Proficiency test for Masters and PhD candidates
In partnership with UNIFESP

Name of candidate:
Number of candidate:
Candidate for: ( ) Mestrado Acadêmico ( ) Mestrado Profissional ( ) Doutorado

Allocated time for the test: 180 minutes

Instructions

The test includes four different texts. The candidate must answer the questions to all four texts.

The **ANSWER SHEET** is the only valid place to enter answers, in ink, with name and number clearly indicated.

3 hours is the maximum time allocated for the test. Candidates may leave the exam room before that if they finish earlier.

Candidates are allowed to use one dictionary without any notes. All cell

Signature	

phones and other electronic devices must be turned off during the test.

TEXT 1	WORLD'S FASTEST OPTICAL NEUROMORPHIC PROCESSOR

A	An international team of researchers led by Swinburne University of Technology has demonstrated the world's fastest and most powerful optical neuromorphic processor for artificial intelligence (AI) which operates faster than 10 trillion operations per second (TeraOPs/s) and is capable of processing ultra-large-scale data, this breakthrough represents an enormous leap forward for neural networks and neuromorphic processing in general.
B	Artificial neural networks, a key form of AI, can 'learn' and perform _____ operations with wide applications to computer vision, natural language processing, facial recognition, speech translation, playing strategy games, medical diagnosis and many other areas. Inspired by the biological structure of the brain's visual cortex system, artificial neural networks extract key features of raw data to predict properties and behaviour with unprecedented accuracy and simplicity.
C	Led by Swinburne's Professor David Moss, Dr Xingyuan (Swinburne, Monash University) and Distinguished Professor Arnan Mitchell from RMIT University, the team achieved an exceptional feat in optical neural networks: dramatically accelerating their computing speed and processing power.
D	The team demonstrated an optical neuromorphic processor _____ more than 1000 times faster than any previous processor, with the system also processing record-sized ultra-large-scale images -- enough to achieve full facial image recognition. **This is something that other optical processors have been unable to accomplish.**
E	"This breakthrough was achieved with 'optical micro-combs', as was our world-record internet data speed reported in May 2020," says Professor Moss, Director of Swinburne's Optical Sciences Centre.
F	While state-of-the-art electronic _____ such as the Google TPU can operate beyond 100 TeraOPs/s, this is done with tens of thousands of parallel _____. In contrast, the optical system demonstrated by the team uses a single _____ and was achieved using a new technique of simultaneously interleaving the data in time, wavelength and spatial dimensions through an integrated micro-comb source.
G	Micro-combs are relatively new devices that act like a rainbow made up of hundreds of high-quality infrared lasers on a single chip. They are much faster, smaller, lighter and cheaper than any other optical source.
H	"In the 10 years since I co-invented them, integrated micro-comb chips have become enormously important and it is truly exciting to see them enabling these huge advances in information communication and processing. Micro-combs offer enormous promise for us to meet the world's insatiable need for information," Professor Moss says.
I	"We're currently getting a sneak-peak of how the processors of the future will look. It's really showing us how dramatically we can scale the power of our processors through the innovative use of microcombs. This technology is applicable to all forms of processing and communications -- it will have a huge impact. Long term we hope to realise fully integrated systems on a chip, greatly reducing cost and energy consumption." Dr Xu explains.
J	Convolutional neural networks have been central to the AI revolution, but existing silicon technology increasingly presents a bottleneck in processing speed and energy efficiency. This breakthrough shows how a new optical technology makes such networks faster and more efficient and is a profound demonstration of the benefits of cross-disciplinary thinking, in
K	having the inspiration and courage to take an idea from one field and using it to solve a fundamental problem in another.

Enter your answers on the Answer Sheet.

