

[ I ]

Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question "A", write your answers in the corresponding spaces provided on the Writing Answer Sheet.

(Based on Karen S. Cosby "Do Teams Make Better Diagnoses?" from "Diagnosis Interpreting the Shadows" by Pat Croskerry, Karen S. Cosby, Mark L. Graber, Hardeep Singh. 2017.)

① We tend to view the work of diagnosis and treatment as a solo task with images of the doctor sitting, thinking, and deciding. In academia, we envision a gray-haired professor encircled by captivated young trainees. After all, diagnosis and treatment are important tasks requiring [Q1a] and [Q1b]. The doctor is the leader; the surgeon is the captain of the ship.

② [Q2] model for diagnosis and treatment, suited to work as it actually happens today, is one that includes cross-discipline collaboration and teamwork. Admittedly, no single person possesses all the necessary expertise. Knowledge, skills, and expertise are shared across the spectrum of medicine. Diagnosis and treatment are no longer the domains of a single person but rather the joint work products of many individuals. They are also best seen as processes that are incremental, occurring over time and space, involving multiple testing modalities, consultations, and cooperation. Whether we realize it or not, our skill in working and collaborating with other professionals may be a significant factor in our success. The effective use of teams and teamwork principles has been suggested as one strategy to improve the process.

③ Everyone loves the concept of teams and teamwork. The idea of teamwork conjures up images of the *esprit de corps*\*<sup>1</sup> of a group of individuals working (even racing) toward a goal, supporting one other, and sacrificing for the good of the whole. But does a teamwork model fit the work of diagnosis and treatment, particularly diagnosis which is a process that is largely intangible and unseen?

④ Many have argued that teamwork is one solution for some diagnostic and/or treatment failures, but simply assigning people to teams will likely do little to achieve better results. The argument for teamwork is based on the recognition that a lack of teamwork and poor task design often lead to diagnostic or treatment errors. Good, effective, and highly functioning teams can address many of the problems that manifest in healthcare, but teams tend to reflect the culture that gives rise to them, and may reproduce the same flaws that exist in the underlying organization.

- ⑤ Potential problems with team structure include the following:
- Teamwork implies effective, timely, and accurate communication. However, many communication failures are the result of a complex dynamic in relationships between people. If we fail to address the cultural issues that impact how individuals communicate in healthcare, much of the improvement we seek in team structures will fail.
  - Individuals tend to contribute less to a project as more people are added to the task, a concept described as *social loafing*. One such example is when workers are asked to pull a rope, the effort they expend decreases with the successive addition of more workers.
  - Teams may lead to the diffusion of responsibility, such that no one feels, or takes, responsibility for team actions. This tendency has been observed outside the field of medicine where bystanders are less inclined to intervene in an emergency if others are present. This tendency may be compounded further in medicine when members are uncertain of their roles, or fearful of taking charge when there are others with greater authority or seniority.
  - Healthcare providers work in hierarchical settings, and the role of any given team member may be ambiguous. The willingness to take charge, make a decision, or speak for the team may be influenced by *authority gradients*, fears of criticism or reprisal, or uncertainty.
  - Teams can develop an illusion of invulnerability and become overly confident.
  - Very dominant teams may have unquestioned belief in their group. Strong groups may give the appearance of unanimity, when in fact, less dominant members feel discouraged from questioning or challenging the team. *Groupthink* may sway the team members to buy into a decision simply because it seems to reflect the majority opinion. Unquestioned belief in *Groupthink* can have devastating and even fatal consequences.
- ⑥ Team training is now integrated into many medical schools and the healthcare community is widely adopting strategies to teach and promote teamwork. However, we should use caution to ensure that the teams we build are [Q5a] and [Q5b]. And ultimately, we need to understand that the change we seek is not necessarily one of team structure, but rather a change in attitudes and culture.
- ⑦ We can describe diagnosis and treatment as decisions that are made in a single moment by a single person, or decisions made by a number of individuals acting in sequence, or a process that occurs over space and time depending on numerous people and processes, or as real-time face-to-face collaborative processes. These differing images reflect the varied settings in which diagnosis and treatment take place. Individual excellence in cognition is essential for all diagnostic work. But some diagnostic work and treatments also require interpersonal communication skills and professional collaboration. Diagnostic and treatment excellence within healthcare organizations also require institutional commitment to reliable processes for the timely and accurate flow of information, support for second opinions, and structures for team development. The concept of multidisciplinary medical teams has become rather expansive and open to a number of new voices and opinions. Regardless of setting, a culture of safe and accurate diagnosis and treatment is one that engages the patient, the only constant throughout the clinical journey.

