ASIAN UNIVERSITY FOR WOMEN

ADMISSION TEST 2019-20

APPLICANT ID: ________________

PLEASE FILL UP THE BOX BEFORE STARTING THE EXAM AND MENTION YOUR APPLICANT ID ON ALL THE PAGES

APPLICANT NAME: ____________________________

APPLICANT COUNTRY: ____________________________

DATE: ____________________________

ENGLISH TEST- (SET-A)

READING COMPREHENSION {1 HOUR}

INSTRUCTIONS TO CANDIDATES

- **Answer all the questions.**
- **Write your answers on the bubble sheet .**
- **You must complete the answer sheet within the time limit.**

*You should spend about **20 minutes** on **Questions 1-13**, which are based on **Reading Passage 1**.*

Reading Passage 1

Tea and the Industrial Revolution

A Cambridge professor says that a change in drinking habits was the reason for the Industrial Revolution in Britain. Anjana Abuja reports

A. Alan Macfarlane, professor of anthropological science at King's College, Cambridge has, like other historians, spent decades wrestling with the enigma of the Industrial Revolution. Why did this particular Big Bang – the world-changing birth of industry happen in Britain? And why did it strike at the end of the 18th century?

B. Macfarlane compares the puzzle to a combination lock. 'There are about 20 different factors and all of them need to be present before the revolution can happen,' he says. For industry to take off, there needs to be the technology and power to drive factories, large urban populations to provide cheap labour, easy transport to move goods around, an affluent middle-class willing to buy mass-produced objects, a market-driven economy and a political system that allows this to happen. While this was the case for England, other nations, such as Japan, the Netherlands and France also met some of these criteria but were not industrialising. All these factors must have been necessary. But not sufficient to cause the revolution, says Macfarlane. 'After all, Holland had everything except coal while China also had many of these factors. Most historians are convinced there are one or two missing factors that you need to open the lock.'

C. The missing factors, he proposes, are to be found in almost even kitchen cupboard. Tea and beer, two of the nation's favourite drinks, fuelled the revolution. The antiseptic properties of tannin, the active ingredient in tea, and of hops in beer – plus the fact that both are made with boiled water – allowed urban communities to flourish at close quarters without succumbing to water-borne diseases such as dysentery. The theory sounds eccentric but once he starts to explain the detective work that went into his deduction, the scepticism gives way to wary admiration. Macfarlane's case has been strengthened by support from notable quarters – Roy Porter, the distinguished medical historian, recently wrote a favourable appraisal of his research.

D. Macfarlane had wondered for a long time how the Industrial Revolution came about. Historians had alighted on one interesting factor around the mid-18th century that required explanation. Between about 1650 and 1740, the population in Britain was static. But then there was a burst in population growth. Macfarlane says: 'The infant mortality rate halved in the space of 20 years, and this happened in both rural areas and cities, and across all classes. People suggested four possible causes. Was there a sudden change in the viruses and bacteria around? Unlikely. Was there a revolution in medical science? But this was a century before Lister's revolution. Was there a change in environmental conditions? There were improvements in agriculture that wiped out malaria, but these were small gains. Sanitation did not become widespread until the 19th century. The only option left is food. But the height and weight statistics show a decline. So the food must have got worse. Efforts to explain this sudden reduction in child deaths appeared to draw a blank.'

E. This population burst seemed to happen at just the right time to provide labour for the Industrial Revolution. 'When you start moving towards an industrial revolution, it is economically efficient to have people living close together,' says Macfarlane. 'But then you get disease, particularly from human waste.' Some digging around in historical records revealed that there was a change in the incidence of water-borne disease at that time, especially dysentery. Macfarlane deduced that whatever the British were drinking must have been important in regulating disease. He says, 'We drank beer. For a long time, the English were protected by the strong antibacterial agent in hops, which were added to help preserve the beer. But in the late 17th century a tax was introduced on malt, the basic ingredient of beer. The poor turned to water and gin and in the 1720s the mortality rate began to rise again. Then it suddenly dropped again. What caused this?'