1: What do the initials AI represent found in n paragraph A?
A: analogical intelligence
B: artificial intelligence
C: artefactual intelligence
D: aspirational intelligence

2: Which of the following sentences is not the closest in meaning to the statement
made in the ultimate part of paragraph A?
A: The advance is a demonstration representing a colossal step forward for neural networks and neuromorphic processing in general.
B: This improvement is conclusive evidence is a giant leap forward for neural networks and neuromorphic processing in general.
C: : This breakthrough is proof of a massive leap forward for neural networks and neuromorphic processing in general.
D: This stalemate is conclusive evidence of a giant leap forward for neural networks and neuromorphic processing in general.

3: Which of the following words can adequately fill in the blank space found in paragraph B?
A: complex
B: streamlined
C: rigorous
D: rudimentary

4: Which word can adequately replace the word 'Inspired' found in paragraph B?
A: motivated
B: enervate
C: discourage
D: prevail

5: What does the word 'unprecedented' refer to in paragraph B?
A: having precedent: CLEARLY EXAMPLES
B: having time honoured precedent: NOVEL
C: having no precedent: NOVEL, UNEXAMPLED
D: having precedent: HACKNEYED

6: The research led by Swinburne's Professor David Moss gave which of
the following results, according to paragraph C?
A: dramatically raising computer speed and processing capacity.
B: heightening some computing speed and processing.
C: improving and heightening their CPUs and capacity.
D: dramatically improving and heightening their computing speed and processing capacity.

7: Which of the following words can adequately fill in the blank space found in paragraph D ?
A: registering
B: listing
C: operating
D: generating

8: Which of the following sentences sums up the accomplishment stated in the last sentence from paragraph D?
A: 1000 times faster is something that other optical processors have been able to accomplish.
B: Other optical processors have been incapable of achieving this was without large scale resolution images.
C: Processing 1000 times faster as well as processing record-sized ultra-large-scale images
D: Processing 1000 times is something that other optical processors have been paralyzed without resolution.

9: Which of the following word sets can adequately fill in the 3 blank spaces found throughout paragraph F?
A: systems systems system
B: processors processors processor
C: chipsets chipsets chips
D: PCs PCs PC

10: Which of the following words are a synonym for the word 'parallel' from paragraph F?
A: unakin
B: lined
C: dissimilar
D: comparable

11: Which of the following sentences adequately defines the phrase 'interleaving the data' in paragraph F?
A: a method for making data retrieval more efficient by rearranging or renumbering the sectors on a hard disk or by splitting a computer's main memory into sections so that the sectors or sections can be read in alternating cycles.
B: a method for making data retrieval somewhat efficient by remarking or renumbering the sectors on a hard disk or by splitting a computer's main memory into sections so that the sectors or sections can be read in alternating cycles.
C: a method for making data retrieval quite efficient by remarking or renumbering the sectors on a hard disk or by splitting a computer's main memory into sections so that the sectors or sections can be read in cycles.
D: a method for making data retrieval affable by remarking or renumbering the sectors or by layering a computer's main memory into sections so that the sectors or sections can be read in alternating cycles.

12: Which adjectives are mentioned in relation to the Micro-combs in paragraph G?
A: smaller, faster & cheaper
B: lighter, faster, cheaper & smaller
C: lighter, faster & cheaper
D: smaller & cheaper

13: What does the adjective 'them' refer to from paragraph H?
A: micro-comb chips
B: process
C: PCs
D: micro-TPU

14: Which definition of the word 'sneak-peak' from paragraph I, line 40 is correct?
A: a brief reason
B: a brief showing
C: a brief review
D: a brief return

15: What does Dr Xu hope for, according to paragraph I?
A: greatly redefining expenditure and energy use
B: greatly readjusting investment and energy demands
C: greatly remodelling investment and energy costs
D: greatly reducing expenditure and energy use

TEXT 2	SO ARE SOFTWARE UPDATES SLOWING YOU DOWN?

