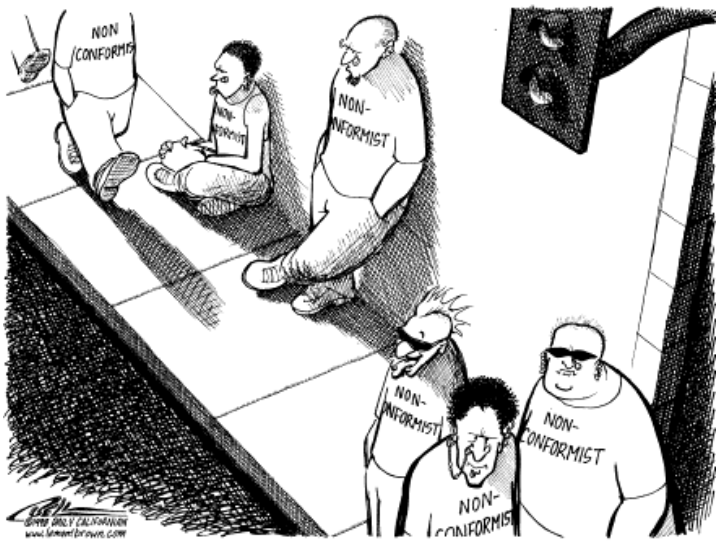
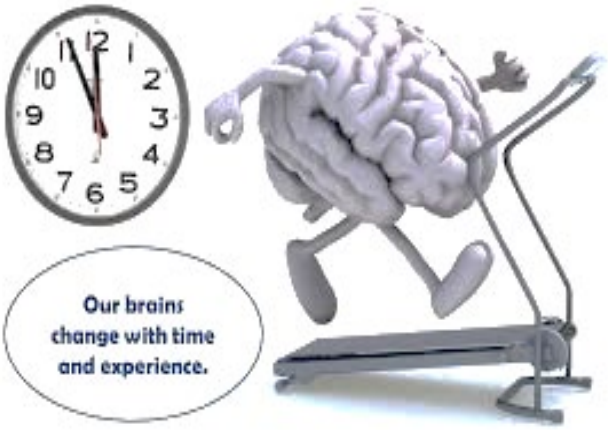
The Friary Sixth Form

Psychology Summer Project Pack 2023





Summer Tasks

Biopsychology revision – The Nervous system/Endocrine system

- Answer all questions ***without*** notes.
- Once you have answered one section, hand it in to be marked.
- Using your notes, add anything you have missed in a ***different coloured pen***.

Match the key terms to the definitions. (8 marks)

Adrenaline	Readies the body for fight or flight by releasing adrenaline and noradrenaline.
Central nervous system	The master gland in the body that regulates the release of hormones in the body.
Autonomic nervous system	Sends information to the CNS from the outside world, transmits messages from the CNS to muscles and glands.
Somatic nervous system	Transmits information from receptor cells in sense organs to the CNS. Also receives info from the CNS to direct muscles to act.
Pituitary gland	Consists of the brain and spinal cord and is responsible for complex commands and decisions.
Peripheral nervous system	A hormone released that changes our bodies physiologically.
Parasympathetic nervous system	Transmits information from receptor cells in the sense organs to the CNS.
Sympathetic nervous system	Returns the body back to our normal resting rate.

Outline the functions and organisation of the nervous system (5 marks)

……

……

……

……

……

……

……

……

……

……

……

……

‘Mary is extremely afraid of spiders. One day her brother decides to surprise her by bringing one into the house. When she sees the spider she screams and runs straight out of the house. Later she comes back into the house when she has been assured the spider is gone, she seems more calm now.

Using your knowledge of the nervous system, explain Mary’s behaviour (4 marks)

……

……

……

……

……

……

……

……

……

……

……

……

Identify the **two** components of the peripheral nervous system, and explain **two** differences in their organisation and/or functions.

[4 marks]

