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Name.....

Reg. No.....

**FIRST SEMESTER (CUFYUGP) DEGREE EXAMINATION
NOVEMBER 2024**

English

**ENG IFA 101 (1B)—ENGLISH LANGUAGE SKILLS FOR HUMANITIES AND
OTHER BA PROGRAMMES**

(2024 Admission onwards)

Time : One Hour and a Half

Maximum : 50 Marks

Section A

- I. Read the provided paragraphs and answer the following questions. Each question carries 2 marks.
(Ceiling : 16 Marks)

Caffeine, the stimulant in coffee, has been called “the most widely used psychoactive substance on Earth.” Snyder, Daly and Bruns have recently proposed that caffeine affects behavior by countering the activity in the human brain of a naturally occurring chemical called adenosine. Adenosine normally depresses neuron firing in many areas of the brain. It apparently does this by inhibiting the release of neurotransmitters, chemicals that carry nerve impulses from one neuron to the next. Like many other agents that affect neuron firing, adenosine must first bind to specific receptors on neuronal membranes. There are at least two classes of these receptors, which have been designated A₁ and A₂.

Snyder et al propose that caffeine, which is structurally similar to adenosine, is able to bind to both types of receptors, which prevents adenosine from attaching there and allows the neurons to fire more readily than they otherwise would.

For many years, caffeine's effects have been attributed to its inhibition of the production of phosphodiesterase, an enzyme that breaks down the chemical called cyclic AMP. A number of neurotransmitters exert their effects by first increasing cyclic AMP concentrations in target neurons. Therefore, prolonged periods at the elevated concentrations, as might be brought about by a phosphodiesterase inhibitor, could lead to a greater amount of neuron firing and, consequently, to behavioral stimulation. But Snyder et al point out that the caffeine concentrations needed to inhibit the production of phosphodiesterase in the brain are much higher than those that produce stimulation. Moreover, other compounds that block phosphodiesterase's activity are not stimulants.

Turn over

To buttress their case that caffeine acts instead by preventing adenosine binding, Snyder et al compared the stimulatory effects of a series of caffeine derivatives with their ability to dislodge adenosine from its receptors in the brains of mice. "In general," they reported, "the ability of the compounds to compete at the receptors correlates with their ability to stimulate locomotion in the mouse; i.e., the higher their capacity to bind at the receptors, the higher their ability to stimulate locomotion." Theophylline, a close structural relative of caffeine and the major stimulant in tea, was one of the most effective compounds in both regards. There were some apparent exceptions to the general correlation observed between adenosine-receptor binding and stimulation. One of these was a compound called 3-isobutyl-1-methylxanthine (IBMX), which bound very well but actually depressed mouse locomotion. Snyder et al suggest that this is not a major stumbling block to their hypothesis. The problem is that the compound has mixed effects in the brain, a not unusual occurrence with psychoactive drugs. Even caffeine, which is generally known only for its stimulatory effects, displays this property, depressing mouse locomotion at very low concentrations and stimulating it at higher ones.

- 1 What is the primary psychoactive substance in coffee ?
- 2 What role does adenosine play in neuron activity ?
- 3 What are the two classes of adenosine receptors mentioned in the passage ?
- 4 Why does Snyder et al argue against the phosphodiesterase theory of caffeine stimulation ?
- 5 What compound is mentioned as a close structural relative of caffeine and a major stimulant in tea ?
- 6 What is IBMX, and how does it differ in its effects from other caffeine derivatives ?
- 7 What naturally occurring chemical does caffeine counteract in the brain ?
- 8 How does adenosine affect neurotransmitter release ?
- 9 Explain how caffeine is proposed to stimulate neuron activity by interacting with adenosine receptors.
- 10 Describe the dual effects of caffeine on mouse locomotion and how Snyder et al use these results to support their hypothesis.

Section B

II. Answer the following questions in not more than 100 words. All questions can be attended. Each question carries 6 marks. (Ceiling : 24 Marks)

- 11 "Anthem" reflects Cohen's exploration of religious and spiritual themes. Elucidate.
- 12 How can art be utilized in social work, particularly in marginalized communities ?

- 13 Do you think that performances like stand-up comedy are effective methods of social criticism ? Substantiate your answer with insights from Carlin's video.
- 14 Attempt a character analysis of Willy Loman.
- 15 Helen Keller was convinced that the struggles necessitated by evil made her strong and patient. Explain.

Section C

III. Answer any *one* question in 300 words.

- 16 What were the social and political conditions in the United States that led to Martin Luther King Jr.'s "I Have a Dream" speech ?
- 17 Do you think that the "Rip it Out" scene symbolizes the struggle between individual desires and social expectations ? Elucidate.

(1 × 10 = 10 marks)