

DEVOIR DE FIN DE SEMESTRE N°1

PART ONE: READING COMPREHENSION (18 mks):

I-Select the statement that best relates to the text (1mk):

- 1- Robotic surgery is still far removed from reality.
- 2- Laparoscopic surgery remains hard for robots due to the unpredictability.
- 3- Fully automated surgery is ahead of us.

II-Say whether the statements below are True or False and justify from the text on the answer sheet (3mks):

- 1-The “Star” robot properly performed surgery on pigs thanks to doctors’ intervention.
- 2-Laparoscopic surgery is a technique that has little margin for error.
- 3-Alex Krieger thinks that the medical achievement marks a significant step towards automated surgery that could one day make patient care accessible to everyone.

III-Complete the paragraph on the answer sheet with reference to the text (3mks):

IV- Sort out 2 main features characterizing the new vision-guided system designed by experts specifically to suture soft tissues (2mks):

V- Why is The Smart Tissue Autonomous Robot considered unique of its kind? (2mks):

VI -Explain the sentence below in your own words (1mk):

“the robot excelled at the procedure” (§2).

VII -Find words in the text having nearly the same meaning as the following (3mks):

- 1- intensify or improve the quality of something. (§1).
- 2- small in degree or inconsiderable (§4).
- 3- happening or behaving in a way that you expect (§7).

VIII- What do the underlined items in the text refer to? (3mks):

- 1-“its” (§1).
- 2-“the same procedure” (§3).
- 3-“it” (§6).

PART TWO: LANGUAGE (10mks):

TASK 1: Choose the right option (answer on the answer sheet) (5mks):

It is clear that the study of space and the planets is by nature expensive. Scientists and politicians must constantly ① (**attempt / succeed / argue**) to balance costs with potential research benefits. A major question to be ② (**considering / considered / considerable**) is whether the benefits of manned space flight are worth the costs. For Nobel Prize-winning ③ (**physicist / physician / physically**) Steven Weinberg the answer is clear. As he noted in 2007 in a lecture ④ (**at / in / on**) the Space Telescope Science Institute in Baltimore. 'Human beings don't serve ⑤ (**none / any / some**) useful function in space. They radiate heat, they're very expensive to keep ⑥ (**live / life / alive**), and unlike robotic missions, they have a natural desire to come back, ⑦ (**but / moreover / so that**) anything involving human beings is enormously expensive.' Unmanned missions are ⑧ (**much / more / many**) less expensive than manned, having no requirement for airtight compartments, food or life support systems. They are also lighter and therefore require less fuel and launch ⑨ (**equipments / equipped / equipment**). According to NASA, the 1992 manned Space Shuttle Endeavor cost \$1.7 billion to build and requires ⑩ (**extremely / occasionally / approximately**) \$450 million for each launch. In contrast, the entire unmanned Voyager mission from 1972 until 1989, when it observed Neptune, cost only \$865 million.

TASK 2: Express differently starting as given on the answer sheet (5mks):

- 1- Despite the heavy rain, they had a great time in Paris.
- 2- The bridge was so low that the bus couldn't go under it.
- 3- Allan is too young to travel abroad on his own.
- 4- Oil spills were slowly covering the sand of the beach.
- 5- Jim must mend his ways; otherwise he'll end up in prison.

PART THREE: WRITING (12mks):

TASK 1: The paragraph below contains 4 mistakes. Find them out and correct them in the space provided on the answer sheet (2mks):

Science fiction writers dreamt of space flight for hundreds of years but, the age space only began in 1957 when the first satellite, Sputnik I, went onto orbit around the Earth. In 1959, Luna I was the first probe to escape from the Earth completly and in 1961 Yuri Gagarin was the first human to fly in space.

TASK2: Rearrange the chunks below to get a coherent paragraph (2mks):

- a- They measure the effect of weightlessness on themselves,
- b- Astronauts work hard in their space station
- c- on growing plants and on small creatures such as spiders and bees.
- d- studying the Earth below, the distant stars and galaxies.

