

PYC3703

(495588)

May/June 2018

Cognition Thinking, Memory and Problem Solving

Duration 2 Hours

70 Marks

EXAMINERS

FIRST

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Closed book examination

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue

This paper consists of 16 pages plus plus 3 blank pages for rough work plus instructions for completion of a mark reading sheet

This examination paper contains 70 questions Your mark out of 70 for this paper will be converted to a mark out of 80 A further 20 marks is based on your year mark. The examination paper and year marks together count 100.

After completing your answers, you must hand in the following

- (i) The mark reading sheet
- (ii) The question paper (All the pages must be handed in)

ENSURE THAT YOU HAVE WRITTEN YOUR STUDENT NUMBER AND COURSE CODE ON BOTH THE EXAMINATION BOOK AND THE MARK READING SHEET

"Please complete the attendance register on the back page, tear off and hand to the invigilator."

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SECTION A

ANSWER THE FOLLOWING SEVENTY MULTIPLE CHOICE QUESTIONS ON THE MARK READING SHEET. READ THE ATTACHED INSTRUCTIONS AND FOLLOW THEM CAREFULLY.

QUESTION 1

A cognitive psychologist is *least likely* to study whether - - - - -

- 1 people can pay attention to multiple stimuli at once without losing accuracy
- 2 a group of people will voluntarily give money to charity
- 3 the reading speed of college graduates differs from that of high school graduates

QUESTION 2

Which approach emphasises logical analysis as the means to acquiring new knowledge?

- 1 tabula rasa
- 2 synthesis
- 3 rationalism

QUESTION 3

Aristotle's empiricist approach to the investigation of the mind and reality was based on the belief that one acquires knowledge through - - - - -

- 1 introspection
- 2 experience and observation
- 3 spiritual insight

QUESTION 4

A psychologist lecturing on the psychology of perception makes the following statement

In perception pattern and organisation are primary These aspects often emerge directly from the relationship between discrete elements, and they cannot be deduced from a knowledge of the individual elements alone Indeed, at times elements can be missing or altered yet the overall shape will be perceived directly, showing that overall form is primary

From the statement above we can infer that the psychologist is probably a supporter of - - - - -

- 1 behaviourism
- 2 Descartes' rationalism
- 3 Gestalt psychology

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QUESTION 5

During the 1950s, many psychologists were becoming disillusioned with behaviourism, and cognitive psychology began to emerge. A major reason why they were disappointed with behaviourism is because it - - - - -

- 1 only examined overt behaviour and did not consider mental processes as relevant to research
- 2 paid too much attention to individual differences
- 3 focussed too much on emotional factors, and not enough on observable behaviours

QUESTION 6

Which researcher examined the impact of rehearsal on memory using himself as a subject?

- 1 Tolman
- 2 Kant
- 3 Ebbinghaus

QUESTION 7

The philosopher, Descartes, is known for having been a(n) - - - - -

- 1 functionalist
- 2 behaviourist
- 3 rationalist

QUESTION 8

Who is known for the development of the concept 'modularity of the mind'?

- 1 B F Skinner
- 2 Jerry Fodor
- 3 Albert Bandura

QUESTION 9

There are two radio stations, one receiving signals from the western hemisphere and one receiving signals from the eastern hemisphere. A cable connects the two stations so that signals sent from one half of the world can be transmitted to the other half. The cable is analogous to the brain's - - - - -

- 1 parietal lobe
- 2 hippocampus
- 3 corpus callosum

[TURN OVER]

QUESTION 10

The ----- and ----- both play a role in anger

- 1 amygdala, hippocampus
- 2 septum, amygdala
- 3 hippocampus, septum

QUESTION 11

The primary function of the thalamus involves -----

- 1 the consolidation of short term memory information into long term memories
- 2 the survival functions, namely fighting, fleeing, feeding and mating
- 3 relaying incoming sensory information to the appropriate regions of the cortex

QUESTION 12

Sisiwe had a small tumour which destroyed a small portion of her hippocampus, but the tumour did not cause damage to any other region in her brain. Based on cognitive neuroscience research, we can therefore predict that -----

