JB Academy, Faizabad
Annual Examination : 2016-17
Class XI (Biology)

Time : 3 hr. 30 Min. M.M. : 70

Note : Attempt all the questions and draw labelled diagrams wherever necessary. The question paper is divided in five sections – Section-A has five questions of 1 mark each, Section-B has five questions of 2 Marks each, Section-C has twelve questions of 3 marks each, Section-D has one value based question of 4 marks, Section-E has three questions of 5 marks each. The last two questions of Section-E have to be answered on the basis of the text provided.

Section-A

1. Name the category of Protists having saprotrophs. Also name one genus belonging to this category.
2. How do the enzymes speed up the rate of reaction ?
3. Why does the formation of lenticels take place ?
4. Name the ear ossicles in sequence.
5. Why Calvin cycle is also known as C3 cycle ?

Section-B

6. Write the meaning of heterospory. Name one pteridophyte which exhibits it. Also mention the significance of this phenomenon.
7. Name the phylum in which Balanoglossus is kept. Write three features of this phylum.
8. How does a nerve fibre get depolarized ?
9. What are the co-factors of an enzyme ? How would you differentiate between a prosthetic group and a co-enzyme ?
10. During which sub-stage of Prophase-I does crossing- over take place ?With the help of a diagram represent crossing-over.

Section-C

11. With regard to a flower explain the following conditions alongwith the examples :

    (i) epipetalous (ii) monoadelphous (iii) tetradynamous
12. Draw detailed structure of actin and myosin filaments.
13. Explain the formation of a cambial ring in a dicot root.
14. Draw sectional view of cochlea and label the organ of corti.
15. Draw circulatory system of cockroach and justify that it is an open circulatory system.

16. How do some hormones show their action by generating a second messenger ?

17. Write those steps of glycolysis in which ATP molecules are consumed.

18. How does the formation of a root nodule take place ? Also specify the function of the main enzyme involved in the process.

19. Explain two ways which help in concentrating urine in humans.

20. Draw V.L.S. of human heart.

21. Write the conclusion of Went's Oat coleoptile experiment.

22. Pieces of lemon were kept in plenty of salt which led to their preservation, how did it become possible ?

Section-D

23. Mukesh was feeling suffocation and had constant cough. His parents took him to a doctor. On examining and knowing his past history , the doctor diagnosed that he was suffering from Emphysema.

    (i) What causes Emphysema ?
    (ii) Which body organ of Mukesh was affected ?
    (iii) What should be the attitude of Mukesh's parents in the present circumstances ?

Section-E

24. Explain Hatch and Slack pathway. Highlight the advantage of this pathway.

25. Diabetes is India's bitter truth, justify. Suggest the steps to overcome the problem.

26. 'Being rich' is not a parameter for a healthy life, explain.

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Open Text Based Assessment 2016-17
Biology (044) Class XI

Social sector, healthcare and education appear high in key priorities of the Government. There is an overall increase in social sector allocation. Overall budget allocation in fiscal year 2016-17 for health, including AYUSH (Ayurveda, Yoga and naturopathy, Unani, Siddha and Homeopathy) is Rupees 39,532.55 crore or 13% higher than previous financial year. Central Government Health Scheme of the Government provides comprehensive medical care facilities to central government employees and their family members. Education has been listed as one of the nine pillars of budget with an allocation of Rupees 72,394, which is 4.9% higher than previous budget.

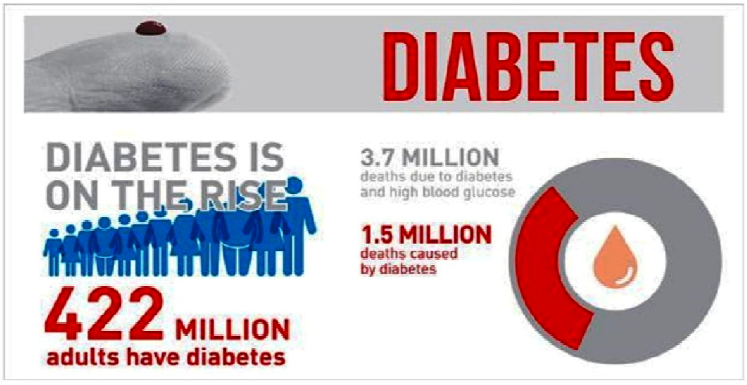
Not only in India, nutrition, health, social sector and education are top priorities for all nations all over the world but still the index of health and wellness is not very high globally also.The data in this regard have proven that more leverage should be given for improvement in health and well-being of populations at global levels. Technical and financial support can be productive only if there is a positive change in attitude towards health and wellness. It has been rightly said -

"There is no knowledge so hard to acquire as the knowledge of how to live this life well and naturally." — Michel de Montaigne

Celebration of '**The World Health Day**' on April, 07 every year by World Health Organisation (WHO) is an initiative at global level to spread awareness about health and wellness. WHO organises international, regional and local events on this day on a particular theme. This year the focus is on Diabetes mellitus.

'Action needed to halt rise in diabetes- Beat Diabetes' was the theme of World Health Day for 2016. Try to find out the theme of World Health Day for last five years.

Diabetes mellitus is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. Its prevalence has been rising more rapidly in middle- and low-income countries. WHO projects that diabetes will be the 7th leading cause of death in 2030! We have to act today for stopping this to happen! Let us understand how can we do this…



Diabetes mellitus is a chronic disease that occurs mainly due to inability of pancreas gland to produce enough insulin or inability of the body to effectively use the insulin. Insulin is a hormone that regulates blood sugar level. A major indication of diabetes is hyperglycaemia, or raised blood sugar.

