

Sample Paper – 2014
Class – XI
Subject – Biology

Time – 3Hrs.

MM – 70

General Instructions

- 1. The question paper comprises of four sections A, B, C and D. You are to attempt all the sections.*
- 2. All questions are compulsory.*
- 3. There is no overall choice however, internal choice has been provided in one question of two marks, one question of three and all the three questions of five marks category. Only one option in such questions is to be attempted.*
- 4. All questions of section A, B, C and D are to be attempted separately.*
- 5. Questions 1 to 8 in section A are very short questions of one mark each. These are to be answered in one word or one sentence each.*
- 6. Questions 9 to 18 in section B are short questions of two marks each. These are to be answered in approximately 20-30 words each.*
- 7. Questions 19 to 27 in section C are questions of three marks each. These are to be answered in approximately 30-50 words each.*
- 8. Questions 28 to 30 in section D are questions of five marks each. These are to be answered in approximately 80-120 words each.*

SECTION-A

- 1. Which coronary artery diseases is caused due to narrowing of the lumen of arteries?**
- 2. A homopolymer has only one type of building block called monomer repeated 'n' number of times. A heteropolymer has more than one type of monomer. Proteins are heteropolymers made of aminoacids. While a nucleic acid like DNA or RNA is made of only 4 types of nucleotide monomers, proteins are made of how many monomers.**
- 3. A fluid filled double membranous layer surrounds the lungs. Name it and mention its important function.**
- 4. State the number of segments in earthworm which are covered by a prominent dark band or clitellum.**
- 5. In a given habitat we have 20 plant species and 20 animal species. Should we call this as 'diversity' or 'biodiversity'? Justify your answer.**
- 6. Draw diagrams of a typical monocot and dicot leaves to show their venation pattern.**
- 7. What constitutes the cambial ring?**
- 8. Name the only hormone secreted by pars intermedia of the pituitary gland.**

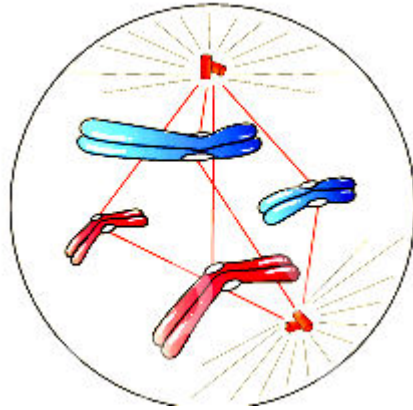
SECTION B

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9. Distinguish between constipation and indigestion. Mention their major causes.
10. Label the diagram and also determine the stage at which this structure is visible.



11. The composition of glomerular filtrate and urine is not same. Comment.

OR

With respect to rib cage, explain the following:

- a. True ribs
 - b. Floating ribs
12. Why are blood, bone and cartilage called connective tissue?
13. Why are bryophytes called the amphibians of the plant kingdom?
14. There is a myth that immediately after heavy rains in forest, mushrooms appear in large number and make a very large ring or circle, which may be several metres in diameter. These are called as 'Fairy rings'. Can you explain this myth of fairy rings in biological terms?
15. Comment on the cartwheel structure of centriole.
16. Neural system and computers share certain common features. Comment in five lines. (Hint: CPU, input-output devices).
17. Differentiate between:
- a. Open and closed circulatory system
 - b. Oviparity and viviparity
 - c. Direct and indirect development
 - d. Aceolomate and pseudo coelomate
18. How can you differentiate between free central and axile placentation?

SECTION C

19. Mention the difference between hypothyroidism and hyperthyroidism.
20. Schematically represent primary, secondary and tertiary structures of a hypothetical polymer say for example a protein.