- 1 transfer of declarative information to her long-term memory and her spatial navigation ability will be impaired
- 2 her ability to process auditory information will be impaired
- 3 her procedural memory and visual processing capabilities will be impaired

QUESTION 13

Susan has been diagnosed with severe depression, and her psychiatrist attributes this to a deficit in a specific neurotransmitter system which has been shown to have an effect on mood and also sleeping and dreaming. The neurotransmitter system that the psychiatrist identified is the ----- system

- 1 acetylcholine
- 2 GABA
- 3 serotonin

QUESTION 14

What does an fMRI produce?

- 1 A connectionist model of the brain in which the operation of the brain is captured using a parallel distributed processing approach
- 2 A 2D image produced through radio-frequency waves in the magnetic field which is similar to a black and white X-ray
- 3 A 3D computer generated image of the brain reflecting blood and oxygen flow produced during cerebral activity

[TURN OVER]

QUESTION 15

Based on his study of patients suffering from aphasia, Paul Broca concluded that

- 1 there is no evidence of any localisation of functions in the brain
- 2 speech functions are typically localised in the left hemisphere of right-handed individuals
- 3 speech functions are localised, but this occurs randomly in the two hemispheres

QUESTION 16

Which neurotransmitter is important for regulating impulsivity and is associated with eating behavior as well as aggressive behaviour?

- 1 acetylcholine
- 2 GABA
- 3 serotonin

QUESTION 17

This particular type of metabolic imaging technique uses a radioactive form of glucose that emits positrons as it is metabolized to look at the physiological functioning of the brain 'in action' It monitors increase in blood flow to particular parts of the brain

- 1 Electroencephalograms (EEGs)
- 2 Glucose Metabolism Tomography (GMT)
- 3 Positron emission tomography (PET)

QUESTION 18

Complete the following sentence Visual perception is best defined as the cognitive process - - - - -

- 1 associated with creating a perfect replica of the external environment
- 2 of storing 'raw' sensory data in memory
- 3 of interpreting information about the environment received via the visual sensory system

QUESTION 19

Research in cognitive psychology indicates that the Muller-Lyer illusion can be explained - - - - -

- 1 in terms of misapplied size constancy
- 2 by interpreting the figure as showing lines in depth, and the less sharp the angles are at the end of the lines are, the less pronounced the illusion will be
- 3 with reference to activation in the frontal and parietal, but not the occipital cortex

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QUESTION 20

Gibson's direct perception model is sometimes referred to as a(n) - - - -, because of Gibson's concern with perception as it occurs in the everyday world rather than in laboratory situations

- 1 anti-laboratory view
- 2 real-life view
- 3 ecological model

QUESTION 21

According to Hubel and Wiesel, - - - - cells receive input from neural cells projected from the thalamus and then fire in response to lines of particular orientations and positions in the receptive field. These cells differ from one another in that each cell responds only to a specific line orientation.

- 1 simple
- 2 complex
- 3 subcortical

QUESTION 22

This hypothesis suggests that there are two distinct visual pathways in the brain, one pathway is important for identifying the object and the other for identifying the function of the object.

- 1 Identity/Location
- 2 Identity/ Position
- 3 What/Where

QUESTION 23

- - - - perception is also known as intelligent perception, because it states that higher-order thinking plays an important role in perception.

- 1 Synthetic
- 2 Unconscious
- 3 Constructive

QUESTION 24

(a) - - - - describes a partial or total loss of memory. There are two subtypes: (b) - - - - which refers to an inability to recall events prior to injury, and (c) - - - - which refers to an inability to (d) - - - -.