⑧ Are diagnosis and treatment team efforts or based on individual skills? The answer is both. No amount of team structure can compensate for poor decision-making skills or a lack of individual expertise. However, we can also argue that individual skills are insufficient for diagnosis and treatment in the complex medical system that clinicians and patients must navigate. Future work in building team structures and support for diagnosis and treatment looks promising, but we should recognize that it will require a significant investment in resources to ensure that we form reliable and effective teams.

\*<sup>1</sup> esprit de corps: (French) refers to a common group spirit.

**Q 1 . In paragraph ① (line 4), which of the following contains a set of words that could best be added to [Q1 a] and [Q1 b], respectively ?**

	Q1 a	Q1 b
1 .	connections	devotees
2 .	expertise	leadership
3 .	persistence	solitude
4 .	repetition	imagination
5 .	uniformity	concentration

**Q 2 . Which of the following phrases could best be added to [Q2] to start off paragraph ② ?**

- 1 . A more realistic
- 2 . A purely theoretical
- 3 . An inherently inferior
- 4 . A simpler and unconditioned
- 5 . A hierarchical from the top down

**Q 3 . In paragraph ③ (line 2), why does the author use the underlined parenthetical phrase (even racing) in the context of this article ?**

- 1 . It is used to suggest that sprinting towards a midpoint is necessary.
- 2 . It is used to emphasize that charging forward at all costs is the way to go.
- 3 . It is used to illustrate that competition can sometimes be beneficial in accomplishing goals.
- 4 . The reason for its use is to point out that sharing information in one direction is vital to success.
- 5 . The reason for its use is to show that a head-to-head confrontational approach is always better when aiming for desired outcomes.

**Q 4 . Which of the following statements best represents the key information the author is trying to make in paragraph ④ ?**

- 1 . Teams reflect the best that diverse cultures have to offer.
- 2 . Mistakes in decision-making are invariably based on a lack of cooperative teamwork.
- 3 . Working in teams is the only solution to addressing diagnostic and treatment errors.
- 4 . Best results are consistently obtained by carefully assigning the proper tasks to individual members.
- 5 . Groups created to solve problems and come up with solutions are only as good as the original source pool from which the individual members were selected from.

**Q 5 . In paragraph ⑥ (line 3), which of the following contains a set of words that could best be added to [Q5a] and [Q5b], respectively ?**

	Q5a	Q5b
1 .	coping	flawless
2 .	dominant	commanding
3 .	healthy	effective
4 .	quick	punctual
5 .	rich	repetitive

**Q 6 . What is the main message the author is trying to convey in the last underlined sentence of paragraph ⑦ ?**

- 1 . Diversity enhances, engages, and creates safe cultures.
- 2 . The less people involved in identifying the disorder, the better the final decision that is reached.
- 3 . Discussions based on real people coming together to help others should be the priority in some healthcare settings.
- 4 . The process of solving problems and finding solutions should never lose sight of those whom the process is created to serve.
- 5 . Communication and rules among departments are the most important concerns when working together in a clinical environment.

**Q 7 . Which of the following is not mentioned by the author in paragraph ⑧ ?**

- 1 . A group's ability.
- 2 . A person's ability.
- 3 . The complicated nature of the healthcare environment.
- 4 . The fundamental qualities needed for successful group outcomes.
- 5 . Precisely, the step-by-step sequence as to how teams are constructed.

**Q 8 . Based on a reading of the entire article, which of the following best represents the author's overall thinking on this topic ?**

- 1 . Good spirits are critical to form good teams.
- 2 . There are three primary problems with structuring teams.
- 3 . The best decision-making will always result from teamwork.
- 4 . Training for good goals will result in the best teams for healthcare institutions.
- 5 . The process of building teams is important, but the quality of the teams being built should also be considered.