OR

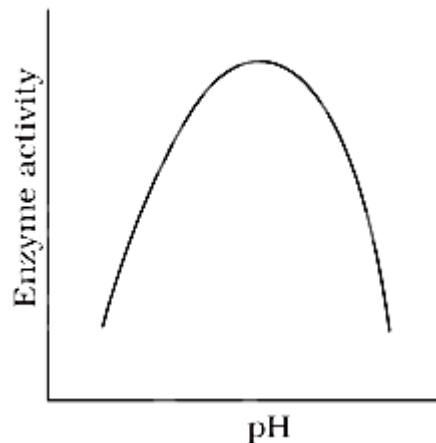
Enzymes are proteins. Proteins are long chains of amino acids linked to

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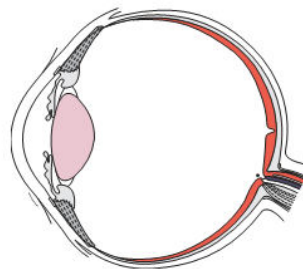
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each other by peptide bonds. Aminoacids have many functional groups in their structure. These functional groups are, many of them at least, ionisable. As they are weak acids and bases in chemical nature, this ionization is influenced by pH of the solution. For many enzymes, activity is influenced by surrounding pH. This is depicted in the curve below, explain briefly



21. What are three major types of cells found in the gastric glands? Name their secretions.
22. The stomatal pore is guarded by two kidney shaped guard cells. Name the epidermal cells surrounding the guard cells. How does a guard cell differ from an epidermal cell? Use a diagram to illustrate your answer.
23. Explain double circulation with diagram.
24. Labell the diagram.
 - a. Aqueous chamber
 - b. Cornea
 - c. Lens
 - d. Retina
 - e. Vitreous chamber
 - f. Blind spot
25. Is rubber a primary metabolite or a secondary metabolite? Write four sentences about rubber.
26. Write the functions of the following
 - a. Centromere
 - b. Cell wall
 - c. Smooth ER
 - d. Golgi Apparatus
 - e. Centrioles
27. Differentiate between
 - a. Bract and Bracteole
 - b. Pulvinus and petiole
 - c. Pedicel and peduncle



SECTION D

28.OPEN TEXT QUESTION

Globalization is an ultra modern term which is spreading its aura in every corner of the world, so it takes India also in consideration. For a country to become developed and achieve higher standards of success, it is of great significance. This widespread of the spirit of globalization is also affecting the style of working, which ultimately affects the health of the country. Since most of the working population of the country is youth, it is indirectly affecting the future of the country. Awareness about such consequences can lead to their prevention and it is a well known fact that "Prevention is always better than cure".

India is sitting on the cradle of progress. With massive change in economic policy of Liberalisation, Privatization and Globalization in 1991, India has moved on the path towards modernisation and great technical and professional advancements. There has been a tremendous growth of private sector enterprises in our country and a rise in number of school and college going educated youth who are employed in these sectors.

India's youth force is highest in the world, which is extremely determined, ambitious, tech-savvy and confident. The youth vigour is seen as the prime agent for contributing to the country's economic intensification and development. Youngsters are employed in large number in BPO (Business process Outsourcing), IT and KPO (Knowledge Process Outsourcing) industries, and are being provided handsome salaries. The most striking feature about India's youth is its desire to stay ahead in the rat race of cut-throat competition, and to succeed as fast as possible.

But this picture of 'India shining' comes at a cost and studies reveal that this cost has to be paid by none other than the very factor that is bringing the country to the brink of high growth, prosperity and development. Majority of college-going students and young working population is concentrated in metropolitan cities, Delhi, Mumbai, Bangalore, Chennai and Kolkata and the urban cities like Pune, Ahmedabad, Hyderabad, Surat, Kochi, Kanpur, Indore etc. Rapid urbanisation, growth of professionalism and the desire to earn fast and more money, has proved extremely detrimental to the country's youth. Despite the growth in industry and commerce, the foremost and important sector, neglected in the process, is health. It is observed that there has been a significant difference in life style of urban young population compared to the traditional, rather 'disciplined' style of living. It is seen that the life style adopted by majority of youth is extremely disorganised and unhealthy, and is further coupled with a defective diet. This can be owed to the idea that time is converted to money, and corporate and personal ambitions are being kept over and above health priorities.

