

令和2年度個別学力試験問題

英 語

(医 学 科)

解答時間 80分

配 点 100点

注意事項

1. 試験開始の合図があるまで、この問題冊子の中を見てはいけません。
2. 受験番号及び氏名を解答用紙の所定の欄に記入しなさい。
3. 解答は解答用紙の指定されたところに横書きで記入しなさい。
4. 試験時間中に問題冊子及び解答用紙の印刷不鮮明、ページの落丁及び汚損等に気が付いた場合は、手を挙げて監督者に知らせなさい。
5. 問題冊子は持ち帰ってもかまいません。

1 次の英文を読んで、以下の問いに答えなさい。

One sunny Saturday morning two years ago, my phone rang as I was walking out to my garden with my coffee and paper. It was my big sister, Karen, from California. “You’re not going to believe this,” she said. “I’ve just found out I have breast cancer.”

Unfortunately, I didn’t have any trouble believing it. Not because of the statistics (about 26,000 Canadian women and over 260,000 women in the United States were diagnosed with breast cancer in 2017), or because Karen had already had cancer. The news didn’t surprise me because I have it, too.

Two sisters, two countries, two cancers. On the surface, our experiences were very similar: we both received excellent treatment, we had lots of support, and we’re recovering well. But there were some important differences.

Karen is 64, four years older than me. Her three children are grown, and she lives with her husband, John, in a small town outside Los Angeles. I live in Toronto, have children in their 20s and a new husband, Jim, and I run a communications business.

My sister survived a brain tumor when she was 37 and hasn’t worked since. But we’re both healthy and reasonably active. I have never smoked, and Karen stopped a few years ago. There’s no history of breast cancer in our family, and we’ve both tested negative for mutations in BRCA1 and BRCA2 genes that produce tumor suppressor proteins.

Every year, my doctor would give me a requisition for a mammogram, and every year, I’d find it crumpled at the bottom of my bag several months later. I was always too busy. I hadn’t had one since my first at age 50.

Things changed when I met Jim. I was happier and taking better care of myself, and so finally, at the age of 56, I took the time to go for my scan. The test showed a bit of calcification, and the radiologist thought it would be worth coming back for an ultrasound.

It took the ultrasound and a second mammogram in early June 2015 to find two large masses in my right breast that not even my doctor had been able to feel. Together, the tumors were over six centimeters long. The technician brought in a radiologist, who explained that she was going to perform a biopsy on the spot. A few days later, I got the call. It felt exactly like you’d expect—everything changed in an instant.

Several weeks later, an MRI revealed that the cancer was likely moving into my lymphatic system. My surgeon recommended a single mastectomy with a biopsy of my lymph nodes to see how far the cancer had spread, followed by chemo and radiation. Surgery was set for July 15.

The procedure went off without a hitch, and I recovered pretty quickly. About a month later, I was on the train to Montreal to speak at a conference. I wore a breast prosthetic, and nobody

was any the wiser.

Chemo started in September, and the six treatments weren't easy. I wasn't nauseous, but during my last three treatments I had to immerse my fingers and toes in ice for excruciating 90-minute intervals to prevent my nails from blackening and falling off. There were other side effects too: my body ached, I developed mouth sores and body rashes, and I shuffled when I walked thanks to weakened joints. During the worst of it, my legs were so swollen that none of my shoes or boots fit.

Karen's experience was different in many ways. She was always more careful than I was. She'd been told she had dense breasts, so she went to a clinic every year for an ultrasound-guided mammogram. Her latest test in March 2016 had come back clear, but when she let the clinic know about my diagnosis, they asked her to come in for another mammogram, this time guided by MRI. On May 11, they found a two-centimeter lump—exactly a year after they'd found mine. On the recommendation of the clinic, she opted for a lumpectomy with a simultaneous cosmetic reduction of the other breast.

The surgery was set for June 8, four weeks after her diagnosis. “Just as I was getting ready to head to the operating room, a tall man in a nice suit came in and told us he had to have a check before they would go ahead,” said Karen. “It's our new policy because people aren't paying their bills.’ We paid him, of course, but it seemed absolutely outrageous,<sup>(3)</sup> especially when you're frightened and sick.”