- 1 (a) Amnesia (b) retrograde amnesia (c) anterograde amnesia (d) remember events before and after injury
- 2 (a) Hypermnnesia (b) anterograde amnesia (c) retrograde amnesia (d) remember events subsequent to injury
- 3 (a) Hypermnnesia (b) anterograde amnesia (c) retrograde amnesia (d) remember events prior to injury

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QUESTION 25

In retrograde amnesia, the memories that return typically do so starting - - - -

- 1 from the more distant past and progressing up to the time of the trauma
- 2 with the more meaningful experiences, regardless of their chronological time
- 3 with the less meaningful experiences, regardless of their chronological time

QUESTION 26

During a memory experiment, the participants are first presented with the items that they have to remember and are then asked to count backwards after the presentation of the last item, and before they have to recall them. The counting task is designed to - - - -

- 1 deceive the participants about the purpose of the experiment
- 2 allow some decay to occur
- 3 prevent the participants from rehearsing

QUESTION 27

After a test, Jill identified and then learned the information that she had forgotten for the test. She noted that there was a 'savings' in that the information was learned faster the second time. Jill has discovered the concept of - - - -

- 1 partial-report method
- 2 subsequent refinement
- 3 relearning

QUESTION 28

Participants are asked to recall material that has been verbally presented to them. Which of the following types of error in their recall would be indicative of acoustic confusion?

- 1 Errors that look like the correct response
- 2 Errors that have the same meaning as the correct response
- 3 Errors that sound like the correct response

QUESTION 29

Anytime we read, we unconsciously and effortlessly remember the meanings of particular words and even how to read. These are examples of everyday tasks that primarily involve - - - - memory

- 1 episodic
- 2 semantic
- 3 implicit

[TURN OVER]

QUESTION 30

Damage to the hippocampus can result in 'loss of memory function' in which old information is still able to be recalled, but the individual is unable to form new memories. This is known as - - - - -

- 1 hypermnesia
- 2 infantile amnesia
- 3 Korsakoff's syndrome

QUESTION 31

At a party, Joan was introduced to Steve just as she arrived. Joan then went off to speak with a different group and was introduced to each of them as well. After hearing the new names, Joan could not remember Steve's name. This description illustrates - - - - -

- 1 retroactive interference
- 2 proactive interference
- 3 decay of information

QUESTION 32

A typical serial position curve shows that recall of words in a list is best for items (a) - - - - - of the list and poorest for items (b) - - - - -

- 1 (a) in the middle (b) in the beginning
- 2 (a) in the beginning (b) at the end
- 3 (a) at the end (b) in the middle

QUESTION 33

How do we transfer information from short-term memory to long-term memory?

- (a) By deliberately attending to information in order to comprehend it
- (b) By making connections or associations between the new information and what we already know

- 1 Only (a) is correct
- 2 Only (b) is correct
- 3 Options (a), and (b) are all correct.

QUESTION 34

In a PDP or connectionist model of memory, information is stored in a (a) - - - - - in the form of various patterns of (b) - - - - - and the information is (c) - - - - - the brain

- | | | | |
|---|-------------|-----------------------------------|------------------------|
| 1 | (a) schema | (b) propositional representations | (c) distributed across |
| 2 | (a) script | (b) analogue representations | (c) stored locally in |
| 3 | (a) network | (b) connections | (c) distributed across |

[TURN OVER]

QUESTION 35

Which model of memory consists of four main elements: central executive, phonological loop, visuospatial sketchpad, and the episodic buffer?

- 1 three-store model
- 2 levels-of-processing framework
- 3 working memory

QUESTION 36

A person with damage to the cerebellum might have problems with - - - - -

- 1 memory consolidation
- 2 emotionally-based memories
- 3 procedural memories

QUESTION 37

The results of Farah (2000) research using faces, parts of faces, houses and parts of houses supported which conclusion about face recognition?

- 1 Face recognition involves primarily feature analysis
- 2 Face recognition involves primarily configurational processing
- 3 Face recognition does not depend on feature analysis, nor on configurational processing

QUESTION 38

This part of the problem-solving cycle involves periodically assessing to what extent you are getting closer to the goal. In other words, individuals who are effective problem-solvers will check their performance along the way to decide if they should continue or change their approach.

- 1 strategy formulation
- 2 problem definition
- 3 monitoring

QUESTION 39

Which of the following is true regarding isomorphic problems?

