　) (　　) (　　) (　　) (39) (　　) (　　) (40) (　　) (　　) time.

① about　② advance　③ far in　④ man's　⑤ of its
⑥ questions　⑦ raised　⑧ of science　⑨ that　⑩ use

(イ)　原作の表題は，人間の似姿をした存在を造る科学者の名前であり，彼の被造物の名前ではない。

The title of the original novel (　　) (　　) (41) (　　) (　　) (42) (　　) (　　) (　　), not (　　).

① a being　② the scientist　③ creates　④ of his creation
⑤ in　⑥ the likeness　⑦ is　⑧ of man
⑨ the name of　⑩ who

(ウ)　しかし，1931年の映画版の強い影響以降，一般大衆はフランケンシュタインの名を，首にボルトが刺さった無言の怪物と結びつけがちである。

(　　) (　　) of its 1931 film adaptation, however, the (　　) (　　) (43) (　　) (　　) (　　) (44) (　　) with the bolt-necked, mute monster.

① have been　② link　③ general
④ prone　⑤ the strong impact　⑥ public
⑦ to　⑧ since　⑨ Frankenstein
⑩ the name of

(エ)　映画のなかの怪物とは反対に，小説中の被造物は思考と雄弁の能力を示し，そのことが私たちに彼への共感を抱かせる。

Contrary to the monster in the film, the creature in the novel (　　) (　　) (45) (　　) (　　), (　　) (　　) (46) (　　) (　　) for him.

① a capacity　② and eloquence　③ feel　④ for
⑤ makes　⑥ shows　⑦ sympathy　⑧ thought
⑨ us　⑩ which

(オ)　この小説は，科学者が自分の被造物にまさに最後まで責任を持って関わらなければならないことを警告する寓話として読める。

The novel can be (　　) (　　) (47) (　　) (　　) (　　) (48) (　　) their (　　) (　　) last.

① a parable　② to the very　③ remain　④ with
⑤ warning that　⑥ should　⑦ creations　⑧ scientists
⑨ read as　⑩ responsibly involved