A	We've all shared the frustration -- software updates that are intended to make our applications run faster inadvertently end up doing just the opposite. These bugs are time-consuming to fix since locating software errors normally requires substantial human intervention.
B	To overcome this obstacle, researchers at Texas A&M University, in collaboration with computer scientists at Intel Labs, have now developed a complete automated way of identifying the source of errors caused by software updates. Their algorithm, based on a specialized form of machine learning called deep learning, is not only turnkey, but also quick, finding performance bugs in a matter of a few hours instead of days.
C	"Updating software can sometimes turn on you when errors **creep** in and cause slowdowns. This problem is even more exaggerated for companies that use large-scale software systems that are continuously evolving," said Dr. Abdullah Muzahid, assistant professor in the Department of Computer Science. "We have designed a convenient _____ for diagnosing performance regressions that is compatible with a whole range of software and programming languages, expanding its usefulness tremendously."
D	To pinpoint the source of errors within a software, debuggers often check the status of performance counters within the central processing unit. These counters are lines of code that monitor how the program is being _____ on the computer's hardware in the memory, for example. So, when the software runs, counters keep track of the number of times it accesses certain memory locations, the time it stays there and when it exits, among other things. Hence, when the software's behaviour goes awry, counters are again used for diagnostics.
E	"Performance counters give an idea of the execution health of the program," said Muzahid. "So, if some program is not running as it is supposed to, these counters will usually have the tell-tale sign of anomalous behaviour."
F	However, newer desktops and servers have hundreds of performance counters, making it virtually impossible to keep track of all of their statuses _____ and then look for aberrant patterns that are indicative of a performance error. That is where Muzahid's machine learning comes in.
G	By using deep learning, the researchers were able to monitor data coming from a large number of the counters simultaneously by reducing the size of the data, which is similar to compressing a high-resolution image to a fraction of its original size by changing its format. In the lower dimensional data, their algorithm could then look for patterns that deviate from normal.
H	When their algorithm was ready, the researchers tested if it could find and _____ a performance bug in a commercially available data management software used by companies to keep track of their numbers and figures. First, they trained their algorithm to recognize normal counter data by running an older, glitch-free version of the data management software. Next, they ran their algorithm on an updated version of the software with the performance regression.
I	In addition to diagnosing performance regressions in software, it was noted that their deep learning algorithm has potential uses in other areas of research as well, such as developing the technology needed for autonomous driving. "The basic idea is once again the same, that is being able to detect an anomalous pattern," said Muzahid.

Enter your answers on the Answer Sheet.

16: Which definition of the word 'frustration' in paragraph A, line 1, is correct?
A: the feeling of being upset or annoyed because of inability to change or achieve something.
B: the feeling of being annoyed because something has changed.
C: the feeling of being upset because things are difficult.
D: the feeling of being irritated because of change.

17: All the following sentences about 'software updates' mentioned in paragraph A are true, except one.
Choose the exception.
A: Software updates that are intended to make our apps run quicker, but sometimes accidentally end up doing just the opposite.
B: Software updates that are intended to make our apps run correctly, and more often than not, they do just that.
C: Software updates that are intended to make our apps run faster, every now and again unintendedly end up doing just the opposite.
D: Software updates that are created to make our apps perform faster, but occasionally and unwittingly end up not doing that.

18: All the following sentences about 'software updates' mentioned in paragraph A are false, except one.
Choose the exception.
A: These bugs consume a lot of time to fix since locating the software errors usually requires substantial human intervention.
B: All bugs consume a lot of time to fix, by locating the software errors human intervention is substantial.
C: The software bugs take a lot of time to fix as locating the errors usually requires little human intervention.
D: Software bugs require partial human intervention, and this takes a lot of time to locate the errors.

19: What did the researchers at Texas A&M University do to overcome the obstacle stated in paragraph A and described in paragraph B?
A: Developed a really automated way of focusing on most of the errors as a result of updates.
B: Developed a completely automated way of listing errors as a result of software bugs.
C: Developed an 100% way of identifying most errors as a result of software updates.
D: Developed a 100% automated way of identifying the source of errors as a result of software updates.