**Writing Answer Question "A"**

Based on the discussions in Article [ I ], write the appropriate descriptive term (or the single word "None" if none apply) in the "Descriptive Term" column that best describes the team structure problem presented in the "Situation" column. The descriptive term answers can be found in Article [ I ] (particularly paragraph ⑤) and are also listed for your convenience in alphabetical order on the Writing Answer Sheet to choose from.

Be sure to read each situation in the first column on the Writing Answer Sheet carefully and then write your Descriptive Term answers (that best fit each situation) in the second column. (Please note, the first Situation labeled "Ex." is only an example that is included to help you better understand the instructions.)

## [ II ]

**Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question “B”, write your answer in the corresponding spaces provided on the Writing Answer Sheet.**

(Based on Yuval Noah Harari. 2018. *21 Lessons for the 21<sup>st</sup> Century*.)

- ① The liberal belief in the feelings and free choices of individuals is neither natural nor very ancient. For thousands of years people believed that authority came from divine\*<sup>1</sup> laws rather than from the human heart, and that we should therefore sanctify the word of God rather than human liberty. Only in the last few centuries did the source of authority shift from celestial deities\*<sup>2</sup> to flesh-and-blood humans.
- ② Soon authority might shift again—from humans to algorithms. Just as divine authority was legitimised\*<sup>3</sup> by religious mythologies, and human authority was justified by the liberal story, so the coming technological changes might establish the authority of Big Data algorithms, while undermining the very idea of individual freedom.
- ③ Scientific insights into the way our brains and bodies work suggest that our feelings are not some uniquely human spiritual quality, and they do not reflect any kind of ‘free will’. Rather, feelings are biochemical mechanisms that all mammals and birds use in order to quickly calculate probabilities of survival and reproduction. Feelings aren’t based on intuition, inspiration or freedom — they are based on calculation.
- ④ For we are now at the confluence of two immense revolutions. On the one hand biologists are deciphering the mysteries of the human body, and in particular, of the brain and of human feelings. At the same time computer scientists are giving us unprecedented data-processing power. When the biotech [Q12] merges with the infotech [Q12], it will produce Big Data algorithms that can monitor and understand my feelings much better than I can, and then authority will probably shift from humans to computers. My illusion of free will is likely to disintegrate as I daily encounter institutions, corporations and government agencies that understand and manipulate what was hitherto my inaccessible inner realm.
- ⑤ The most important medical decisions in our life rely not on our feelings of illness or wellness, or even on the informed predictions of our doctor — but on the calculations of computers which understand our bodies much better than we do. Within a few decades, Big Data algorithms informed by a constant stream of biometric data could monitor our health twenty-four hours a day, seven days a week. They could detect the very beginning of influenza, cancer or Alzheimer’s disease, long before we feel anything is wrong with us. They could then recommend appropriate treatments, diets and daily regimens, custom-built for our unique physique, DNA and personality.

- ⑥ People will enjoy the best healthcare in history, but for precisely this reason they will probably be sick all the time. There is always something wrong somewhere in the body. There is always something that can be improved. In the past, you felt perfectly healthy as long as you didn't sense pain or you didn't suffer from an apparent disability such as limping\*<sup>4</sup>. But by 2050, thanks to biometric sensors and Big Data algorithms, diseases may be diagnosed and treated long before they lead to pain or disability. As a result, you will always find yourself suffering from some 'medical condition' and following this or that algorithmic recommendation. If you refuse, perhaps your medical insurance would become invalid, or your boss would fire you — why should they pay the price of your obstinacy\*<sup>5</sup>?
- ⑦ It is one thing to continue smoking despite general statistics that connect smoking with lung cancer. It is a very different thing to continue smoking despite a concrete warning from a biometric sensor that has just detected seventeen cancerous cells in your upper left lung. And if you are willing to defy the sensor, what will you do when the sensor forwards the warning to your insurance agency, your manager and your mother?
- ⑧ Who will have the time and energy to deal with all these illnesses? In all likelihood, we could just instruct our health algorithm to deal with most of these problems as it sees fit. At most, it will send periodic updates to our smartphones, telling us that 'seventeen cancerous cells were detected and destroyed'. Hypochondriacs\*<sup>6</sup> might dutifully read these updates, but most of us will ignore them just as we ignore those annoying anti-virus notices on our computers.

