令和７年度東京海洋大学海洋工学部
編入学（学力）試験問題

外国語（英語）１

前半（６０分）

〈１３：１５～１４：１５〉

注　意　事　項

１．外国語（英語）１の試験では、この問題冊子１部の他、解答用紙１枚、英和辞典１冊を配付します。
２．解答用紙には、受験番号・氏名を忘れないで記入してください。
３．解答は、問題ごとに、解答用紙の所定の欄に記入してください。
４．英和辞典には、絶対に、書き込みをしないでください。
５．試験終了後、問題冊子は持ち帰ってください。

令和６年６月14日（金）実施

令和７年度海洋工学部編入学学力試験（令和６年６月 14 日実施）

外国語１（英語－前半 60 分）

I. working memory（作業記憶）についての次の英文を読み、その内容に従って設問に日本語で答えなさい。（各 10 点、合計 30 点）

Working memory is one of the brain's executive functions, a skill that allows humans to process information without losing track of what they're doing. In the short term, working memory allows the brain to complete an immediate task, like loading the dishwasher. Long term, it helps the brain decide what to store for future use, such as whether more dishwasher soap will be needed.

University of Texas at Arlington researchers know that working memory varies greatly among individuals, but they aren't sure exactly why. To better understand, Matthew Robison, assistant professor of psychology, and doctoral student Lauren D. Garner conducted an experiment to see if studying a person's pupils (the centers of their eyes) was a good indicator of working memory.

Normally, a person's pupils naturally widen (or dilate) in low-light environments to allow more light into the eye. However, in their new study published in the peer-reviewed journal *Attention, Perception & Psychophysics*, the researchers reported that a person's pupils also dilate when they are concentrating on tasks. In particular, they found that the more a person's eyes dilated during the task, the better they did on tests measuring their working memory.

For the study, he and Garner recruited 179 undergraduate students at UT Arlington. Participants completed several working memory tasks where they were presented with information and then asked to remember it for a few seconds. During the tasks, participants had their pupils continuously measured using an eye-tracker, similar to what optometrists use during eye exams.

問１　working memory の短期的ならびに長期的な働きを簡潔にまとめなさい。

問２　人間の瞳孔が拡張するのはどんな時か。２つの場合を簡潔にまとめなさい。

問３　最終パラグラフに記述されている実験の手順を、簡単にまとめなさい。
（注：eye-tracker　はそのまま「アイトラッカー」でよい。）

II.　次の英文を読み、注を参考にして、下線部 (1)〜(3) を日本語に訳しなさい。
（各 10 点、合計 30 点）

Robotics engineers have worked for decades and invested many millions of research dollars in attempts to create a robot that can walk or run as well as an animal..And yet, (1) it remains the case that many animals are capable of feats that would be impossible for robots that exist today.

"A wildebeest can migrate for thousands of kilometers over rough terrain, (2) a mountain goat can climb up a cliff, finding footholds that don't even seem to be there, and cockroaches can lose a leg and not slow down," says Dr. Max Donelan, Professor in Simon Fraser University's Department of Biomedical Physiology and Kinesiology. "We have no robots capable of anything like this endurance, agility and robustness."

(3) To understand why robots lag behind animals, scientists and engineers from several universities completed a detailed study of various aspects of running robots, comparing them with their equivalents in animals.

（注: feat「スゴ技」、mountain goat「シロイワヤギ」）