20: Which definition of the word 'turnkey' found in paragraph B, line 8 is correct?
A: a key part of the process and built, supplied, or installed with this is mind
B: built and ready to switch on
C: built, supplied, or installed complete and ready to operate
D: a solution you can turn on or build with simplicity

21: Which of the following is a synonym for the word 'creep' located in paragraph C?
A: role
B: inch
C: slob
D: register

22: Which of the following words can adequately fill in the blank space in paragraph C?
A: association
B: modicum
C: gulocity
D: tool

23: Which definition of the word 'pinpoint' found on the first line, in paragraph D is correct?
A: Directed with precision
B: Located, fixed, or directed with extreme precision
C: An extremely small or sharp point
D: Located or fixed with precision

24: Which of the following words can adequately fill in the blank space found in paragraph D?
A: printed
B: defined
C: stipulated
D: executed

25: Which of the following words is a synonym for the word 'Hence' found in paragraph D?
A: justified
B: thus
C: expectant
D: reasoned

26: Which of the following words is an antonym for the word 'awry' found in paragraph D?
A: askew
B: correct
C: cock-a-hoop
D: cockeyed

27: According to paragraph E all but one of the following sentences about “anomalous behaviour” are false.
A: This behaviour is inconsistent with or deviating from what is normally expected.
B: All behaviour is inconsequent with or derivative from what is registered.
C: This behaviour is consistent with or deviating from what is expected.
D: All behaviour is inconsequent with or deviating from what is normal.

28: Which of the following words can correctly fill in the blank space found in paragraph F?
A: mannishly
B: manager
C: mandate
D: manually

29: Which of the following sentences could correctly describe "how the researcher's algorithm searches for patterns in the data" in paragraph G?
A: By compressing a resolution to look for patterns in data.
B: By counting simultaneously reductions in pictures to look for patterns.
C: By using lower dimensional data to look for patterns.
D: By using fractions of images to look for patterns.

30: Which of the following words can correctly fill in the blank space found in paragraph H?
A: diagnose
B: train
C: study
D: register

TEXT 3	ENGINEERS CREATE HYBRID CHIPS WITH PROCESSORS AND MEMORY TO RUN AI ON BATTERY-POWERED DEVICES

A	Smartwatches and other battery-powered electronics would be even smarter if they could run AI algorithms. But efforts to build AI-capable chips for mobile devices have so far hit a wall -- the so-called "memory wall" that separates data processing and memory chips that must work together to meet the massive and continually _____ computational demands imposed by AI.
B	"Transactions between processors and memory can consume 95% of the energy needed to do machine learning and AI, and that severely limits battery life," said computer scientist Subhasish Mitra, senior author of a new study published in Nature Electronics.
C	Now, a team that includes Stanford computer scientist Mary Wootters and electrical engineer H.-S. Philip Wong has designed a system that can run AI tasks faster, and with less energy, by harnessing eight hybrid chips, each with its own data processor built right next to its own memory storage.
D	This paper builds on the team's prior development of a new memory technology, called RRAM, that stores data even when power is switched off -- like flash memory -- only faster and more energy efficiently. Their RRAM advance enabled the Stanford researchers to develop an earlier generation of hybrid chips that worked alone.
E	"If we could have built one massive, conventional chip with all the processing and memory needed, we'd have done so, but the amount of data it takes to solve AI problems makes that a dream," Mitra said. "Instead, we trick the hybrids into thinking they're one chip, which is why we call this the Illusion System."
F	The researchers developed Illusion as part of the Electronics Resurgence Initiative (ERI), a $1.5 billion program sponsored by the Defence Advanced Research Projects Agency (DARPA). The Agency is supporting research investigating workarounds to Moore's Law, which has driven electronic advances by _____ transistors. But transistors can't keep _____ forever.
G	The Stanford-led team built and tested its prototype with help from collaborators at the French research institute CEA-Leti and at Nanyang Technological University in Singapore. The team's eight-chip system is just the beginning. In simulations, the researchers showed how systems with 64 hybrid chips could run AI applications seven times faster than current processors, using one-seventh as much energy. Such capabilities could one day enable Illusion Systems to become the brains of augmented and virtual reality glasses that would use deep neural networks to learn by spotting objects and people in the environment and provide wearers with contextual information.
H	Stanford graduate student Robert Radway, who is first author of the Nature Electronics study, said the team also developed new algorithms to recompile existing AI programs, written for today's processors, to run on the new multi-chip systems. Collaborators from Facebook helped the team test AI programs that validated their efforts. Next steps include _____ the processing and memory capabilities of individual hybrid chips and demonstrating how to mass produce them cheaply.
I	"The fact that our fabricated prototype is working as we expected suggests we're on the right track," said Wong, who believes Illusion Systems could be ready for marketability within three to five years.