- 1 It is easy for children to identify similarities between them
- 2 Identifying underlying similarities is more difficult when content greatly differs
- 3 It is easy for adults to identify similarities between them

[TURN OVER]

QUESTION 40

According to - - - - psychologists, insight problems require problem solvers to perceive the problem as a whole, which differs from perceiving the problem as a collection of its parts

- 1 Gestalt
- 2 information processing
- 3 structural

QUESTION 41

fMRI studies have revealed increased activity in - - - - when a person experiences insight

- 1 all the Brodmann's areas
- 2 the dorsilateral prefrontal cortex
- 3 the right anterior superior-temporal gyrus

QUESTION 42

- - - - refers to the tendency to believe that problem situations with similar contexts or content also have analogous formal structures or solution paths

- 1 Transparency
- 2 Isomorphic inhibition
- 3 Negative transfer

QUESTION 43

Which of the following is the **best** definition for the term *problem space*?

- 1 the amount of physical space on a sheet of paper that a subject uses in solving a particular problem
- 2 all the solutions to the problem that the problem solver has considered
- 3 the initial state, goal state, and all the intermediate states associated with a given problem

QUESTION 44

In a means-ends analysis to problem solving, - - - -

- 1 we disregard some aspects of the problem in order to make the problem simpler
- 2 we solve a problem by using matrices, and complete these matrices one after the other
- 3 we divide the problem into a number of sub-problems, and try to solve each sub-problem, thus gradually moving closer to the end solution

[TURN OVER]

QUESTION 45

Research shows that novices allocate more time and resources on - - - -, than do expert problem-solvers in a given domain

- 1 global, 'big picture' planning
- 2 working forward and implementing strategies for finding unknown information
- 3 local, detail-oriented planning

QUESTION 46

Which of the following circumstances is most likely to encourage the successful use of analogies in problem solving?

- 1 Requiring people to use a mental set
- 2 Having people study the source problem very carefully, rather than simply trying to solve it
- 3 Exposing people to several problems that are structurally similar to the target problem, before they see the target problem

QUESTION 47

In comparison to novices, experts - - - - -

- 1 have loosely connected units of knowledge
- 2 work backwards from focusing on the unknown
- 3 take more time to represent novel problems

QUESTION 48

Chase and Simon (1973) found that if expert and novice chess players are briefly shown a display of a chess board with pieces on it, and are then asked to recall the positions of the pieces, then - - - - -

- 1 experts always perform better than novices on the recall task
- 2 experts perform worse than novices if the positions of the pieces do not make sense in terms of an actual game
- 3 experts perform much better than novices if the pieces make sense in terms of an actual game

QUESTION 49

Suppose that you are trying to solve a difficult problem on a lab report you are writing. You decide to take a break and go for a quick walk. After returning, the solution suddenly occurs to you. This would be an example of - - - - -

- 1 isomorphic thinking
- 2 incubation
- 3 divergent thinking

[TURN OVER]

QUESTION 50

Select the most correct characterisation of 'subjective expected utility theory' from the options below

- 1 Decisions about an action could differ from person to person, because it depends on each person's individual estimate of probability and weighting of utility
- 2 In making decisions, people use objective criteria for studying probabilities of outcomes, but subjective criteria for evaluating each outcome
- 3 In making decisions, people are always fully rational and transparent in regard to their choice of options

QUESTION 51

In -----, the reasoner must draw a conclusion based on an if-then

- 1 conditional reasoning
- 2 *modus tollens* argument
- 3 a linear syllogism

QUESTION 52

Satisficing makes it more difficult for people to make fully rational decisions because, in satisficing, -----

- 1 we do not consider all possible options, but rather consider a few until we find one that is satisfactory
- 2 we consider the additional variable of an incentive, or reward, in the decision-making process
- 3 we often become irrational and unable to make a well-reasoned decision

QUESTION 53

Everybody that I talked to says that 'Interstellar' is an excellent movie, so it must be worth seeing. This statement suggests the use of what heuristic?