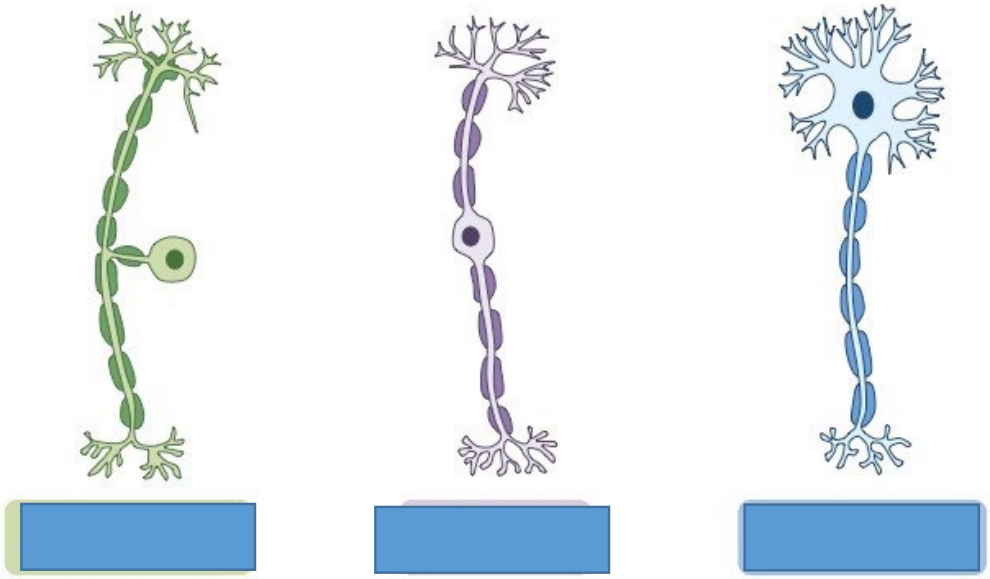
Identify **two** glands that form part of the endocrinal system and outline their functions.

[4 marks]

Biopsychology revision – Neurons & Synaptic transmission

Mild

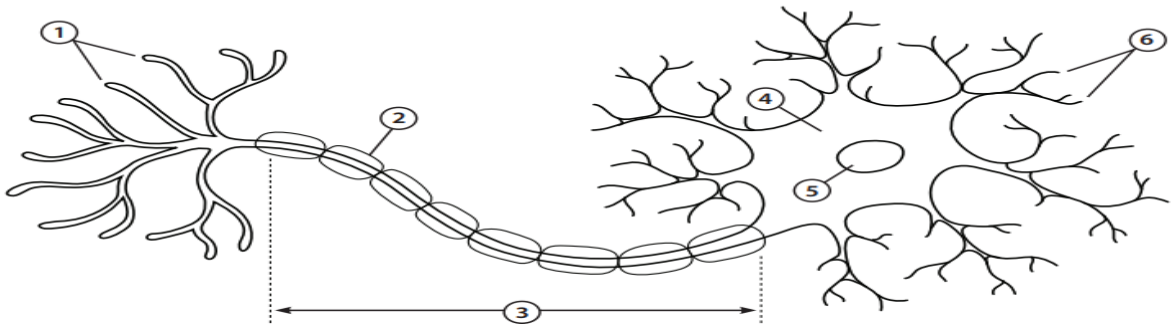
Identify the different types of neurons.



Medium

Neuron Anatomy Activity

The parts of the neuron have been labeled. Your challenge is to write the correct name for each part and explain what it does. If you need some help, visit the web article listed below.



Draw and label a diagram showing synaptic transmission.

Outline the structure and processes of synaptic transmission. (6 marks).

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

Task: sort which goes with which technique

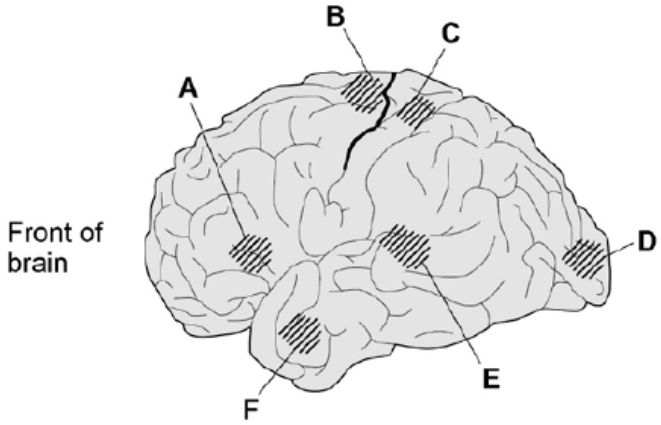
fMRI	EEG	ERP	POST MORTEM
OUTLINE	**INVASIVE OR NON-INVASIVE**	**TEMPORAL RESOLUTION**	**SPATIAL RESOLUTION**
Measures blood flow when a person performs a task and creates a dynamic (moving) 3D map of the brain.	Highlights which areas are involved in different neural activities.	 Non-Invasive	 Poor temporal resolution: 1-4 s
Measures electrical activity through electrodes attached to the scalp. Small electrical charges are detected by the electrodes that are graphed over a period of time, indicating the level of activity in the brain.	Typical activity patterns include: alpha, beta, delta and theta waves.	 Non-Invasive (although uncomfortable)	 Good temporal resolution: 1-10 ms
Uses similar equipment to EEG. However, the key difference is that a stimulus is presented to a participant and the researcher looks for activity related to that stimulus.	Waves which occur within 100 milliseconds are termed sensory. Waves which occur after 100 milliseconds are termed cognitive.	 Non-Invasive (although uncomfortable)	 Good temporal resolution: 1-10 ms
When researchers study the physical brain of a person who displayed a particular behaviour while they were alive that suggested possible brain damage.	For example, Broca examined his patient 'Tan' who had a lesion in the Broca's area, which is responsible for speech production.	 N/A (Invasive - although the person is no longer alive)	 N/A
 Good spatial resolution: 1-2 mm	 Poor spatial resolution: Superficial general regions only	 Poor spatial resolution: Superficial general regions only	N/A. Although enables researchers to perform a more detailed examination of the anatomical structure of the brain, in particular deeper regions like the hypothalamus and hippocampus.