Enter your answers on the Answer Sheet.

31: Which of the following sentences is the closest in meaning to the statement made in the first sentence of paragraph A?
A: Running AI in battery-powered electronics makes things smaller
B: AI makes battery-powered electronics the smartest while running
C: Battery-powered items could be smart with AI running
D: Running AI in battery-powered electronics would make them smarter

32: Which of the following words can correctly fill in the blank space found in paragraph A?
A: sprouting
B: growing
C: lasting
D: diminishing

33: What is the reason stated in paragraph B, that justifies why battery life is severely limited?
A: Transactions between memories and processors.
B: Transactions between memory and processors.
C: Transactions in the PCs processor.
D: Transactions in general.

34: How can the system run AI tasks faster and with less energy according to paragraph C?
A: There are 8 chips together for storage
B: The chips have their own data processor built next to its own memory storage.
C: There are 8 chips with a data processor with built in storage.
D: The chips have their own data built right next to its own storage.

35: Which of the following words is synonymous with 'prior' found in paragraph D?
A: latest
B: last
C: earlier
D: least

36: What was stated as the team's last development in paragraph D?
A: Memory tech, that holds data even when there is no power.
B: New memory technology storage for when power is switched.
C: Technology, that stores data even like a pen drive.
D: Memory tech, that moves data even when powered.

37: Which word could correctly substitute 'hybrid' in paragraph D?
A: hypersensitivity
B: full-blooded
C: mixed
D: purebred

38: What was the reason given by Subhasish for the naming of the system stated in paragraph E?
A: we lie compulsively to the hybrids chips they work as one chip
B: there have many chips so the hybrids may function as just one chip
C: we are devious, and the hybrids are tricked by the way they think and work as one chip
D: we deceive the hybrids into thinking they're just one chip

39: Which of the following initials represent the 'Defense Advanced Research Projects Agency' from paragraph F?
A: DARPA
B: DSARPA
C: DARAS
D: DARPS

40: Which is the correct definition of the word 'workarounds' in paragraph F?
A: A rout around an obstacle for restitution
B: To circle anything as a tactic for problem resolution
C: A plan or method to circumvent a problem
D: A plan to see ho a problem is resolved quickly

41: Which of the following words can correctly fill in the two blank spaces found in paragraph F?
A: shrinkage
B: shrink
C: shrinking
D: shrunken

42: Which sentence below best reflects what was written in paragraph G?
A: 64 hybrid chips have the possibility to run AI applications seven times faster
B: 64 hybrid chips could run AI applications faster in current processors
C: 64 hybrid chips could run AI applications faster in all processors
D: 64 hybrid chips should run AI applications up to seven times faster than current processors

43: What would the wearers of augmented and virtual reality glasses benefit from according to paragraph G?
A: Neural networks
B: Contextual information
C: Spotting objects
D: Contextual networks

44: How did the collaborators help the team according to paragraph H?
A: They helped the team test the AI executable software that validated their work.
B: They helped the team test run AI that validated Facebook.
C: They helped the team test programs that check their work with Facebook.
D: They helped the team test the AI subroutines that auctioned their work.