F . Macfarlane looked to Japan, which was also developing large cities about the same time, and also had no sanitation. Water-borne diseases had a much looser grip on the Japanese population than those in Britain. Could it be the prevalence of tea in their culture? Macfarlane then noted that the history of tea in Britain provided an extraordinary coincidence of dates. Tea was relatively expensive until Britain started a direct dipper trade with China in the early 18th century. By the 1740s, about the time that infant mortality was dipping, the drink was common. Macfarlane guessed that the fact that water had to be boiled, together with the stomach-purifying properties of tea meant that the breast milk provided by mothers was healthier than it had ever been. No other European nation sipped tea like the British, which, by Macfarlane's logic, pushed these other countries out of contention for the revolution.

G. But, if tea is a factor in the combination lock, why didn't Japan forge ahead in a tea-soaked industrial revolution of its own? Macfarlane notes that even though 17th-century Japan had large cities, high literacy rates, even a futures market, it had turned its back on the essence of any work-based revolution by giving up labour-saving devices such as animals, afraid that they would put people out of work. So, the nation that we now think of as one of the most technologically advanced entered the 19th century having 'abandoned the wheel'.

Questions 1-7

*Reading **Passage 1** has seven paragraphs, **A-G**. Choose the correct heading for each paragraph from the list of headings below.*

*Write the correct number**, i-ix,** in boxes **1-7** on your answer sheet.*

List of Headings

I. The search for the reasons for an increase in population
II. Industrialisation and the fear of unemployment
III. The development of cities in Japan.
IV. The time and place of the Industrial Revolution

APPLICANT ID: ____________________

V. The cases of Holland, France and China
VI. Changes in drinking habits in Britain
VII. Two keys to Britain's industrial revolution
VIII. Conditions required for industrialisation
IX. Comparisons with Japan lead to the answer

1 Paragraph A	
2 Paragraph B	
3 Paragraph C	
4 Paragraph D	
5 Paragraph E	
6 Paragraph F	
7 Paragraph G	

Questions 8-13

*Do the following statements agree with the information given in the Reading **Passage 1**?*

*In boxes **8-13** on your answer sheet, tick the correct option.*

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

8. China's transport system was not suitable for industry in the 18th century.

a. True b. False c. Not Given

9. Tea and beer both helped to prevent dysentery in Britain.

a. True b. False c. Not Given

APPLICANT ID: ________________

10. Roy Porter disagrees with Professor Macfarlane's findings.

a. True b. False c. Not Given

11. After 1740, there was a reduction in population in Britain

a. True b. False c. Not Given

12. People in Britain used to make beer at home.

a. True b. False c. Not Given

13. The tax on malt indirectly caused a rise in the death rate.

a. True b. False c. Not Given

Reading Passage 2

You should spend about ***20 minutes*** *on* ***Questions 14-26,*** *which are based on Reading* ***Passage 2*** *below.*

Autumn leaves

Canadian writer Jay Ingram investigates the mystery of why leaves turn red in the Fall

A. One of the most captivating natural events of the year in many areas throughout North America is the turning of the leaves in the fall. The colours are magnificent, but the question of exactly why some trees turn yellow or orange, and others red or purple, is something which has long puzzled scientists.

B. Summer leaves are green because they are full of chlorophyll, the molecule that captures sunlight converts that energy into new building materials for the tree. As fall approaches in the northern hemisphere, the amount of solar energy available declines considerably. For many trees – Evergreen Conifers being an exception – the best strategy is to abandon photosynthesis until the spring. So rather than maintaining the now redundant leaves throughout the winter, the tree saves its precious resources and discards them. But before letting its leaves go, the tree dismantles their chlorophyll molecules and ships their valuable nitrogen back into the twigs. As chlorophyll is depleted, other colours that have been dominated by it throughout the summer begin to be revealed. This unmasking explains the autumn colours of yellow and orange, but not the brilliant reds and purples of trees such as the Maple or Sumac.

C .The source of the red is widely known: it is created by anthocyanins, water-soluble plant pigments reflecting the red to blue range of the visible spectrum. They belong to a class of sugar-based chemical compounds also known as flavonoids. What's puzzling is that anthocyanins are actually newly minted, made in the leaves at the same time as the tree is preparing to drop them. But it is hard to make sense of the manufacture of anthocyanins – why should a tree bother making new chemicals in its leaves when its already scrambling to withdraw and preserve the ones already there?