- 1 Availability
- 2 The confirmation bias
- 3 Illicit conversion

QUESTION 54

Celine is trying to figure out the best way to take notes. She tried both a deductive and an inductive approach. She also tried highlighting the most important facts. After the exam, she realised that it would have been much more to her advantage to concentrate on specifics. Michelle's discovery is an example of which 'effect'?

- 1 Overconfidence
- 2 A framing effect
- 3 Hindsight bias

[TURN OVER]

QUESTION 55

Another term for deductive validity is - - - - -

- 1 replicability of reasoning
- 2 logical soundness
- 3 propositional adequacy

QUESTION 56

The following is an example of a(n) - - - - - All animals breathe All humans are animals Therefore, all humans breathe

- 1 if-then statement
- 2 linear syllogism
- 3 illicit conversion

QUESTION 57

*Turtles are slower than iguanas
Iguanas are slower than rabbits
Therefore turtles are slower than rabbits*

The above is an example of - - - - -

- 1 conditional reasoning
- 2 a categorical syllogism
- 3 modus tollens

QUESTION 58

In - - - - -, we seek to support rather than to disprove what we already believe

- 1 pragmatic reasoning
- 2 overconfidence
- 3 confirmation bias

QUESTION 59

A family has three children, all of whom are boys, and the wife is expecting again Their friends all predict that their next child will be a girl Which heuristic does this demonstrate?

- 1 Representativeness
- 2 Availability
- 3 Anchoring and adjustment

[TURN OVER]

QUESTION 60

During her review of the literature in cognitive psychology, Kate stumbles across an experimental technique for conducting research on analogical problem solving in the 1980s. She discusses it with her colleagues, but they all think that the methodology underlying the technique is too dated and that it will not yield useful results. Kate, in contrast, has a more creative approach. She sees a hidden potential in the technique, and feels that with some initial hard work (i.e. rethinking and revising aspects) it can be developed into a technique for doing interesting and scientifically valuable research. Kate's approach here illustrates the - - - - -

- 1 investment theory of creativity
- 2 selective-combination of insights
- 3 productive nature of creativity

QUESTION 61

Consider the following argument

*If someone is a tenor then that person is a singer
Placido Domingo is a tenor, therefore there is at least one singer*

The argument above is an example of - - - - -

- 1 the deductively invalid inference called 'affirmation of the consequent'
- 2 a categorical syllogism containing a particular affirmative which is not reversible
- 3 a valid argument because a modus ponens inference is first required, after which the final conclusion logically follows

QUESTION 62

You have tried carrots, broccoli, and squash and have not liked any of them. From this information you reason that all vegetables taste bad. What type of reasoning have you just engaged in?

- 1 Inductive reasoning
- 2 Differential reasoning
- 3 Analogical reasoning

QUESTION 63

- - - - - is a process in which we focus on one attribute of the various options, form a minimum criterion for that attribute, and then exclude all options that do not meet that criterion

- 1 Illusory correlation
- 2 Inductive reasoning
- 3 Elimination by aspects

[TURN OVER]

QUESTION 64

The effect of the context on an individual's decision making is referred to as the - - - - -

- 1 fallacy of composition
- 2 hindsight bias
- 3 framing effect

QUESTION 65

Among the following statements that accurately describe Howard Gardner's theory of multiple intelligences, there is a false statement. Identify the *false* statement.

- 1 His theory integrates many aspects of intelligence
- 2 He defines eight distinct intelligences that are relatively independent of each other
- 3 His theory is a factorial theory, where each of the eight intelligences is a different factor of intelligence

QUESTION 66

Lesibo is a chef at a top restaurant, and is busy doing research to prepare a new dish that he wants to present for celebrity clients at the restaurant. According to Sternberg's triarchic theory of intelligence, he is primarily using his - - - - - abilities to generate novel ideas in thinking up the new dish.

- 1 creative
- 2 analytical
- 3 stratum III

QUESTION 67

Select the best definition of an *expert system*, as used in the context of artificial intelligence, among the options given below.

