STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2007 –2008)

SUBJECT CODE: EN/FC/RL13

B.A./ B.Sc./B.Com. DEGREE EXAMINATION, NOVEMBER 2007
FIRST SEMESTER

COURSE : FOUNDATION CORE
PAPER : READING AND LISTENING SKILLS I
TIME : 2 HOURS **MAX. MARKS: 50**

SECTION - A

I Read the following passage and answer the questions that follow: (15x1=15)

But before we begin, I think it's important for you to understand my personal approach to science and why I am drawn to curious cases. When I give talks to lay audiences around the country, one question comes up again and again: "When are you brain scientists ever going to come up with a unified theory for how the mind works? There's Einstein's general theory of relativity and Newton's universal law of gravitation in physics. Why not one for the brain?"

My answer is that we are not yet at the stage where we can formulate grand unified theories of mind and brain. Every science has to go through an initial "experiment" or phenomena-driven stage – in which its practitioners are still discovering the basic laws – before it reaches a more sophisticated theory-driven stage. Consider the evolution of ideas about electricity and magnetism. Although people had vague notions about lodestones and magnets for centuries and used them both for making compasses, the Victorian physicist Michael Faraday was the first to study magnets systematically. He did two very simple experiments with astonishing results. In one experiment – which any schoolchild can repeat – he simply placed a bar magnet behind a sheet of paper, sprinkled powdered iron filings on the surface of the paper and found that they spontaneously aligned themselves along the magnetic lines of force (this was the very first time anyone had demonstrated the existence of fields in physics). In the second experiment, Faraday moved a bar magnet to and fro in the center of a coil of wire, and, lo and behold, this action produced an electrical current in the wire. These informal demonstrations – and this book is full of examples of this sort – had deep implications. They linked magnetism and electricity for the first time. Faraday's own interpretation of these effects remained qualitative, but his experiments set the stage for James Clerk Maxwell's famous electromagnetic wave equations several decades later – the mathematical formalisms that form the basis of all modern physics.

My point is simply that neuroscience today is in the Faraday stage, not in the Maxwell stage, and there is no point in trying to jump ahead. I would love to be proved wrong, of course, and there is certainly no harm in trying to construct formal theories about the brain, even if one fails (and there is no shortage of people who are trying). But for me, the best research strategy might be characterized as "tinkering". Whenever I use this word, many people look rather shocked, as if one couldn't possibly do sophisticated science by just playing around with ideas and without an overarching theory to guide one's hunches. But that's exactly what I mean (although these hunches are far from random; they are always guided by intuition).

I've been interested in science as long as I can remember. When I was eight or nine years old, I started collecting fossils and seashells, becoming obsessed with taxonomy and evolution. A little later I set up a small chemistry lab under the stairway in our house and enjoyed watching iron filings "fizz" in hydrochloric acid and listening to the hydrogen "pop" when I set fire to it. (The iron displaced the hydrogen from the hydrochloric acid to form iron chloride and hydrogen.) The idea that you could learn so much from a simple experiment and that everything in the universe is based on such interactions was fascinating. I remember that when a teacher told me about Faraday's simple experiments, I was intrigued by the notion that you could accomplish so much with so little. These experiences left me with a permanent distaste for fancy equipment and the realization that you don't necessarily need complicated machines to generate scientific revolutions; all you need are some good hunches.

Another perverse streak of mine is that I've always been drawn to the exception rather than to the rule in every science that I've studied. In high school I wondered why iodine is the only element that turns from a solid to a vapor directly when heated, without first melting and going through a liquid stage. Why does Saturn have rings and not the other planets? Why does water alone expand when it turns to ice, whereas every other liquid shrinks when it solidifies? Why do some animals not have sex? Why can tadpoles regenerate lost limbs though an adult frog cannot? Is it because the tadpole is younger, or is it because it's a tadpole? What would happen if you delayed metamorphosis by blocking the action of thyroid hormones (you could put a few drops of thiouracil into the aquarium) so that you ended up with a very old tadpole? Would the geriatric tadpole be able to regenerate a missing limb? (As a schoolboy I made some feeble attempts to answer this, but, to my knowledge, we don't know the answer even to this day.)