Employers have fixed long hours of working for their people, in the way it suits them and young employees are constantly engaged in monotonous and immobile practice of spending hours in front of computer screen, working. They do not realise that even though they may be progressing financially and seem to be securing their lives and their family's future, they are moving towards an even more insecure future, as they are becoming more vulnerable to serious health risks. It is very unfortunate that they are not conscious about the facts that smoking, consuming calorie rich fast food, alcoholism and drug consumption and eventually becoming couch potatoes while not at work or engaged in anything, will, at the end of the day, cut their life span and hinder the country's progress at large.

Today our eating habits are different from those of a generation ago in all ways. Fast food, takeaways and eating out are parts of life for modern teenagers. There are many changes during adolescence that can cause changes in eating behaviour. It can be very difficult for parents of teenagers to convince their children about the benefits of healthier eating when they are also competing with the powerful messages advertising the taste of unhealthy but enticing food.

Innumerable health issues, which are coming up among today's youth, show a growing concern among the medicos and health experts. Usually, such issues are attributed to conflicts prevailing in the country over the last 24-25 years. Sedentary, deskbound life styles and less physical activity are other contributing factors to it. "Change in dietary habits, obesity (which is rapid nowadays due to sedentary life style), less outside activity and more time spend on social websites are the contributing factors responsible for health issues among youth" says Dr. Aadil Ashraf, senior post graduate, Deptt. of medicines, Shri Maharaja Hari Singh (SMHS) hospital in Kashmir.

Common problems which arise due to today's life style are:

eating is not triggered by extremely intense hunger. It is a response to depression, tension, stress or other feelings related to body weight, shape or feeding habits.

Dr. Ashraf says, "There is a rapid increase in mental illness", by adding that the mental illness has become common here. For him, conflicts and increase in competition level are some of its contributing factors.

Various life style diseases including diabetes, drug abuse, depression, obesity, cardio-vascular diseases and various forms of cancer are taking a heavy toll on the health of people. This was stated by the Deptt. of community medicine, Sher-e-kashmir Institute of medical Sciences(SKIMS).

Kulsoom Bhat, SKIM's Public Relations Officer (PRO), while quoting various health experts in a seminar on 'life style diseases and the role of community medicine', organized by the hospital in January, says, over use of internet causes internet addiction disorder, which is seen as the most modern life style disease. She adds, the speakers viewed physical inactivity, improper diet, tobacco, alcohol and stress as the main contributing factors that cause increased risk to human health, taking the form of very specific life style diseases.

Referring to a study conducted by hospital's Deptt. of General Surgery, Clinical Biochemistry and Endocrinology, Bhat says, obesity has been found to be an important factor associated with the risk of having gall bladder stone diseases followed by raised cholesterol. She, while quoting experts, says, metabolic syndrome is a growing health problem and is closely associated with cardiovascular diseases and non-alcoholic fatty liver diseases.

Study revealed that people with high blood pressure, diabetes and hyperglyceridemia are at high risk of having metabolic syndrome. It further brought to the light the fact that these problems can be curtailed through multidisciplinary treatment, including life style modifications, combined with therapeutic pharmacotherapy.

The stress of modern day living is causing an enormous burden on healthcare globally. Poor eating timings and habits, sleep deprivation and sedentary lifestyles have contributed to the growth of lifestyle diseases such as diabetes and hypertension, leading to a literal explosion of cases with cardiovascular complications.

The situation is worse in a country like India where historically the ratio of a physician to population is 1,00,000 to 1. Lack of expertise in complete disease management from the provider's side and lack of understanding of life style diseases among people, has created a complicated situation. Experts forecast that by 2020 nearly half the deaths will occur from complications of lifestyle diseases in India.

RJ, 33 years old, was highly dedicated to his job and lived a very hectic lifestyle. He was considered as the hardest working employee in his organisation. He never liked to waste time during lunch hours and worked continuously during office time. He either frequently ate from outside, grabbing quick meals from hawkers or stalls, cafes and fast food restaurants, or he just skipped food. He never had time for exercise and was very overweight. He was also a heavy smoker, and frequently used the excuse that cigarettes helped him deal with stress.