D. Some theories about anthocyanins have argued that they might act as a chemical defence against attacks by insects or fungi, or that they might attract fruit-eating birds or increase a leaf's tolerance to freezing. However there are problems with each of these theories, including the fact that leaves are red for such a relatively short period that the expense of energy needed to manufacture the anthocyanins would outweigh any anti-fungal or anti-herbivore activity achieved photosynthesis: the production of new material from sunlight, water and carbon dioxide.

E. It has also been proposed that trees may produce vivid red colours to convince herbivorous insects that they are healthy and robust and would be easily able to mount chemical defences against infestation. If insects paid attention to such advertisements, they might be prompted to lay their eggs on a duller, and presumably less resistant host. The flaw in this theory lies in the lack of proof to support it. No one has as yet ascertained whether more robust trees sport the brightest leaves, or whether insects make choices according to colour intensity.

F. Perhaps the most plausible suggestion as to why leaves would go to the trouble of making anthocyanins when they're busy packing up for the winter is the theory known as the 'light screen' hypothesis. It sounds paradoxical, because the idea behind this hypothesis is that the red pigment is made in autumn leaves to protect chlorophyll, the light-absorbing chemical, from too much light. Why does chlorophyll need protection when it is the natural world's supreme light absorber? Why protect chlorophyll at a time when the tree is breaking it down to salvage as much of it as possible?

G. Chlorophyll, although exquisitely evolved to capture the energy of sunlight, can sometimes be overwhelmed by it, especially in situations of drought, low temperatures, or nutrient deficiency. Moreover, the problem of oversensitivity to light is even more acute in the fall, when the leaf is busy preparing for winter by dismantling its internal machinery. The energy absorbed by the chlorophyll molecules of the unstable autumn leaf is not immediately channeled into useful products and processes, as it would be in an intact summer leaf. The weakened fall leaf then becomes vulnerable to the highly destructive effects of the oxygen created by the excited chlorophyll molecules.

H. Even if you had never suspected that this is what was going on when leaves turn red, there are clues out there. One is straightforward: on many trees, the leaves that are the reddest are those on the side of the tree which gets most sun. Not only that, but the red is brighter on the upper side of the leaf. It has also been recognised for decades that the best conditions for intense red colours are dry, sunny days and cool nights, conditions that nicely match those that make leaves susceptible to excess light. And finally, trees such as Maples usually get much redder the more north you travel in the northern hemisphere. It's colder there, they're more stressed, their chlorophyll is more sensitive and it needs more sunblock.

I. What is still not fully understood, however, is why some trees resort to producing red pigments while others don't bother, and simply reveal their orange or yellow hues. Do these trees have other means at their disposal to prevent overexposure to light in autumn? Their story, though not as spectacular to the eye, will surely turn out to be as subtle and as complex.

APPLICANT ID: ________________

Questions 14-18

Reading ***Passage 2*** *has nine paragraphs,* ***A-I***

Which paragraph contains the following information? Write the correct letter, ***A-I****, in boxes (****14-18*** *)on your answer sheet.*

NB You may use any letter more than once.

14. a description of the substance responsible for the re colouration of leaves. [ ]
15. the reason why trees drop their leaves in autumn. [ ]
16. some evidence to confirm a theory about the purpose of the red leaves. [ ]
17. an explanation of the function of chrophyll. [ ]
18. a suggestion that the red colouration in leaves could serve as a warning signal. [ ]

Question 19-22

Complete the notes below.

Choose ***ONE WORD ONLY*** *from the* ***passage 2*** *for each answer.*

Write your answers in boxes ***19-22*** *on your answer sheet.*

Why Believe the "Light Screen" hypothesis?