\*<sup>1</sup> divine: directly from God.

\*<sup>2</sup> celestial deities: Gods.

\*<sup>3</sup> legitimised: made acceptable.

\*<sup>4</sup> limping: to walk unevenly.

\*<sup>5</sup> obstinacy: stubbornness.

\*<sup>6</sup> Hypochondriac: a person who continuously worries about their health without any real reason to do so.

**Q 9. Which of the following is true of the author's descriptions in paragraphs ①, ②, and ③?**

1. Humans' feelings are determined only by their free will.
2. In the 19th century, individuals had no choice in making decisions.
3. Data algorithms can predict biochemical mechanisms in all life forms.
4. Ancient people believed in their own will, rather than the words of God.
5. Birds' feelings are the results of calculating the probability of their survival.

**Q10. In paragraph ② (line 4), the underlined word undermining is closest in meaning to –**

- 1 . admitting
- 2 . constructing
- 3 . destroying
- 4 . exaggerating
- 5 . integrating

**Q11. In paragraph ④ (line 3), the underlined word unprecedented is closest in meaning to –**

- 1 . customary
- 2 . extraordinary
- 3 . perfect
- 4 . strange
- 5 . traditional

**Q12. In paragraph ④ (line 4), which of the following could best be added to [Q12] ?**

- 1 . businesses
- 2 . choice
- 3 . commercials
- 4 . material
- 5 . revolution

**Q13. Which of the following is true of the author's descriptions in paragraphs ⑤, ⑥, and ⑦ ?**

- 1 . Most medical decisions are made solely by doctors.
- 2 . Big Data algorithms will not alter the number of sick people.
- 3 . The diagnosis of disease will be postponed by using biometric sensors.
- 4 . Monitoring of biometric data could recommend to each patient what to eat.
- 5 . The number of treatments covered by medical insurance will increase in the future.

**Q14. In paragraph ⑦ (line 4), the underlined word defy is closest in meaning to –**

- 1 . check
- 2 . decide
- 3 . obey
- 4 . research
- 5 . resist



**Q15. Which of the following is most suitable as the theme of this article ?**

- 1 . The words of God.
- 2 . Listen to the algorithm.
- 3 . Mechanisms of feelings.
- 4 . Development of medicine.
- 5 . Management of business corporate data.

**Writing Answer Question “B”**

On the Writing Answer Sheet, put the following words into the proper order necessary to complete the summary sentence about Article [II]. Please put them in the order that makes the best sense within the context of the entire article. Write your answer in the space provided in the Writing Answer Question “B” section. The word “You” should be the first word and the word “from” should be the seventh word.

[always] [condition] [find] [medical] [some] [suffering] [yourself] [will]

You [       ] [       ] [       ] [       ] [       ] from [       ] [       ] [       ].

### [ III ]

Read the following article carefully and answer the questions. For each question, choose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. For Writing Answer Question "C" write your answers in the corresponding spaces provided on the Writing Answer Sheet.

(Based on Loren Eiseley. 2016. *Eiseley Collected Essays on Evolution, Nature, and the Cosmos, Volume One.* The Library of America.)

① Man\*<sup>1</sup> is at heart a romantic. He believes in thunder, the destruction of worlds, the voice out of the whirlwind. Perhaps the fact that he himself is now in possession of powers seized from the atom's heart has enhanced the appeal of violence in natural events. The human generations are short-lived. We have difficulty in visualizing the age-long processes involved in the rising of mountain systems, the advance of continental freezing or the creation of life. In fact, scarcely two hundred years have past since a few wary pioneers began to suspect that the earth might be older than the 4004 years B.C. assigned to it by the theologians.