- 1 A machine that has almost an encyclopaedic knowledge of lots of different domains
- 2 A system that has been developed specifically to pass Turing's test of intelligence
- 3 A system that has considerable knowledge of a specific fairly narrow, and circumscribed domain

QUESTION 68

Searle's Chinese Room Argument is intended to show that - - - - -

- 1 computers will never be able to converse in Chinese
- 2 symbol manipulation may be sufficient for the creation of humanlike intelligence in robots
- 3 symbol processing of the kind performed by computers is not sufficient for language understanding

[TURN OVER]

QUESTION 69

Carl recently bought a used car - and it's a dud. He has spent thousands of dollars on repairing the car, and this week, the mechanic told him it needs a new radiator. Carl thinks about how much money he has put into the car and thinks that, because he has invested so much money in repairs, he would be better off just making the repair as opposed to spending money to buy a new car. Carl is a victim of - - - - -

- 1 overconfidence
- 2 the sunk-cost fallacy
- 3 opportunity costs

QUESTION 70

The main assumption underlying the Turing test is that there is nothing more to being intelligent than being able to - - - - -

- 1 do complex mathematical calculations
- 2 use language like we do in everyday conversation
- 3 think like a computer in terms of inputs and outputs

[TOTAL. 70]

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ROUGH WORK

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ROUGH WORK

PART-1 (GENERAL/ALGEMEEN) DEEL 1

STUDY UNIT e.g. PSY100-X
STUDIE-LENHEID by PSY100-X

INITIALS AND SURNAME
VOORLETTERS EN VAN

DATE OF EXAMINATION
DATUM VAN EKSAMEN

PAPER NUMBER
VRAESTELNOMMER

EXAMINATION CENTRE (E.G. PRETORIA)
EKSAMENSENTRUM (BY PRETORIA)

STUDENT NUMBER
STUDENTENOMMER

UNIQUE PAPER NO.
UNIEKE VRAESTEL NR.

1 2 3 4 5 6 7 8 9

For use by examination invigilator
Vir gebruik deur eksamenopsiener

- IMPORTANT**
- USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
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- BELANGRIK**
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PART-2 (ANSWERS/ANTWOORDE) DEEL 2

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Specimen only

MARK READING SHEET INSTRUCTIONS

Your mark reading sheet is marked by computer and should therefore be filled in thoroughly and correctly

USE ONLY AN HB PENCIL TO COMPLETE YOUR MARK READING SHEET

PLEASE DO NOT FOLD OR DAMAGE YOUR MARK READING SHEET

Consult the illustration of a mark reading sheet on the reverse of this page and follow the instructions step by step when working on your sheet

Instruction numbers ① to ⑩ refer to spaces on your mark reading sheet which you should fill in as follows

- ① Write your paper code in these eight squares, for instance

P	S	Y	1	0	0	-	X
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- ② The paper number pertains only to first-level courses consisting of two papers

WRITE

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 for the first paper and

0	2
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 for the second. If only one paper, then leave blank

- ③ Fill in your initials and surname
- ④ Fill in the date of the examination
- ⑤ Fill in the name of the examination centre
- ⑥ WRITE the digits of your student number HORIZONTALLY (from left to right). Begin by filling in the first digit of your student number in the first square on the left, then fill in the other digits, each one in a separate square
- ⑦ In each vertical column mark the digit that corresponds to the digit in your student number as follows [-]
- ⑧ WRITE your unique paper number HORIZONTALLY
NB Your unique paper number appears at the top of your examination paper and consists only of digits (e.g. 403326)
- ⑨ In each vertical column mark the digit that corresponds to the digit number in your unique paper number as follows [-]
- ⑩ Question numbers 1 to 140 indicate corresponding question numbers in your examination paper. The five spaces with digits 1 to 5 next to each question number indicate an alternative answer to each question. The spaces of which the number correspond to the answer you have chosen for each question and should be marked as follows [-]

◆ For official use by the invigilator. Do not fill in any information here