- The most vividly coloured red leaves are found on the side of the tree facing the **19**______________________**.**
- The **20**__________________ surfaces of leaves contain the most red pigment.
- Red leaves are most abundant when daytime weather conditions are **21**_________________ and sunny.
- The intensity of the red colour of leaves increases as you go further **22**_________________**.**

Questions 23-25

Do the following statements agree with the information given in Reading ***Passage 2****?*

In boxes ***23-25*** *on your answer sheet, tick correct option.*

TRUE if the statement agrees with the information
FALSE if the statement contradicts the information
NOT GIVEN if there is no information on this

23 . It is likely that the red pigments help to protect the leaf from freezing temperatures.

a. True b. False c. Not Given

24 . The "light screen" hypothesis would initially seem to contradict what is known about chlorophyll.

a. True b. False c. Not Given

25. Leaves which turn colours other than red are more likely to be damaged by sunlight.

a. True b. False c. Not Given

Question 26

Choose the correct letter ***A,B, C, or D.***

Tick the correct option on your answer sheet.

For which of the following questions does the writer offer an explanation?

A why conifers remain green in winter

B how leaves turn orange and yellow in autumn

C how herbivorous insects choose which trees to lay their eggs in

D why anthocyanins are restricted to certain trees

READING PASSAGE 3

*You should spend about **20 minutes** on **Questions 27-40,** which are based on Reading **Passage 3 below.***

When evolution runs backward

Evolution isn't supposed to run backwards - yet an increasing number of examples show that it does and that it can sometimes represent the future of a species.

The description of any animal as an 'evolutionary throwback' is controversial. For the better part of a century, most biologists have been reluctant to use those words, mindful of a principle of evolution that says 'evolution cannot run backwards'. But as more and more examples come to light and modern genetics enters the scene, that principle is having to be rewritten. Not only are evolutionary throwbacks possible, they sometimes play an important role in the forward march of evolution.

The technical term for an evolutionary throwback is an 'atavism', from the Latin atavus, meaning forefather. The word has ugly connotations thanks largely to Cesare Lombroso, a 19th-century Italian medic who argued that criminals were born not made and could be identified by certain physical features that were throwbacks to a primitive, sub-human state.

While Lombroso was measuring criminals, a Belgian palaeontologist called Louis Dollo was studying fossil records and coming to the opposite conclusion. In 1890 he proposed that evolution was irreversible: that 'an organism is unable to return, even partially, to a previous stage already realised in the ranks of its ancestors'. Early 20th-century biologists came to a similar conclusion, though they qualified it in terms of probability, stating that there is no reason why evolution cannot run backwards -it is just very unlikely. And so the idea of irreversibility in evolution stuck and came to be known as 'Dollo's law'.

If Dollo's law is right, atavisms should occur only very rarely, if at all. Yet almost since the idea took root, exceptions have been cropping up. In 1919, for example, a humpback whale with a pair of leglike appendages over a metre long, complete with a full set of limb bones, was caught off Vancouver Island in Canada. Explorer Roy Chapman Andrews argued at the time that the whale must be a throwback to a land-living ancestor. 'I can see no other explanation', he wrote in 1921.

Since then, so many other examples have been discovered that it no longer makes sense to say that evolution is as good as irreversible. And this poses a puzzle: how can characteristics that disappeared millions of years ago suddenly reappear?

In 1994, Rudolf Raff and colleagues at Indiana University in the USA decided to use genetics to put a number on the probability of evolution going into reverse. They reasoned that while some evolutionary changes involve the loss of genes and are therefore irreversible, others may be the result of genes being switched off. If these silent genes are somehow switched back on, they argued, long lost traits could reappear.

Raff's team went on to calculate the likelihood of it happening. Silent genes accumulate random mutations, they reasoned, eventually rendering them useless. So how long can a gene survive in a species if it is no longer used? The team calculated that there is a good chance of silent genes surviving for up to 6 million years in at least a few individuals in a population, and that some might survive as long as 10 million years. In other words, throwbacks are possible, but only to the relatively recent evolutionary past.

As a possible example, the team pointed to the mole salamanders of Mexico and California. Like most amphibians these begin life in a juvenile 'tadpole' state, then metamorphose into the adult form – except for one species, the axolotl, which famously lives its entire life as a juvenile. The simplest explanation for this is that the axolotl lineage alone lost the ability to metamorphose, while others retained it. From a detailed analysis of the salamanders' family tree, however, it is clear that the other lineages evolved from an ancestor that itself had lost the ability to metamorphose. In other words, metamorphosis in mole salamanders is an atavism. The salamander example fits with Raff's 10million-year time frame.