45: Which of the following words can correctly fill in the blank space found in paragraph H?
A: increased
B: increase
C: increasing
D: increment

TEXT 4	LIGHT- CARRYING CHIPS ADVANCE MACHINE LEARNING

A	In the digital age, the demands on computing power for applications in AI such as pattern and speech recognition in particular, or for self-driving vehicles, often exceeds the capacities of conventional computer processors.
B	Working together with an international team, researchers at the University of Münster are developing new approaches and process architectures which can cope with these tasks extremely efficiently. They have now shown that so-called photonic processors, with which data is processed by means of light, can process information much more rapidly and in parallel -- something electronic chips are incapable of doing.
C	Light-based processors for speeding up tasks in the field of machine learning enable complex mathematical tasks to be processed at enormously fast speeds (10^{12} -10^{15} operations per second). Conventional chips such as graphic cards or specialized hardware like Google's TPU (Tensor Processing Unit) are based on electronic data transfer and are much slower.
D	The team of researchers led by Prof. Wolfram Pernice from the Institute of Physics and the Centre for Soft Nanoscience at the University of Münster implemented a hardware accelerator for so-called matrix multiplications, which represent the main processing load in the computation of neural networks. Neural networks are a series of _____ which simulate the human brain. This is helpful, for example, for classifying objects in images and for speech recognition.
E	The researchers combined the photonic structures with phase-change materials (PCMs) as energy-efficient storage elements. PCMs are usually used with DVDs or BluRay discs in optical data storage. In the new processor this makes it possible to store and preserve the matrix elements without the need for an energy supply. To carry out matrix multiplications on multiple data sets in parallel, the Münster physicists used a chip-based frequency comb as a light source.
F	A frequency comb provides a variety of optical wavelengths which are processed independently of one another in the same photonic chip. As a result, this enables highly parallel data processing by calculating on all wavelengths simultaneously -- also known as wavelength multiplexing. "Our study is the first one to apply frequency combs in the field of artificial neural networks," says Wolfram Pernice.
G	In the experiment the physicists used a so-called convolutional neural network for the recognition of handwritten numbers. These networks are a concept in the field of machine learning inspired by biological processes. They are used primarily in the processing of image or audio data, as they currently achieve the highest accuracies of classification. "The convolutional operation between input data and one or more filters -- which can be a highlighting of edges in a photo, for example -- can be transferred very well to our matrix architecture," explains Johannes Feldmann, the lead author of the study.
H	"Exploiting light for signal transference enables the processor to perform parallel _____ processing through wavelength multiplexing, which leads to a higher computing density and many matrix multiplications being carried out in just one timestep. In contrast to traditional electronics, which usually work in the low GHz range, to process _____. Optical modulation speeds can be achieved with speeds up to the 50 to 100 GHz range." This means that the process permits _____ rates and computing densities, i.e., operations per area of processor, never previously attained.
I	The results have a wide range of applications. In the field of artificial intelligence, for example, more data can be processed simultaneously while saving energy. The use of larger neural networks allows more accurate, and hitherto unattainable, forecasts and more precise data analysis.
J	Further applications are in the fields of self-driving vehicles, which depend on fast, rapid evaluation of sensor data, and of IT infrastructures such as cloud computing which provide storage space, computing power.

Enter your answers on the Answer Sheet.

46: Which idea is presented in the first paragraph by the author?
A: Demands on computing power for applications in AI often equal the capacities of conventional computer processors.
B: Demands on computing power for applications in AI often ultra-pass the capacities of conventional computer processors.
C: Demands on computing power for applications in AI often match the capacities of conventional computer processors.
D: Demands on computing power for applications in AI often meet the capacities of conventional computer processors.