During the procedure, Karen's doctor also removed some lymph nodes and found cancerous cells in one of them. “We had all been so sure it would be simple, because the tumor was so small,” she says. The oncologists recommended chemo and radiation, assuring her that a mastectomy wasn't necessary.

Like me, Karen had six chemotherapy treatments, but her side effects weren't as severe, and she didn't have to put her nails in ice. “My body ached, my legs swelled near the end, and my nails were discolored and sensitive. But I didn't have mouth sores, and I never lost my appetite.” We both had 25 rounds of radiation, which was easy compared to the chemo.

During Karen's treatment, I found myself playing the role of big sister. We talked on the phone a lot. I read her medical reports and told her what to ask the doctors. We decided I would visit her when John was away on business, just before her fourth chemo treatment.

One morning, Karen pulled out a folder with her medical bills. As I flipped through the eight-centimeter pile of papers, I was astounded.<sup>(4)</sup> She'd been to two hospitals and three clinics, but there were invoices from almost 50 different service providers—pathologists, imaging centers, radiologists, plastic surgeons, anesthesia services, blood labs—people she didn't know, asking for money for services she'd never heard of.

Astonishingly, Karen's insurance report shows that the gross amount billed to the company was just over \$450,000. Compare that to \$46,893, the mean cost for two years of treatment for stage II cancer in Canada between 2005 and 2009, which is covered by health care.

Karen's insurance company negotiated this \$450,000 bill down to just under \$150,000, and she ended up owing roughly \$16,000 in deductibles (\$14,500 for medical costs and \$1,500 for prescriptions), plus two and a half years of premiums (roughly \$7,500). That puts the total out of pocket for her cancer treatment at around \$23,000. And that's with health insurance.

It's been over two years now since I finished my treatments, and I'm feeling great. My hair has grown in, my energy is back, and all my scans are clear. Karen completed her treatments about a year and a half ago and is still struggling with lack of energy and some depression, which is just part of the process. And that's not the end of it. We're both now taking Tamoxifen, a drug<sup>(5)</sup> that blocks estrogen action in breast cells, which should reduce the risk of the cancer coming back by 75 to 80 per cent.

Comparing our experiences has reminded me of how lucky I am to be living in Canada. Karen and I both received great medical care, but Canada's health care system is simply more humane.<sup>(6)</sup> I have access to excellent treatment whenever I need it and can focus on getting better instead of worrying about huge bills or fighting with service providers. The Canada Health Act says this is what every resident is entitled to, and it's one of the things that make our country such a wonderful place to be.

[注]

anesthesia : 麻酔	biopsy : 生体組織検査
blacken : 黒くなる	breast prosthetic : 人工乳房
calcification : 石灰化	cancerous : がんの
chemo (= chemotherapy) : 化学療法	cosmetic : 美容整形の
crumpled : くしゃくしゃになった	
deductible : (保険の)控除免責金額(被保険者の年間自己負担額)	
diagnose : 診断する	diagnosis : 診断
discolor : 変色する	estrogen : エストロゲン, 女性ホルモン物質
excruciating : 耐え難い	flip through : パラパラめくる
hitch : 障害, 遅れ	immerse : つける, 浸す
invoice : 請求書	lump : しこり
lumpectomy : 乳腺腫瘍摘出術	lymph node : リンパ節
lymphatic : リンパ節の	mammogram : マンモグラム, 乳房 X 線撮影
mastectomy : 乳房切除術	mouth sore : 口内炎
MRI (= magnetic resonance imaging) : 磁気共鳴画像法	
mutation : 突然変異(体)	nauseous : 吐き気を催す
oncologist : がん専門医	opt : 選択する
pathologist : 病理医	plastic surgeon : 形成外科医
premium : 保険料	radiation : 放射線(治療)
radiologist : 放射線科医	rash : 発疹
requisition : (医師による)検査要求書	shuffle : 足を引きずる
side effect : 副作用	swollen : 腫れた
technician : 検査技師	tumor suppressor protein : 腫瘍抑制タンパク質
ultrasound : 超音波検査	