More recently, however, examples have been reported that break the time limit, suggesting that silent genes may not be the whole story. In a paper published last year, biologist Gunter

Wagner of Yale University reported some work on the evolutionary history of a group of South American lizards called Bachia. Many of these have minuscule limbs; some look more like snakes than lizards and a few have completely lost the toes on their hind limbs. Other species, however, sport up to four toes on their hind legs. The simplest explanation is that the toed lineages never lost their toes, but Wagner begs to differ. According to his analysis of the Bachia family tree, the toed species re-evolved toes from toeless ancestors and, what is more, digit loss and gain has occurred on more than one occasion over tens of millions of years.

So what's going on? One possibility is that these traits are lost and then simply reappear, in much the same way that similar structures can independently arise in unrelated species, such as the dorsal fins of sharks and killer whales. Another more intriguing possibility is that the genetic information needed to make toes somehow survived for tens or perhaps hundreds of millions of years in the lizards and was reactivated. These atavistic traits provided an advantage and spread through the population, effectively reversing evolution.

But if silent genes degrade within 6 to million years, how can long-lost traits be reactivated over longer timescales? The answer may lie in the womb. Early embryos of many species develop ancestral features. Snake embryos, for example, sprout hind limb buds. Later in development these features disappear thanks to developmental programs that say 'lose the leg'. If for any reason this does not happen, the ancestral feature may not disappear, leading to an atavism.

Questions 27-31

*Choose the correct letter, **A, B, C or D**. Tick the correct option of **27-31** on your answer sheet.*

27. When discussing the theory developed by Louis Dollo, the writer says that

A. it was immediately referred to as Dollo's law.

B. it supported the possibility of evolutionary throwbacks.

C. it was modified by biologists in the early twentieth century.

D. it was based on many years of research.

28. The humpback whale caught off Vancouver Island is mentioned because of

A. the exceptional size of its body.

B. the way it exemplifies Dollo's law.

C. the amount of local controversy it caused.

D. the reason given for its unusual features.

29. What is said about 'silent genes'?

A. Their numbers vary according to species.

B. Raff disagreed with the use of the term.

C. They could lead to the re-emergence of certain characteristics.

D. They can have an unlimited life span.

30. The writer mentions the mole salamander because

A. it exemplifies what happens in the development of most amphibians.

B. it suggests that Raffs theory is correct.

C. it has lost and regained more than one ability.

D. its ancestors have become the subject of extensive research.

31. Which of the following does Wagner claim?

A. Members of the Bachia lizard family have lost and regained certain features several times.

B. Evidence shows that the evolution of the Bachia lizard is due to the environment.

C. His research into South American lizards supports Raffs assertions.

D. His findings will apply to other species of South American lizards.

APPLICANT ID: __________________

Questions 32-36

Complete each sentence with the correct ending, from the list ***A-G,*** *below.*

*Write the correct letter****, A-G,*** *in boxes* ***32-36*** *on your answer sheet.*

List
A. the question of how certain long-lost traits could reappear.
B.the occurrence of a particular feature in different species.
C.parallels drawn between behaviour and appearance.
D. the continued existence of certain genetic information.
E. the doubts felt about evolutionary throwbacks.
F. the possibility of evolution being reversible.
G. Dollo's findings and the convictions held by Lombroso.

32. For a long time biologists rejected ☐

33. Opposing views on evolutionary throwbacks are represented by ☐

34. Examples of evolutionary throwbacks have led to ☐

35. The shark and killer whale are mentioned to exemplify ☐

36. One explanation for the findings of Wagner's research is ☐

Questions 37-40

Do the following statements agree with the claims of the writer in Reading ***Passage 3****?*

In boxes ***37-40*** *on your answer sheet, tick the correct option.*

YES if the statement agrees with the claims of the writer
NO if the statement contradicts the claims of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

APPLICANT ID: ________________

37. Wagner was the first person to do research on South American lizards.

a. True b. False c. Not Given

38. Wagner believes that Bachia lizards with toes had toeless ancestors.

a. True b. False c. Not Given

39. The temporary occurence of long lost traits in embryos is rare.

a. True b. False c. Not Given

40. Evolutionary throwbacks might be caused by developmental problems in the womb.

a. True b. False c. Not Given