Biopsychology revision – Localisation of function

- Answer all questions ***without*** notes.
- Once you have answered one section, hand it in to be marked.
- Using your notes, add anything you have missed in a ***different coloured pen***.

Label the areas of the brain

Mild



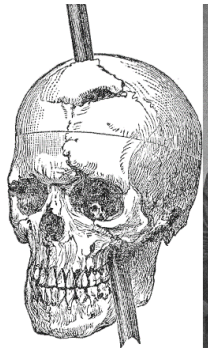
Broca's area
Wernicke's area
Auditory cortex
Visual cortex
Somatosensory cortex
Motor cortex

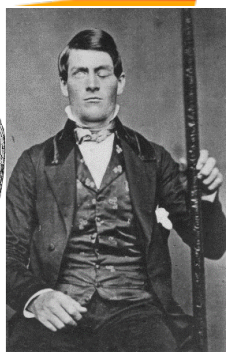
Medium

Explain the function of each area of the brain (6 marks).

Broca's area	
Wernicke's area	
Somatosensory cortex	
Visual cortex	
Auditory cortex	
Motor cortex	

Apply your knowledge of localisation to the case of Phineas Gage.





……

……

……

……

……

……

……

……

……

……

'The brain is completely localised, certain areas of the brain look have their own exclusive functions'

Discuss this statement in relation to localisation of function.

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

……

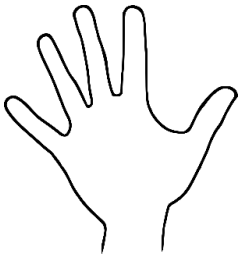
……

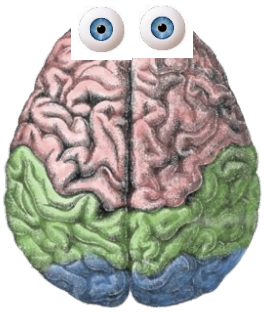
Biopsychology revision – Lateralisation & Split-Brain research

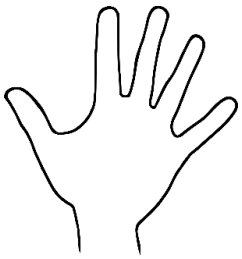
- Answer all questions ***without*** notes.
- Once you have answered one section, hand it in to be marked.
- Using your notes, add anything you have missed in a ***different coloured pen***.

Annotate and label the diagram to show how our brain is lateralised.

Mild

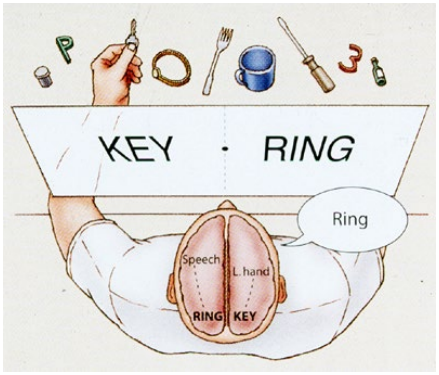






Outline the procedure of Sperry's split-brain research (mind map)

Medium



Answer the following past paper questions.

Split brain patients show unusual behaviour when tested in experiments. Briefly explain how unusual behaviour in split brain patients could be tested in an experiment.

[2 marks]

Briefly evaluate research using split brain patients to investigate hemispheric lateralisation of function.

[4 marks]

Explain whether a split-brain patient would be able to do the task and why

1. An object is placed in the left hand and the patient is asked to find the object with the right hand.		
2. Two different objects are placed in the left hand (key) and right hand (ring). The objects are then hidden within other objects.		
3. A patient was shown an object to the left visual field and asked to draw it with the right hand.		
4. Two different words are shown to the left (Ball) and right (Pen) visual field. They are asked to name one and pick the other up.		
5. The patient is shown a split face with half of the image being a man and half being a woman		

Biopsychology revision – Plasticity & Functional recovery

- Answer all questions ***without*** notes.
- Once you have answered one section, hand it in to be marked.
- Using your notes, add anything you have missed in a ***different coloured pen***.