問 1 下線部(1)の理由を日本語で簡潔に説明しなさい。

問 2 ‘one’を具体的に説明しながら、下線部(2)を日本語に訳しなさい。

問 3 下線部(3)と(4)の本文中の意味に最も近いものを、それぞれア～エの中から1つ選び、記号で答えなさい。

(3) outrageous      [ア. acceptable    イ. expensive    ウ. professional    エ. terrible]

(4) astounded      [ア. amazed      イ. impressed    ウ. relieved      エ. thrilled]

問 4 下線部(5)の薬を姉妹が服用している理由を日本語で簡潔に説明しなさい。

問 5 下線部(6)の具体的な内容を日本語で簡潔に説明しなさい。

2

次の英文を読んで、あとの a ~ f の [ ] 内の語(句)を正しく並べ替え、本文中の【 (1) 】~【 (6) 】の適切な場所に入れなさい。解答欄には、a, b などの記号は書かず、並べ替えた英文のみを記入すること。

In the Resuscitation Council's guidelines on conducting an ABCDE assessment, the section relating to exposure—the examination of the skin and the body as a whole—comprises just two sentences. Breathing consists of twelve paragraphs, circulation nineteen. But looking at the body as a whole is fundamental to understanding a patient's condition. The wounds and scars 【 (1) 】 story, the world they live in, where they have come from, what they have endured.

The nurse must look at a patient from head to toe, exposing 【 (2) 】. Through the skin we might find the source of their condition: low blood pressure from a hemorrhaging wound uncovered beneath a T-shirt, pain from a fractured femur pushing against a trouser leg, a rash signaling an allergic reaction spreading out across the back.

While E is the fifth part of the nursing assessment, representing the final stage, it does not represent the end. The A-E examination is fluid and can move backwards as well as forwards. Upon reaching the fifth part of the examination, one might be led back to the start: what if this mark on the person's skin is the cause of their neurological condition in D; what if their neurological condition is the cause of their breathing problem in B? What if, what if ...

During the first four parts of the assessment, the nurse has predominantly focused on the inside of the body, shining pen torches within the mouth to look for possible obstructions blocking the airway; listening to the inside of the chest, to damaged lungs or creaky heart valves; staring into the dark depths of brain scans searching for the origins of consciousness inside the skull.

Exposure, in contrast, offers an opportunity to focus on the outside, to look for elements of the self on the surface. For thousands of years the skin was interpreted in this way, perceived as a porous surface that offered 【 (3) 】. This approach to the outer layer of the body would begin to wane with the evolution of clinical-anatomical medicine in the eighteenth century.

Before this evolution, if there were no natural opening in the body, the physician would make one in order to allow the sickness to pass; blood-letting, scarification and acupuncture were common practices to try and alleviate the symptoms of disease via the skin.

While the study of anatomy through dissection has a long history, dating as far back as ancient Greece, it wasn't until Flemish anatomist Andreas Vesalius' pioneering work with dissection in the sixteenth century that pre-established thinking was revolutionized. Prior to him, the world generally accepted the anatomical writings and dogmatic teachings of Galen, much of which was based on dissection of animals rather than human beings.

With the coming of the Enlightenment period, the practice of dissecting cadavers was widespread across medical schools and in anatomical theaters (when corpses were available). The new, modern [ (4) ], nor was it so widely thought to be connected to the external world by osmotic, visceral projections such as blood and urine. Instead it had come to be understood as a demarcated boundary, a passage into an internal realm that could be scientifically and objectively explored through the physician's skill.

The first time I saw *inside* was as a teenager, when we went to Professor Gunther von Hagens' exhibition 'Body Worlds' in east London. This exhibition hosted twenty-five cadavers, stripped bare of their skin, flayed, bisected and dissected, and safely ensconced in revolving glass cases. These dead bodies had been through an innovative process called plastination, in which the cells of the body were impregnated with liquid polymer in order to preserve the cadaver for viewing.

The image of one body in particular stayed with me. I remember looking up at the corpse suspended behind glass; pink and red and taut with stretched sinew and ligaments. This *écorché* stood upright with one foot in front of the other, head tilted, looking glassily at its own skin, which hung lifelessly from its outstretched arm like a wet raincoat, collapsed and empty of its body. Later I learnt that it was based on a famous sixteenth-century copperplate illustration of a flayed cadaver holding its own skin aloft, the dagger used in the flaying held in the other hand. In the illustration, the face left behind in the discarded skin looked haunted, nothing more than five black holes for eyes, nose and a mouth, perhaps the last expression it wore before it was skinned alive.