② Man has always had two ways of looking at nature, and these two divergent approaches to the world can be observed among modern primitive peoples, as well as being traceable far into the primitive past. Man has a belief in seen and unseen nature. He is both [Q16a] and [Q16b]. He has been so from the beginning, and it may well be that the quality of his inquiring and penetrating intellect will cause him to remain so till the end.

③ Primitive man, grossly superstitious though he may be, is also scientist and technologist. He makes tools based upon his verifiable observation of the simple forces around him. Man would have vanished long ago if he had been content to exist in the wilderness of his own dreams. Instead he compromised. He accepted a world of reality, a natural, everyday, observable world in which he existed, and whose forces he utilized in order to survive. The other aspect of his mind, the mystical part seeking answers to final questions, clothed this visible world in a glowing fog of magic. Unseen spirits moved in the wood. Today in our sophistication we smile, but we are not satisfied with the appearances of the phenomenal world around us. We wish to pierce beneath to ask the question, "Why does the universe exist?" We have learned a great deal about secondary causes, about the *how* of things. The why, however, eludes us, and as long as this is the case, we will have a yearning for the marvelous, the explosive event in history. Indeed, so restless is man's intellect that were he to penetrate to the secret of the universe tomorrow, the likelihood is that he would grow bored on the day after.

④ A scientist writing around the turn of this century\*<sup>2</sup> remarked that all of the past generations of men have lived and died in a world of illusions. The unconscious irony in his observation consists in the fact that this man assumed the progress of science to have been so great that a clear vision of the world without illusion was, by his own time, possible. It is needless to add that he wrote before Einstein, before the spread of Freud's doctrines, at a time when Mendel was just about to be rediscovered, and before advances

in the study of radioactivity had made their impact—of both illumination and confusion—upon this century\*<sup>2</sup>.

⑤ Certainly science has moved forward. But when science progresses, it often opens vaster mysteries to our gaze. Moreover, science frequently discovers that it must abandon or modify what it once believed. Sometimes it ends by accepting what it has previously scorned. The simplistic idea that science marches undeviatingly down an ever broadening highway can scarcely be sustained by the historian of ideas. As in other human affairs, there may be prejudice, rigidity, timid evasion and sometimes inability to reorient oneself rapidly to drastic changes in world view.

⑥ The student of scientific history soon learns that a given way of looking at things, a kind of unconscious conformity which exists even in a free society, may prevent a new contribution from being followed up, or its implications from being fully grasped. The work of Gregor Mendel, founder of modern genetics, suffered such a fate. Darwin's forerunners endured similar neglect. Semmelweis, the discoverer of the cause of childbed fever\*<sup>3</sup>, was atrociously abused by his medical colleagues. To rest uneasy consciences, we sometimes ascribe such examples of intolerant behavior to religious prejudice—as though there had been a clean break, with scientists all arrayed under the white banner of truth while the forces of deception parade under the black flag of prejudice.

⑦ The truth is better, if less appetizing. Like other members of the human race, scientists are capable of prejudice. They have occasionally persecuted other scientists, and they have not always been able to see that an old theory, giving a hairsbreadth twist, might open an entirely new vista to the human reason.

⑧ I say this not to defame the profession of learning but to urge the extension of education in scientific history. The study leads both to a better understanding of the process of discovery and to that kind of humbling and [Q22] wisdom which comes from a long knowledge of human folly in a field supposedly devoid of it. The man who learns how difficult it is to step outside the intellectual climate of his or any age has taken the first step on the road to emancipation, to world citizenship of a high order.

⑨ He has learned something of the forces which play upon the supposedly [Q23] mind of the scientist; he has learned how difficult it is to see differently from other men, even when that difference may be incalculably important. It is a study which should bring into the laboratory and the classroom not only greater tolerance for the ideas of others but a clearer realization that even the scientific atmosphere evolves and changes with the society of which it is a part. When the student has become consciously aware of this, he is in a better position to see farther and more impartially in the guidance of his own research. A not unimportant by-product of such an awareness may be an extension of his own horizon as a human being.

\*<sup>1</sup> Man: this term is used to represent humanity as a whole.

\*<sup>2</sup> this century: originally published in 1960.

\*<sup>3</sup> childbed fever: an elevated body temperature in the mother following the birth of a child.

