

TIME ALLOWED: TWO AND HALF HOURS

MAXIMUM MARKS = 80

- (i) Attempt ALL questions from PART-II.
- (ii) All the parts (if any) of each Question must be attempted at one place instead of at different places.
- (iii) Write Q. No. in the Answer Book in accordance with Q. No. in the Q.Paper.
- (iv) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
- (v) Extra attempt of any question or any part of the question will not be considered.

Part II

1. Write a précis of the following and suggest a suitable title: (20)

Clearly, the empirical study of the biochemistry of aggressive and violent behavior in humans has just begun. The most well-replicated relationship appears to be the inverse association between indicators of central serotonergic function and aggressive/violent behavior, or perhaps more specifically, impulsive aggressive/violent behavior. This general finding is supported by a large animal literature showing that experimental increases in 5-HT function result in decreases in aggression, while decrease in 5-HT function increases aggression. A positive relationship between testosterone and aggression/ violence is also suggested by a large number of studies. The magnitude of this relationship appears to be small, and it may be due, at least in part, to increases in testosterone following commission of aggressive or violent behavior. The inverse association between platelet MAO activity and aggressive/violent behavior is also intriguing; however, its significance remains questionable. It is important to note again that the large majority of studies on the biochemistry of aggression and violence in humans are correlational in nature; the direction of the brain-behavior. relationship cannot be specified from these studies.

A neglected area of research is the biochemistry of prosocial, affiliative behavior in humans, presumably these relationships would be the inverse of those found for aggressive and violent (i.e., antisocial) behavior (e.g., the serotonin reuptake inhibitor paroxetine increasing affiliative behavior in healthy volunteers). Higher order relationships are certainly possible, however. Greater emphasis also needs to be placed on experimental studies in humans in which neurotransmitter or hormonal functioning is altered and the effects on behavior observed. Such studies will help to elucidate the biochemical mechanisms contributing to human aggression and violence.

Investigators are only beginning to map out possible neurotransmitter/neurotransmitter and neurotransmitter/hormone interactions in the regulation of human aggressive and violent behavior. Serotonin/norepinephrine and serotonin/testosterone interactions have been hypothesized; however, experiments designed to test these relationships in humans have only just begun. One of the difficulties in this field is the lack of easily measurable peripheral indicators of central neurotransmitter function. Hormonal responses to neurotransmitter agonist challenges represent one such indicator; whole blood serotonin may yet prove to be another. Future investigation of adrenal/gonadal hormonal interactions promise to provide a greater understanding of the relationship between hormones, stress, and aggressive behavior.

Interactions between biochemistry and the environment will also need to be a focus of future investigation. A biochemical system may be tuned in such a fashion that it provides a template for the occurrence of aggression or violent behavior given the occurrence of certain environmental stimuli, for example, individuals with low serotonin may exhibit aggressive behavior specifically when provoked. Studies designed to demonstrate persons by environment interactions will help to illuminate the multitude of interactions that likely occur in the expression of aggressive and violent behavior in humans. An array of newer techniques has the potential to further enhance our understanding of human aggressive, violent, and prosocial behavior. / vis imaging of brain neurotransmitter synthesis and receptor function will clarify

neurochemical systems regulating prosocial and aggressive behavior. Groups of well-defined individuals selected for specific behavioral characteristics (e.g. physical aggression, impulsivity) should be studied in order to advance our knowledge of the biochemistry of the components of clinical disorders (e.g., conduct disorder). Only through such fine-grained analyses will the biochemical underpinnings of pro-social, aggressive, and violent behavior be illuminated.

2. Read carefully the passage given below and write your answers to the Questions that follow in clear, correct, and concise language: (20)

Everything is in motion, everything acts and reacts, in nature.