Match the key terms to the definitions.

Plasticity	An active synapse will physically grow; this creates more synaptic vesicles which in turn will release more neurotransmitters which will increase the action potential of the neuron. The opposite occurs if you under use a synapse.
Functional recovery	When synapses are deleted as the synapses are rarely used.
Synaptic pruning	The brain's tendency to change and adapt (functionally and physically) as a result of experience and learning).
Recruitment of homologous	When dormant synapses are activated as a result of damage to surrounding active neurons.
Neural unmasking	The growth of new nerve endings which connect with other undamaged nerve cells to form new neuronal pathways.
Axonal sprouting	When an area of the brain is damaged, the area on the other side of the brain will perform the task so the brain can repair itself.
Synaptic reweighting	A form of plasticity. Following damage through trauma, the brain's ability to redistribute or transfer functions usually performed by a damaged areas to other undamaged areas.

Read the research associated with plasticity and fix the mistakes.

Maguire et al (2000)

Studied the brain of female taxi drivers and found significantly more volume of white matter in the posterior hippocampus than in a match control group. The hippocampus is associated with hand eye co-ordination and memory skills. London cab drivers have to complete a test to show their understanding of the streets in London. This learning may have led to the altered structured of their brains. They found a significant negative correlation between length of time in the job and volume of white matter.

Kuhn et al (2014)

Compared a group playing Super Mario for two hours a day with a group playing Sonic. They found a significant increase in white matter in various brain areas including the cortex, hippocampus and cerebellum. This increase was found in the Sonic group. The game had resulted in neural unmasking in brain areas involves in spatial navigation, planning and motor performance.

Josie is twelve. Last year she was involved in a serious road accident and suffered head injuries that caused problems with speech and understanding language. Now, a year later, Josie has recovered most of her language abilities.

Using your knowledge of plasticity and functional recovery of the brain after trauma, explain Josie's recovery. (4 marks)

……

……

……

……

……

……

……

……

……

……

……

……

Categorise the evaluation points into for or against plasticity/functional recovery, explain your answers.

Practical applications – neurorehabilitation

Hubel & Wiesel – sewed a cat's eye shut and monitored the activity of the visual cortex association with the shut eye.

Commonly accepted plasticity reduces with age, although research shows signs of adult plasticity research concluded the capacity for neural reorganisation is much greater in children than adults.

Brain's ability to rewire can sometimes be maladaptive – e.g. prolonged drug use.

Biopsychology revision – Biological rhythms

- Answer all questions ***without*** notes.
- Once you have answered one section, hand it in to be marked.
- Using your notes, add anything you have missed in a ***different coloured pen***.

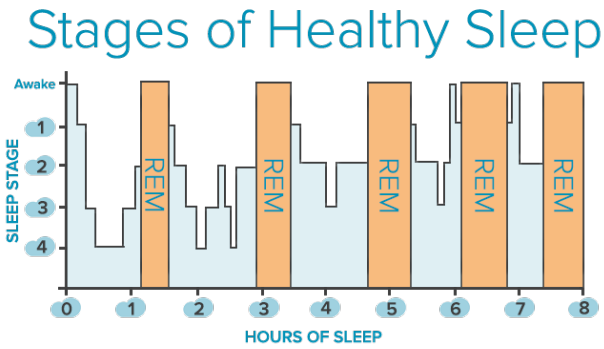
Write a definition and an example for each key term. 10 marks.

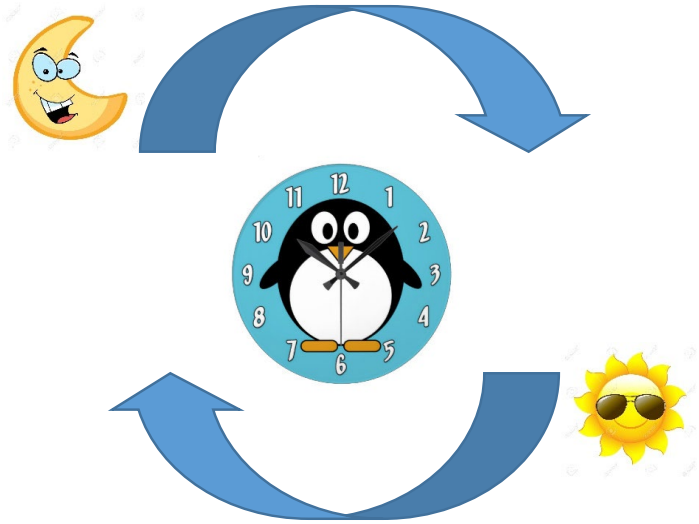
Circadian rhythm	
Exogenous zeitgeber	
Ultradian rhythm	
Infradian rhythm	
Endogenous pacemaker	

Outline the procedure and findings or four key studies into bio rhythms.