I was personally drawn into medicine, a discipline full of ambiguities, because its Sherlock Holmes style of inquiry greatly appealed to me. Diagnosing a patient's problem remains as much an art as a science, calling into play powers of observation, reason and all the human senses. I recall one professor, Dr. K.V.Thiruvengadam, instructing us how to identify disease by just smelling the patient – the unmistakable, sweetish nail polish breath of diabetic ketosis; the freshly baked bread odor of typhoid fever; the stale-beer strench of scrofula; the newly plucked chicken feathers aroma of rubella; the foul smell of a lung abscess; and the ammonialike Windex odor of a patient in liver failure. (And today a pediatrician might add the grape juice smell of *Pseudomonas* infection in children and the sweaty-feet smell of isovaleric acidemia.) Inspect the fingers carefully, Dr. Thiruvengadam told us, because a small change in the angle between the nail bed and the finger can herald the onset of a malignant lung cancer long before more ominous clinical signs emerge. Remarkably, this telltale sign – clubbing – disappears instantly on the operating table as the surgeon removes the cancer, but, even to this day, we have no idea why it occurs. Another teacher of mine, a professor of neurology, would insist on our diagnosing Parkinson's disease with our eyes closed – by simply listening to the patients' footsteps (patients with this disorder have a characteristic shuffling gait). This detectivelike aspect of clinical medicine is a dying art in this age of high-tech medicine, but it planted a seed in my mind. By carefully observing, listening, touching and, yes, even smelling the patient, one can arrive at a reasonable diagnosis and merely use laboratory tests to confirm what is already known.

1. According to the writer, why is there no satisfactory scientific theory to explain the way the brain works?
2. What far – reaching result did Faraday's experiments have in the field of physics?

3. What does the author mean to convey by the word 'tinkering' as related to science?
4. In chemical terms, what happened to the iron filings when immersed in hydrochloric acid?
5. What does the author mean when he says that practicing medicine involves a 'Sherlock Holmes style of inquiry'?
6. What have finger nails to do with lung cancer?
7. Does the writer think that the Sherlock Holmes style is likely to continue in the future of medicine?
8. Find a word in the passage that means:
   a) Old b) Foul smell
9. Find an antonym from the passage for
   a) specific b) benign

Select the alternative that is most accurate

10. One can identify a patient suffering from Parkinson's disease
    a) by smelling his breath
    b) by closing one's eyes
    c) by looking at his nails
    d) even with one's eyes shut
11. A tadpole can grow a lost limb
    a) because it is young
    b) because it is a tadpole
    c) because it has been treated with the drug thiouracil which blocks the thyroid hormone
    d) scientists have not yet understood the reason
12. The author feels that
    a) Laboratory tests are useless in diagnosing illness
    b) Doctors need to use their five senses while examining a patient and rely on technical resources to check up what they have diagnosed
    c) Learning through lab tests is not as much fun as learning through observation
    d) Doctors at present rely more on observation than on lab tests
13. The writer learned from Faraday's experiments that
    a) Electricity is a powerful natural force
    b) It is not easy to construct a general unified theory of the brain
    c) That expensive equipment is not necessary to become a great scientist
    d) All great scientists tend to 'tinker' rather than create unified theories
14. Saturn having rings, unlike other planets, is mentioned in this piece to indicate that
    a) The author likes to notice deviations from the normal pattern rather than merely ignore them
    b) That planets are different
    c) Scientists have now discovered why planets have rings
    d) That Saturn may be a more dangerous planet because it is different
15. Michael Faraday lived during the age of
    a) Queen Elizabeth II b) Queen Victoria
    c) There is no information in this passage
    d) Queen Elizabeth I

II. Write a summary of each of the following passages in about 15 words each. The first is done, as an example. (5x2=10)

Machines which seem to think have become a regular feature of our lives. Tasks that 20 years ago would have been unthinkable are now simple for quite basic computers.