When we returned home from the exhibition, I stood in front of the mirror and examined my own skin. I could hardly believe that a von Hagens-type structure lived beneath. My own skin was smooth; [ (5) ] any scars or wrinkles. I had my mum's delicate hands and my dad's round fingernails.

One year later, after having stomach surgery, I stood in the same spot and examined my skin once again. I had come home from the hospital in springtime, the tree outside Daisy's bedroom pink with blossom. Mum helped me walk to the front door on a carpet of petals.

Over the next few weeks, I stood in front of the mirror and watched my stomach scars heal. One of the scars took longer than the others; it itched through the night and when I looked at it closely it appeared more open than the others. It seemed [ (6) ], some blood-red part of me that had always been there but that I had not seen before. This new layer seemed both concealing and revealing at the same time.



[注]

acupuncture : 鍼(はり)療法	allergic reaction : アレルギー反応
alleviate : 緩和する	aloft : 空中に
anatomist : 解剖学者	anatomy : 解剖学
bisect : 分割する	cadaver : 死体
comprise : ~から成る	copperplate : 銅板
corpse : 死体	creaky : 異常な音がする
dagger : 短剣	demarcated : 境界の, 区切られた
discarded : 廃棄された	dissection : 切開
dogmatic : 独断的な	écorché : 人体の筋肉を示す標本
Enlightenment : 啓蒙	ensconce : 安置する
femur : 大腿骨	flay : 皮をはぐ
fractured : 骨折した	haunted : とりつかれた
hemorrhaging : 出血している	impregnate : 染み込ませる
itch : かゆい	ligament : 靭帯
neurological : 神経系の	osmotic : 浸透(性)の
petal : 花びら	polymer : ポリマー, 高分子
porous : 多孔性の	predominantly : 主に
rash : 発疹	Resuscitation Council : 蘇生協議会
scar : 傷跡, 癍痕 <small>はんこん</small>	scarification : (外科)乱切(法)
sinew : 腱	skull : 頭蓋骨
taut : ピンと張った	tilted : 傾いた
torch : 懐中電灯	urine : 尿
valve : 弁	visceral projection : 内臓の状態を予測するもの
wane : 衰える	wrinkle : しわ

- a . [ happening on / the inside / was / clues as / to what ]
  
- b . [ something / as / was / elemental / staring into / if I ]
  
- c . [ years / had / yet picked / it / lived for / and not / up / fifteen ]
  
- d . [ dignity and / both maintaining / loss / their / fully while / minimizing heat / them ]
  
- e . [ purely by / longer / on its / changes / interpreted / body / surface / was no ]
  
- f . [ life help / acquired through / person's / they have / us / their / understand a ]

3 次の英文の( 1 )～( 8 )に入る最も適切な語を語群から選び、必要に応じて適切な形にして、書きなさい。(ただし、同じ語を2度以上使わないこと。)

The headlines sound almost too good to be true: “Researchers ‘Stunned’ by Stem Cell Experiment That Helped Stroke Patient Walk”; “Wife Recovered From Cancer After Pioneering Stem Cell Treatment”; “Stem Cell Transplant Trial ‘Has Miraculous Effect’ on Multiple Sclerosis (MS) Sufferers.”

Indeed, even experts are excited about these miracle cells, which are abundant in the body and can repair and replace all kinds of tissue. “There’s no doubt in my mind that stem cells are going to revolutionize the way medicine is ( 1 )—with the same kind of impact that antibiotics and vaccinations had—getting at the root causes of disease rather than dancing around the periphery,” says Charles Murry, M.D., Ph.D., director of the Institute for Stem Cell and Regenerative Medicine at the University of Washington in Seattle.

But when it comes to medical research, Dr. Murry cautions, stem cells are barely at the starting gate. Despite their hitting the petri dish more than 20 years ago, many big questions ( 2 ): Which people, with which diseases, might benefit from their use? What types of stem cells should be used? How can the cells be manipulated and administered for lasting effect? And how does the treatment work? Exciting as the clinical trials are, most of those that have been completed so far are just at the phase one stage, in which researchers test a small number of people to see if an intervention is safe, not yet whether it’s effective.