Siffre (1962)	***Dement & Kleitman (1957)***
McClintock (1998)	***DeCoursey et al (2000)***

Annotate the stages of sleep and sleep/wake cycle.





Answer the following past paper question. (4 marks)

Read the item and then answer the question that follows.

> Sam is a police officer. She has just started working the night shift and after a week, she finds that she has difficulty sleeping during the day and is becoming tense and irritable. Sam is also worried that she is less alert during the night shift itself.

Using your knowledge of endogenous pacemakers and exogenous zeitgebers, explain Sam's experiences.

Additional Reading/ Supporting Resources

To be successful in psychology, you need to be able to apply psychology to the real world and therefore you will need to be both independent and proactive in being able to research around the subject. Listed below are some examples of TED talks linked to psychology. Some of these are linked to topics we will cover; others are more general psychology. Watch as many of these as you have opportunity to and then write a review about the one that had the biggest impact on you. Think about why it is important and what impact that could make on the wider world. If you want to choose one that I have not listed, that is also fine.

- https://www.ted.com/talks/philip_zimbardo_the_psychology_of_evil
- https://www.ted.com/talks/beau_lotto_optical_illusions_show_how_we_see
- https://www.ted.com/talks/emma_bryce_the_power_of_the_placebo_effect
- https://www.ted.com/talks/kashfia_rahman_how_risk_taking_changes_a_teenager_s_brain
- https://www.ted.com/talks/daniel_kahneman_the_riddle_of_experience_vs_memory
- https://www.ted.com/talks/jim_fallon_exploring_the_mind_of_a_killer
- https://www.ted.com/talks/elizabeth_loftus_how_reliable_is_your_memory
- https://www.ted.com/talks/dan_ariely_are_we_in_control_of_our_own_decisions
- https://www.ted.com/talks/kim_gorgens_the_surprising_connection_between_brain_injuries_and_crime
- https://www.ted.com/talks/luis_h_zayas_the_psychological_impact_of_child_separation_at_the_us_mexico_border
- https://www.ted.com/talks/laurel_braitman_depressed_dogs_cats_with_ocd_what_animal_madness_means_for_us_humans
- https://www.ted.com/talks/scott_fraser_why_eyewitnesses_get_it_wrong
- https://www.ted.com/talks/karissa_sanbonmatsu_the_biology_of_gender_from_dna_to_the_brain
- https://www.ted.com/talks/sam_rodriques_what_we_ll_learn_about_the_brain_in_the_next_century
- https://www.ted.com/talks/dan_reisel_the_neuroscience_of_restorative_justice
- https://www.ted.com/talks/michael_merzenich_growing_evidence_of_brain_plasticity
- https://www.ted.com/talks/jocelyne_bloch_the_brain_may_be_able_to_repair_itself_with_help
- https://www.ted.com/talks/johann_hari_everything_you_think_you_know_about_addiction_is_wrong

Suggested websites:
www.simplypsychology.org
www.tutor2u.net
https://www.s-cool.co.uk/a-level/psychology
http://www.aqa.org.uk/resources/psychology/as-and-a-level/psychology/teach/list-of-free-resources
https://www.youtube.com/watch?v=v04pMVboR6M&index=1&list=PL8dPuuaLjXtOPRKzVLY0jJY-uHOH9KVU6
https://www.ted.com/topics/psychology
https://www.psychologytoday.com/

Suggested textbooks:

- A Psychology for A Level Year 1 & AS - Student Book by Jarvis Matt, Berry Dave, Flanagan Cara, Liddle Rob
- AQA Psychology for A Level Year 2 - Student Book by Liddle Rob, Jarvis Matt, Berry Dave, Flanagan Cara
- The Complete Companions: AQA Psychology Year 1 and AS Student Book by Mike Cardwell, Cara Flanagan
- The Complete Companion for AQA Psychology A Level: Year 2 Student Book by Mike Cardwell, Cara Flanagan

Online textbook:
We have access to the online textbook at the following web address:
https://illuminate.digital/aqapsych1/

Username: SFRIARY
Password: STUDENT

Seneca learning:
https://app.senecalearning.com/dashboard/join-class/z42d6oyw04