Task3: Essay (8mks):

These days most people have their own computers and cell phones so, it is quite easy for them to work from home. In a 15-line essay demonstrate how teleworking is beneficial for both employers and employees. Support this idea with clear examples.

1-For years, the world of medicine has been steadily advancing the art of robot-assisted procedures, enabling doctors to enhance their technique inside the operating theatre. Now US researchers say a robot has successfully performed keyhole surgery on pigs all on **its** own – without the guiding hand of a human. Furthermore, they add, the robot surgeon produced “significantly better” results than humans.

2-The breakthrough is another step towards the day when fully automated surgery can be performed on patients. The Smart Tissue Autonomous Robot (Star) carried out laparoscopic surgery to connect two ends of an intestine in four pigs. According to a paper published in Science Robotics, the robot excelled at the procedure, which requires a high level of precision and repetitive movements.

3-Axel Krieger, of Johns Hopkins University, said it marked the first time a robot had performed laparoscopic surgery without human help. “Our findings show that we can automate one of the most intricate and delicate tasks in surgery: the reconnection of two ends of an intestine,” he said. “The Star performed the procedure in four animals and it produced significantly better results than humans performing **the same procedure.**”


4-Connecting two ends of an intestine is a challenging procedure in gastrointestinal surgery, requiring a surgeon to apply stitches – or sutures – with high accuracy and consistency. Even a slight hand tremor or misplaced stitch can result in a leak that could result in a patient suffering fatal complications.

5-Krieger, an assistant professor of mechanical engineering at Johns Hopkins, helped create the robot, a vision-guided system designed specifically to suture soft tissue. It improves a 2016 model that repaired a pig’s intestines, but required a large incision to access the intestine and more guidance from humans.

6-Experts say new features allow for improved surgical precision, including specialised suturing tools and imaging systems that provide more accurate visualisations of the surgical field. It is hard for robots to perform soft-tissue surgery because of how unpredictable **it** can be, forcing them to be able to adapt quickly to handle unexpected obstacles. The paper set out a novel control system in the Star that can adjust the surgical plan in real time, just as a human surgeon would.

7-“What makes the Star special is that it is the first robotic system to plan, adapt, and execute a surgical plan in soft tissue with minimal human intervention,” Krieger said. “Robotic anastomosis (surgically joining two structures) is one way to ensure that surgical tasks that require high precision and repeatability can be performed with more accuracy and precision in every patient independent of surgeon skill. We hypothesise that this will result in a democratised surgical approach to patient care with more predictable and consistent patient outcomes.”

Andrew Gregory
The Guardian
26 January 2022

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ANSWER SHEET

PART ONE: READING COMPREHENSION (18mks):

I. The statement that best relates to the text (1mk):

II. True / False statements (3mks):

1. (-----) Justification:-----
2. (-----) Justification:-----
3. (-----) Justification:-----

III. Paragraph completion (3mks):

A robot has ----- carried out -----on pigs
 -----assistance, which researchers say is a groundbreaking
 -----The operation is particularly delicate because it requires
 -----, -----and repeatability.

IV- The 2 main features characterizing the new vision-guided system designed by experts specifically to suture soft tissues (2mks):

- 1-----
- 2-----

✂-----

V- The Smart Tissue Autonomous Robot is considered unique of its kind because (2mks):

VI – Sentence explanation (1mk):

VII –Vocabulary items: (3mks):

- 1- -----
2- -----
3- -----

VIII- Reference words: (3mks):

- 1- -----
2- -----
3- -----

PART TWO: LANGUAGE (10mks):

TASK 1: The right options (5mks):

1		6	
2		7	
3		8	
4		9	
5		10	

✂-----

TASK 2: Express differently starting as given (5mks) :

- 1-Although-----
- 2-It was such-----
- 3- Allan isn't-----
- 4- The sand of the beach-----
- 5-Unless-----

PART THREE: WRITING(12mks):

TASK 1: Mistakes and Correction(2mks):

Mistake		Correction	
1		1	
2		2	
3		3	
4		4	

TASK2: Rearranging the chunks (2mks):

1→	2→	3→	4→
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4