**Q16. In paragraph ② (line 4), which of the following contains a set of words that could best be added to [Q16a] and [Q16b], respectively ?**

	Q16a	Q16b
1 .	brave	courageous
2 .	cool	calm
3 .	objective	quantifying
4 .	reasonable	illogical
5 .	vigorous	weak

**Q17. Which of the following is not true of the author's descriptions in paragraph ③ ?**

- 1 . Scientific progress has made mankind proud, but not content.
- 2 . Humans have always been overly simple, believing completely in storytelling narratives.
- 3 . Scientific inquiry has allowed mankind to detect patterns that would otherwise have remain hidden.
- 4 . Humans have developed devices to manipulate the environment in response to the detected patterns encountered.
- 5 . Even answering the ultimate questions through science would not mark the end of the search for even more answers.

**Q18. What is the main point the author trying to say in paragraph ④ ?**

- 1 . Albert Einstein's discoveries are all that physics has to offer.
- 2 . Sigmund Freud's writings are the final word on psychological insight.
- 3 . Gregor Mendel's studies in genetics were not added to by the ideas of others.
- 4 . The process of scientific discovery is an ongoing search without an endpoint.
- 5 . Scientific discoveries always add a clearer understanding of the world around us.

**Q19. Which of the following is true of the author's descriptions in paragraph ⑤ ?**

- 1 . Quick corrections in worldviews are easily made possible by science.
- 2 . Scientific discoveries lead only to clearer and narrower destination points.
- 3 . The self-correcting mechanisms inherent in science allow for a recalibration of positions.
- 4 . Historical precedence validates the fact that the scientific road always heads in the correct direction.
- 5 . Adhering to the scientific way of thinking excludes the possibility of prejudging things and others.

**Q20. Which of the following words, when pronounced, has the same primary stress location as the underlined word atrociously in paragraph ⑥ (line 6) ?**

- 1 . agriculture
- 2 . characterize
- 3 . diagnosis
- 4 . facilitate
- 5 . variable

**Q21. In paragraph ⑦ (line 3), the underlined word hairsbreadth is closest in meaning to –**

- 1 . considerable
- 2 . exhaustive
- 3 . gross
- 4 . minute
- 5 . vast

**Q22. In paragraph ⑧ (line 3), which of the following could best be added to [Q22] ?**

- 1 . antagonistic
- 2 . boastful
- 3 . error-free
- 4 . prejudiced
- 5 . regretful

**Q23. In paragraph ⑨ (line 1), which of the following could best be added to [Q23] ?**

- 1 . adventurous
- 2 . contented
- 3 . dispassionate
- 4 . invisible
- 5 . mythmaking

**Writing Answer Question “C” (includes C1 and C2)**

On the writing Answer Sheet, write the appropriate word in the blocks provided in the Writing Answer Question “C” (C1 and C2) section to complete the summary sentence below. C1 requires exactly ten letters and C2 requires exactly five letters. The words required appear in the main text. You must use the appropriate word, exactly as it appears in the main text, that correctly best completes the meaning and context of the sentence. Please write clearly. [C1] begins with the letter “s” and [C2] begins with the letter “f”.

The [C1] method can be seen as a potential counterbalance to the [C2] of human self-importance when it comes to understanding our physical world.

**[IV]**

Read the following question carefully and answer the question. Chose ONE BEST answer. On your answer sheet, find the number of the question and fill in the space that corresponds to the number of the answer you have chosen. The following question pertains to all three articles ( I , II , and III).

**Q24. Which of the following expresses a statement that correctly summarizes and could best be considered representative of the overall concepts for all three articles ( I , II , and III)?**

- 1 . Large groups always make the best objective decisions that are fair and just.
- 2 . Free choice, teamwork, and instinctive decision-making are the preferred ways to navigate the world by.
- 3 . Reorienting from a wrong direction is an easy task so long as individual expert opinions guide the decision making process.
- 4 . Input from wide and varied sources collectively working together can potentially lead to improved and beneficial outcomes.
- 5 . Advanced flowcharts, based on previous errors, so long as multidisciplinary inputs have been achieved, are always the wisest maps to guide going forward.