

Part A: 2X5=10: Answer all

1. Answer in Brief:

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| a) Explain CREB as memory inducer. | 2 |
| b) Misfolded protein as infective agent. | 2 |
| c) Explain Sleep deprivation leads to death of animals. | 2 |
| d) Functions of Blood-Brain Barrier. | 2 |
| e) Mode of action of Atropine. | 2 |

Part B: Answer any Five: 5X8=40

2. What are endocannabinoids? Describe their receptor and their receptors location? What is the function of endocannabinoids? What is glutamate toxicity? How is ischemia enhanced cell death? $1+2+2+1+2=8$
3. What is dopamine? What is the mechanism of action of Dopamine? What is the mode of action of methamphetamine? What will happen: when dopaminergic neuron will die? Why opioids have neuromodulation activity? $1+2+1+2+2=8$
4. What is the mechanism of NT vesicle fusion with the membrane? What is clostridial toxin and how it blocks NT release? What is the role Ca^{2+} in NT release? Explain ATP and nucleotides as neurotransmitter. $2+2=2+2=8$
5. What are survival factors for neuronal development? What kind of experiment you can do to prove that survival factors are essential? What is dendritic spine? How it is important for synaptogenesis? Give examples of guidance molecules involved in synapse formation. What is Presynapse and what is Postsynapse? $1+2+1+1+1+2=8$
6. Explain the term LTP and LTD. What are the molecular mechanisms underlying LTP? How would one enhance the capability of learning and memory? $2+3+3=8$
7. Can blind mice have Circadian Photoreception? Explain. Explain regulation of circadian rhythm with Photopigment. What is Jet lag? Explain. Explain Melatonin and its function? $2+2+2+2=8$
8. What is Multiple Sclerosis? What are the possible causes of Multiple Sclerosis? What are the causes of ALS? Why motor neurons are most susceptible in ALS? $2+2+2+2=8$

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