Ans: Computers perform such complex tasks today that they seem to think.

1. The most complex computers can boast remarkable achievements. Automatic pilots fly jumbo jets, and at the most sophisticated airports such as Heathrow even the largest jets can now land in zero visibility, relying entirely on computers.

2. Chess is another field where the machine's advances go far beyond mankind's. The most advanced computers are now a match for all but the very best players and it won't be long before they will be capable of beating the champions.

3. Different people use the tem 'artificial intelligence' to mean different things. But before it can be argued successfully that we are in the presence of an artificial intelligence, we have to prove that a machine can – as a minimum – 'learn' from the environment, independently of its programmer.

4. One important difference between computers and the human brain is that computers rely on 'serial processing'. The fact that a computer may be able to win a complex game like chess simply reflects its ability to look at numerous possible series of moves at rapid speed and to 'learn' not to make losing moves. While this does show advanced programming, it does not show that the computer is learning independently of its programming and does not therefore show that it is intelligent. Quite apart from its ability to be influenced by the environment, the human brain differs from even the most advanced computer in that it operates with so-called 'parallel processing', doing several things at once.

5. Sir Clive Sinclair, one of the original computer experts, is convinced that parallel processing programs for computers will be with us soon, and that these will totally change society. With parallel processing, computers would be expected to 'learn' better from their experiences and perhaps, be able to pass on the fruits of such learning to other computers, each in turn becoming more advanced. Thus could be born a generation of computers able to offer at least a more realistic attempt at intelligence.

SECTION – B

III. Complete the sentences in this story. Put the verbs in brackets into a suitable form of the past tense. (15x1=15)

One night in January 1938 Samuel Beckett (1) ___________(walk) home in Paris. He (2)________(go) to the cinema and then to café ,where he (3)__________(spend) some time with his friends. As Beckett and his friends (4)__________(walk) along the Avenue d'Orleans, a man (5)____________ (stop) them and (6)__________(ask) them for money. The man (7) ____________(drink) heavily all evening and he (8) __________ (be) very drunk. Beckett (9) _________ (refuse) to give him any money. When he (10) ___________ (start) to walk away the man (11) ________ (take) out a knife and (12) __________ (stab) Beckett in the chest. A young woman called Suzanne (13) __________ (pass) by at the time. She (14) __________ (stop) to help Beckett. Twenty three years later, Beckett and Suzanne (15) ________ (get) married.

IV. Fill in the blanks: (6x ½ =3)

1. I think either of these novels __________(be) worth reading.
2. The prizewinners were called to the dais and each of them __________(be) presented with a gift hamper.
3. Our institution makes a point of punctuality and every employee _______(have) to be on time.
4. My uncle is very overweight. I think this is because poori and potato __________ (be) his favorite dish.
5. The United States of America _________ (welcome) visitors who have no intention of becoming immigrants.
6. Sorry I don't think I can make it; twenty miles_________(seem) a long distance.

V. Complete the sentence. Use *there, it* or *they* with a suitable form of the verb *be*. (14x ½ =7)

Example: There's an old fort near the town. It's over 800 years old.

1. ____________ a film on TV tonight. ____________ called 'Black'.
2. ____________ a closing –down sale at the ABC Carpet Store last month ________ from the 26th to the 31st of July.
3. Meet my sisters; ___________ both born in Delhi. However, my parents moved, so _____________ my birthplace.
4. No, ___________ too late, we've plenty of time to catch the bus.
5. ___________another Olympic games in the year 2020.___________ probably ____________ held in Greece.
6. '____________ any books about Satyajit Ray in the library ?' 'Yes ______. _________ in the film section'.
7. Yes, I can drop you home._________a problem.

****