47: Which paragraph first introduces 'developing new approaches and process architectures for the challenge'?
A: Paragraph C
B: Paragraph D
C: Paragraph B
D: Paragraph A

48: According to paragraph B. What are electronic chips incapable of doing?
A: process information much more radically and in parallel
B: process information much more sensibly and in parallel
C: process information much more swiftly and in parallel
D: process information much more diligently and in parallel

49: The word 'enormously' in paragraph C, could be replaced by which of the following?
A: extremely
B: fabulously
C: fantastic
D: wild

50: Which reason is given for 'conventional chips being so much slower at processing' found in paragraph C?
A: The conventional chips are based on binomial electronic slower data transfer
B: Conventional chips are based on powered data transfer so much slower
C: All chips are based on random electronic data transfer so much slower
D: Conventional chips are based on traditional electronic data transfer and are much slower

51: Which word could correctly replace 'implemented' in paragraph D?
A: tried
B: executed
C: practised
D: elated

52: Which of the following words can correctly fill in the blank space in paragraph D?
A: alloantibody
B: alliterative
C: alimentation
D: algorithms

53: How does the writer tell us it’s possible to store and preserve the matrix elements without the need for an energy supply written in paragraph E?
A: The researchers linked PCMs and other chips as energy-efficient storage elements.
B: The researchers joined together the photonic structures with PCMs as energy-efficient storage elements.
C: The researchers linked DVDs with PCMs as energy-efficient storage elements.
D: The researchers linked photons and PCMs as energy-efficient storage elements with no power.

54: Which of the following words is a synonym for the word 'variety' in paragraph F?
A: assortment
B: verity

C: randomly
D: assignation

55: What does 'wavelength multiplexing' refer to in paragraph F?
A: parallel data processing performed by using all wavelengths at the same time
B: highly parallel data processing captured by manipulating all wavelengths together
C: highly parallel data processing performed by calculating on all wavelengths at the same time
D: parallel processing performed by calculating on wavelengths during the same time

56: What inspired the 'convolutional neural network' according to paragraph G?
A: biological operations
B: Light for signal transference
C: Parallel data processes
D: matrix architectures

57: Which word from the list below could fill in the 3 blank spaces in paragraph H?
A: bytes
B: megabytes
C: data
D: datum

58: Which meaning of the word 'hitherto' in paragraph I, line 52 is correct?
A: that time is up to
B: up to of this and that time
C: this is up to or in this time
D: up to this or that time

59: Which statement could be said to be true in paragraph I?
A: simultaneously lower processed energy is used to maximise output
B: a larger amount of data processed at the same time economizing energy
C: The data can be revised while saving energy output
D: simultaneously data can be processed energy

60: Which idea is presented in the final paragraph J?
A: Further applications are in the fields, which depend on data, and in rapid, agile and focused IT infrastructures.
B: Further applications are in the specialized programs, depending on fast, rapid sensor data, and the use of IT infrastructures.
C: Further applications are in the fields, which depend on fast, rapid evaluation of sensor data, and of IT infrastructures.
D: None of the answers stated in options A, B & C.

Proficiency test for Masters and PhD candidates

UNIFESP – January 2021

NAME:_____**NUMBER:** _____

ANSWER SHEET (please draw a circle around the right answer)

TEXT 1	**WORLD'S FASTEST OPTICAL NEUROMORPHIC PROCESSOR**

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d

TEXT 2	**SO ARE SOFTWARE UPDATES SLOWING YOU DOWN?**

16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d

TEXT 3	**ENGINEERS CREATE HYBRID CHIPS WITH PROCESSORS AND MEMORY TO RUN AI ON BATTERY-POWERED DEVICES**

31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d

TEXT 4	LIGHT-CARRYING CHIPS ADVANCE MACHINE LEARNING

46	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d