What actually is too good to be true, then, are the claims being made by many of the for-profit stem cell clinics that have proliferated in the U.S. (more than 700 and counting). Using nothing more than very early study results and testimonials, these clinics promise that—for thousands or tens of thousands of dollars—they can use your own stem cells to treat everything from MS and rheumatoid arthritis to heart disease, diabetes, damaged joints, and cancer. Some offer cosmetic stem cell face-lifts or cellular breast and buttock jobs; others promise to boost athletic prowess.

“There’s a striking gap between the claims these centers are making and the research that’s been done for most of these diseases,” says Leigh Turner, Ph.D., an associate professor in bioethics at the University of Minnesota who studies these clinics. “People need to be very ( 3 ) about this treatment right now.”

Stem cells generate so much buzz because they have the unique ability to turn into different types of cells. This means they have the ( 4 ) to rebuild organs that are diseased, which in the medical field is known as regenerative medicine. Early on, scientists focused on stem cells taken from embryos because those cells naturally transform into the myriad ones that develop

into the baby's tissues and organs. But ethical issues and federal regulations related to these cells sent researchers scrambling to find alternatives.

Today, cutting-edge scientists are working to coax adult blood cells to become nascent cells akin to the embryonic kind by adding certain DNA molecules. These "induced pluripotent stem (iPS) cells," which have shown early promise, generally require months of careful manipulation in a lab and thus are mainly ( 5 ) to top medical centers. Most of the for-profit clinics have settled on using cells taken from fully developed tissue, known as "adult stem cells." By using cells from a person's own body, these clinics can complete a treatment in a day or a few weeks. Doctors typically liposuction a little fat or remove some bone marrow (which is an especially rich source of stem cells), put it through a few steps to remove other tissue, then inject the stem cells where they want them to proliferate. Someone who's coming in with arthritic hip pain, for example, might have cells removed from her belly and inserted into her hip.

Critics say the for-profit clinics that currently ( 6 ) they can treat all manner of disease with adult stem cells are not being honest. Much more study is needed before any of these claims can be substantiated, says Kapil Bharti, Ph.D., a research scientist at the National Eye Institute of the National Institutes of Health who is at the leading edge of research on using pluripotent cells to treat macular degeneration. "The problem with the cells is what we don't know. Those clinics inject the cells and hope they will secrete something beneficial, but every time they do the injections, they're ( 7 )ing the dice," he says.

The scientific consensus is that stem cells taken from fat or bone marrow are not as malleable as embryonic cells, meaning that rather than turn into completely different cells, they mostly create more of the same tissue. "There is zero evidence, for example, that bone marrow tissue can make eye tissue, even though many of these clinics say it can. The cells don't integrate, so they ( 8 ) off," Bharti says—and the injections may cause significant damage in the process.

[注]

akin : 同種の	antibiotic : 抗生物質
arthritic : 関節炎の	belly : 腹部
bioethics : 生命倫理	bone marrow : 骨髄
boost : 強化する	buttock : 臀部
buzz : うわさ, 話題	clinical trial : 臨床試験
coax : 慎重に操作する	cosmetic : 美容のための
cutting-edge : 最先端の	diabetes : 糖尿病
dice : さいころ	embryo : 胎芽
federal regulation : 連邦規制	for-profit : 営利目的の
inject : 注入する	insert : 挿入する
integrate : 融合する	intervention : 治療介入
liposuction : (手術で脂肪を)吸引する	macular degeneration : 黄斑変性(目の病気)
malleable : 影響されやすい	multiple sclerosis (MS) : 多発性硬化症
myriad : 多種多様な	nascent : 発生期の
periphery : 周辺	petri dish : ペトリ皿
proliferate : 急増する, 増殖する	prowess : 優れた能力
regenerative medicine : 再生医療	rheumatoid arthritis : 関節リウマチ
scrambling : 急いで行う	secrete : 分泌する
stroke : (脳)卒中	stunned : 衝撃を受けた
substantiate : 立証する	testimonial : 証拠
tissue : 組織	vaccination : 予防接種

[語 群]

cautious	claim	die	limit
potential	practice	remain	roll