**Hand-out 6**

**Neurotransmitters, Mood, Behaviour**

 **& The mode of Action of Recreational drugs**

***For this section you are going to be using the A3 handout and the textbook p267-278 to help you complete your notes…***

* We know that neurotransmitters are chemicals which transmit nerve impulses across the synaptic cleft from one neuron to the next.
* Some neurotransmitters are involved in **controlling mood**.

These include:

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| **neurotransmitter**  | **function in brief…** |
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| **What you need to know…..** | **Notes/key points/examples/diagrams** |
| **The functions of endorphins and dopamine.*** Endorphins are neurotransmitters that stimulate neurones involved in reducing the intensity of pain.
* Increased levels are also connected with euphoric feelings, appetite modulation and release of sex hormones.
* Endorphin production increases in response to severe injury, prolonged and continuous exercise, stress and certain foods.

 * Dopamine induces the feeling of pleasure and reinforces particular behaviour in the reward pathway.
* The reward pathway involves neurons which secrete or respond to the neurotransmitter dopamine. It is activated on engagement of beneficial behaviours e.g. eating when hungry.
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| **Neurotransmitter related disorders and their treatment*** Agonists.
* Antagonists.
* Other drugs inhibit the enzymes which degrade neurotransmitters or inhibit re-uptake.
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| **Mode of action of recreational drugs*** These drugs may stimulate the release of neurotransmitters, mimic their action (agonists), block their binding (antagonists) and/or inhibit their reuptake/enzyme degradation.
* Changes in neurochemistry alter mood, cognition, perception and behaviour.
* Many recreational drugs affect neurotransmission in the reward circuit of the brain.
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| **Drug addiction/tolerance*** Sensitisation is an increase in the number and sensitivity of neurotransmitter receptors as a result of exposure to drugs that are antagonists and leads to addiction.
* Desensitisation is a decrease in the number and sensitivity of receptors as a result of exposure to drugs that are agonists and leads to drug tolerance.
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* Find out about the mode of action for one of the following drugs and write a brief note to summarise:
* Cocaine
* Cannabis
* Ecstasy (NDMA)
* Alcohol
* Nicotine
* Now write down some key points that you think would be needed to score **8 marks** in the following extended answer.
* When you have finished check your answer with the marking scheme.

**Describe how recreational drugs can affect the brain (8)**