Mark schemes

Q1.

[AO1 = 6]

Level	Marks	Description
3	5-6	Knowledge of cue reactivity as an explanation for nicotine addiction is detailed and appropriate. The answer is clear and coherent. Specialist terminology is used effectively.
2	3-4	Knowledge of cue reactivity as an explanation for nicotine addiction is mostly appropriate but lacks detail and/or clarity in places. There is some appropriate use of specialist terminology
1	1-2	Knowledge of cue reactivity as an explanation for nicotine addiction is limited/very limited. The answer lacks clarity. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- smoking behaviour is associated with environmental stimuli (exposure to cues), eg being with friends in a bar, relaxing on the sofa after a meal, holding a drink whilst smoking, rituals associated with smoking/lighting a cigarette
- based on the notion of classical conditioning where learning takes place by association between unconditioned stimulus (cigarette) and neutral stimulus (environmental cues)
- cues associated with smoking behaviour become the conditioned stimuli that trigger craving
- smoking continues because of negative reinforcement provided by the removal of the craving/rewarding/satisfying effect it elicits (operant conditioning).

Credit other relevant material.

[6]

Q2.

[AO3 = 6]

Level	Marks	Description
3	5-6	Evaluation of cue reactivity as an explanation for nicotine addiction is detailed and effective. The answer is clear and coherent. Specialist terminology is used effectively.
2	3-4	Evaluation of cue reactivity as an explanation for nicotine addiction is mostly effective but lacks detail and/or clarity in places. There is some appropriate use of specialist terminology
1	1-2	Evaluation of cue reactivity as an explanation for nicotine addiction is limited/very limited. The answer lacks clarity. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible evaluation:

- use of evidence to support/contradict the explanation, eg evidence that smoking associated/ritual cues can elicit craving
- better explains maintenance of smoking behaviour rather than initiation
- usefulness in relation to alternative explanations, eg social learning theory
- links with biological explanation – cue reactivity explanation is consistent with neural basis for classical conditioning through reward pathways
- role of self-efficacy in mediating the effects of cues
- implications for therapy and relapse, eg devising treatments that take account of cue reactivity such as avoiding situations where precipitating cues might occur.

Credit other relevant material.

[6]

Q3.

[AO1 = 6 AO3 = 10]

Level	Mark	Description
4	13-16	Knowledge of **one or more** explanations for nicotine addiction is accurate and generally well detailed. Evaluation is thorough and effective. Minor detail and/or expansion of argument is sometimes lacking. The answer is clear, coherent and focused. Specialist terminology is used effectively.
3	9-12	Knowledge of **one or more** explanations for nicotine addiction is evident but there are occasional inaccuracies/omissions. Evaluation is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.

2	5-8	Limited knowledge of **one or more** explanations for nicotine addiction is present. Focus is mainly on description. Any evaluation is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1-4	Knowledge of **one or more** explanations for nicotine addiction is very limited. Evaluation is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:
Neurochemistry:
- the common reward pathway and role of ACh nicotinic receptors, dopamine and the nucleus accumbens in the limbic system – the brain's reward system
- processes of nicotine regulation, withdrawal and tolerance
- possible genetic determinants – DRD2 gene.

Learning theory:
- operant conditioning processes and positive reinforcement of pleasure due to physiological effect
- negative reinforcement via avoidance of unpleasant withdrawal symptoms; tension reduction theory
- classical conditioning and the role of cue reactivity – learning through association with environmental/situational cues and secondary reinforcement social learning theory – observation imitation, modelling and vicarious reinforcement.

Possible evaluation:
- use of evidence to support/contradict explanation(s)
- problems with some evidence, eg ethical difficulty carrying out experimental research
- complexity of neurochemical evidence – other neurotransmitters are involved (eg GABA, serotonin), not just dopamine
- problems demonstrating cause and effect
- usefulness of explanation(s) in relation to various stages of nicotine addiction, eg initiation and maintenance
- mediating variables, eg social factors such as childhood experiences, education etc may mediate the effects of biological influence
- implications of explanations, eg if smoking is biological then attempts to reduce smoking might need to focus on physiology, eg patches; if it is learned then perhaps it can be unlearned
- evaluation in relation to broader issues, eg determinism, reductionism, nature vs nurture
- interactionism and comparison with alternative explanations, eg cognitive explanations.

Credit other relevant material.

[16]

Q4.

[AO1 = 6]

Level	Mark	Description
3	5-6	Description is clear, accurate and detailed. Specialist terminology is used effectively.
2	3-4	Description is mostly clear but lacks detail in places. There is some appropriate use of specialist terminology.
1	1-2	Description is limited/muddled. The answer lacks clarity and accuracy. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- nicotine binds with nicotinic receptors (a type of acetylcholine receptor) in the ventral tegmental area
- this triggers release of dopamine in the nucleus accumbens in the mesolimbic system (reward centre of the brain)
- activation of reward pathway creates feeling of euphoria and reduced anxiety
- nicotine regulation model – abstinence (eg overnight) leads to increased sensitivity of nicotinic receptors and withdrawal, causing motivation to smoke
- through repeated activation, more nicotine is required to create the same effect (tolerance) which results in craving (addiction)
- nicotine activates natural opioids in the brain (enkephalins and endorphins) creating feelings of pleasure
- role of GABA and serotonin – nicotine increases serotonin

Credit other relevant material.

[6]