Our sun turns on its axis with a rapidity that astonishes us; other suns turn with the same speed, while countless swarms of planets revolve round them in their orbits, and the blood circulates more than twenty times an hour in the lowliest of our animals. A straw that is borne on the wind tends naturally towards the center of the earth, just as the earth gravitates towards the sun, and the sun towards the earth. The sea owes to the same laws its eternal ebb and flow. In virtue of the same laws the vapors which form our atmosphere rise continually from the earth, and fall again in dew, rain, hail, snow, and thunder. Everything, even death, is active. Corpses are decomposed, transformed into plants, and nourish the living, which in their turn are the food of others. What is the principle of this universal activity? This principle must be unique. The unvarying uniformity of the laws which control the march of the heavenly bodies, the movements of our globe, every species and genus of animal, plant, and mineral, indicates that there is one mover. If there were two, they would either differ, or be opposed to each other, or like each other. If they were different, there would be no harmony; if opposed, things would destroy each other; if like, it would be as if there were only one—a twofold employment. I am encouraged in this belief that there can be but one principle, one single mover, when I observe the constant and uniform laws of the whole of nature. The same gravitation reaches every globe, and causes them to tend towards each other in direct proportion, not to their surfaces, which might be the effect of an impelling fluid, but to their masses. The square of the revolution of every planet is as the cube of its distance from the sun (which proves, one may note, what Plato had somehow divined, that the world is the work of the eternal geometrician). The rays of light are reflected and refracted from end to end of the universe. All the truths of mathematics must be the same on the star Sirius as in our little home. If I glance at the animal world, I find that all quadrupeds, and all wingless bipeds, reproduce their kind by the same process of copulation, and all the females are viviparous. All female birds lay eggs. In each species there is the same manner of reproduction and feeding. Each species of plants has the same basic qualities. Assuredly the oak and the nut have come to no agreement to be born and to grow in the same way, any more than Mars and Saturn have come to an understanding to observe the same laws. There is, therefore, a single, universal, and powerful intelligence, acting always by invariable laws. No one doubts that an armillary sphere, landscapes, drawings of animals, or models in coloured wax, are the work of clever artists. Is it possible for the copyists to be intelligent and the originals not? This seems to me the strongest demonstration; I do not see how it can be assailed. This single mover is very powerful, since it directs so vast and complex a machine. It is very intelligent, since the smallest spring of this machine cannot be equalled by us, who are intelligent beings. It is a necessary being, since without it the machine would not exist. It is eternal, for it cannot be produced from nothing, which, being nothing, can produce nothing; given the existence of something, it is demonstrated that something has existed for all eternity. This sublime truth has become trivial. So great has been the advance of the human mind in our time, in spite of the efforts to brutalise us which the masters of ignorance have made for so many centuries.

I cannot prove synthetically the existence of the principle of action, the prime mover, the Supreme Being, as Dr. Clarke does. If this method were in the power of man, Clarke was, perhaps, worthy to employ it; but analysis seems to me more suitable for our poor ideas. It is only by ascending the stream of eternity that I can attempt to reach its source. Having therefore recognized from movement that there is a mover; having



Modern age of Biotechnology

Biotechnology has started research on unkind human nature. Human aggression and serotonergic are inversely related to each other. In an animal research stage, rise of 5-HT hormone reduces violence and vice versa, but positivity has been encouraged. Its magnitude drives aggression in human. Similarly, this study is correlated to nature that indicates this study can not summarize the relationship. Contrarily, Biochemistry of pre-sacral man is linked with anti-sacral perspective. This, no doubt, requires experimental research on human and hormonal effects. It will support Biochemistry in research of humans. Researchers only observe apparently link between serotonergic function and human nature, while experiments present, just its starting. Moreover, no equipment is sufficient to record its functioning. These hormones have a huge concern to attitude, psyche, and aggression of human nature. However, Biotechnology will also require future researches to increase human awareness about environmental actors through mind mapping and abilities. Research on advanced people in the field of Biotechnology should be researched for the sake of knowledge enhancement. This will present a clear image of human nature in the view of unkind human behavior.

(Total Words = 565)
(Words within = 180)