Research on the most fascinating components of so called harmful substances uncovers the components, intake of which is being enjoyed by smokers:

One day, he suffered with severe chest pain and collapsed because of that. His colleagues rushed him to the hospital. Upon investigations, the doctor revealed that he had partial blockage of his blood vessels and had suffered a heart attack during the meeting.

RJ's lifestyle is characteristic of many working people who tend to focus more on their careers than their health. This kind of lack of concern for their health is extremely disturbing and alarming. It is because of this that incidences of non-communicable diseases (NCDs) such as heart diseases have been on the rise.

Non-communicable diseases (NCDs) are diet-related chronic diseases and the main ones include heart diseases, obesity, diabetes, hypertension and different cancers. According to the World Health Organisation (WHO), more than nine million deaths worldwide, attributed to Non Communicable Diseases, occur before the age of 60.

These changes have been occurring in our country and worldwide over the past few decades, but the most worrying fact is that most of the people do not realise that their health is in danger.

These lifestyle disorders affect adolescents in all ways, that is, psychological, emotional, physical and behavioural. Stress is very common in all diseases. They generally eat abruptly leading to other common problems, like gain in weight and nutrient deficiencies leading to anaemia etc.

A major cause of concern is the lack of exercise leading to excess weight. Adolescents who are involved in sports or dancing may want to change their diet for fitness or morphological appearance. This is all - right in moderation and temperance, but if they are becoming obese or cutting down their food too much, this may be a problem or may cause a problem. In these situations, an exercising schedule should be made and followed strictly. They like to go out with their peer group/friends and it is very common for this age group to eat 'fast food' which is readymade and easily available. This could mean that they won't want to eat the evening meal. Doing this once or twice a fortnight is not harmful to them but excessive indulgence into this practice should be avoided.

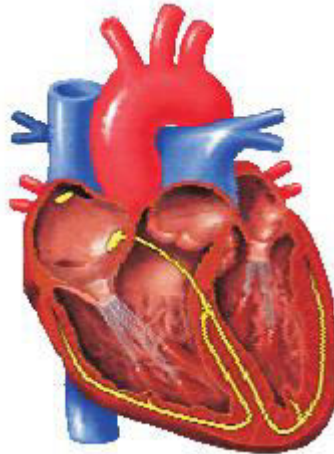
It should be understood that skipping meals actually hinders the process of weight control. Skipping breakfast is not a good practice. Many researches show that this is the most important meal of the day.

All such harmful practices are contributing to a number of chronic diseases in the long run, like heart stroke and diseases, cancer, diabetes, obesity, stress and respiratory infections at a very young age. Improper, faulty life style and dietary habits can be seen as going against nature and against mother earth too, the result of which definitely does not augur very well for the future. Rise in fast food joints across the country and immersion of a western culture of clubbing and eating out and alcoholism, especially in the metropolitan and urban cities, has only accelerated the process of '**Progression towards regression**'. Contemporary lifestyle has become a disease in itself, gradually working as a leisurely poison, leading to fatal consequences.

Lifestyle diseases are spreading very rapidly across the world. Quoting Dr. Syed Shuja Qadri, senior resident community medicine, the PRO of SKIMS says, these diseases are different from other diseases as they are potentially preventable and can be controlled with changes in diet, life style and environment, and are manageable through life style modifications like proper sleep, age appropriate and regular exercise, effective handling of stress, good work-life balance and abstaining from alcohol and smoking to maintain and organize life style.

“Don’t be static, start living a healthier lifestyle today”, support the negative and positive approach towards life mentioned in the statement by quoting the examples from above text. (5)

29. In the diagrammatic presentation of heart given below, mark and label, SAN, AVN, AV bundles, bundle of His and Purkinje fibres.



OR

Explain the mechanism of breathing with neat labelled sketches

29. Draw a neat and well labelled diagram of male reproductive system of a frog.

OR

Distinguish between the following:

- a. Exarch and endarch condition of protoxylem**
- b. Stele and vascular bundle**
- c. Protoxylem and metaxylem**
- d. Interfascicular cambium and intrafascicular cambium**
- e. Open and closed vascular bundles**
- f. Stem hair and root hair**

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