Try to recall the location and functions of Pancreas gland in the human body. Is it an exocrine or an endocrine gland?

Diabetes mellitus is mainly of two types: Type 1 and Type 2.

Type 1 Diabetes mellitus (previously known as insulin-dependent, juvenile or childhood-onset) results from the autoimmune destruction of the insulin producing beta cells in the pancreas (Figure 1). It leads to lack of Insulin and increased glucose in blood and urine. It requires daily administration of insulin for survival. The cause of type 1 diabetes is not fully known. Its symptoms are frequent urination (polyuria), increased thirst (polydipsia), increased hunger (polyphagia), weight loss, vision changes and fatigue. These symptoms may occur suddenly.

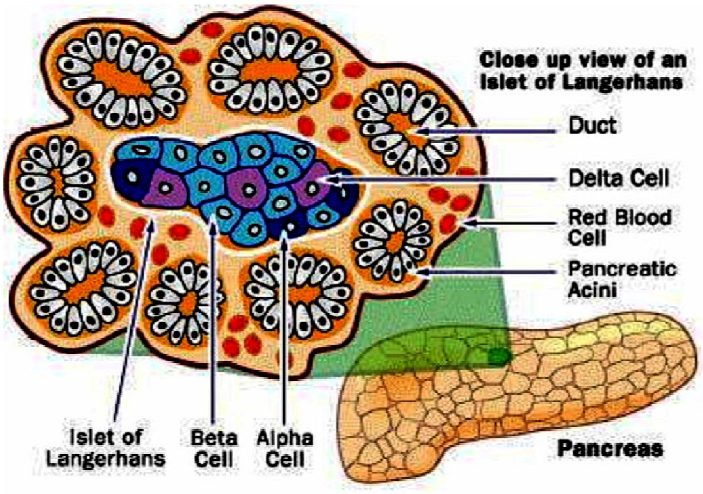
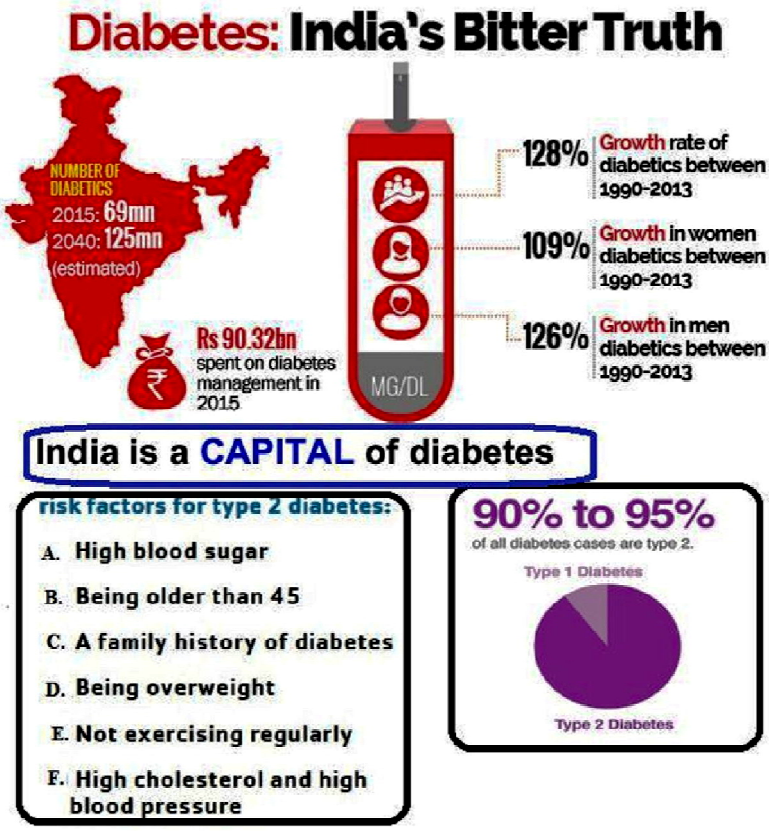


Fig 1: Microscopic view of the section of pancreas

Type 2 diabetes (formerly called non-insulin-dependent or adult-onset) results from the body's ineffective use of insulin. It occurs mainly due to of excess body weight and physical inactivity.Type 2 diabetes comprises the majority of people with diabetes around the world. 90% cases of diabetes are type 2 diabetes, whereas only 10% cases may be of type 1 diabetes. Symptoms of type 2 diabetes are similar to those of type 1 diabetes, but are often less marked. As a result, the disease may be diagnosed several years after onset, once complications have already arisen.

Government of India is also making efforts to educate people about diabetes and prevent it. The central government has proposed to supplement the efforts of state governments by providing technical and financial support through National Program for Prevention and Control of Cancer, Diabetes, CVD and stroke(NPCDCS).

Success of any program depends on the willingness of all the stakeholders to implement it. Government can educate people but the onus of successful implementation lies on each one of us. A number of lifestyle factors such as reduced physical activity, obesity, fast food, sweetened drinks, high blood pressure, tobacco, alcohol intake and stress lead to serious complications and inevitably diabetes. It can thus be prevented by change in the lifestyle and dietary habits. Let us analyse and improve our lifestyle and diet today and ensure healthy living for tomorrow.



Let us accept the challenge to beat diabetes naturally and live well!

Another major health challenge being faced worldwide including India is prevention of thyroid disorders. Common disorders related with thyroid glands are hyperthyroidism, hypothyroidism and goitre.As per the estimates of World Health Organisation, over 200 million people in world and around 42 million people in India suffer from these disorders. Let us try to understand the cause of thyroid disorders and their prevention.

Try to recall the location and functions of thyroid gland. Thyroid is a butterfly shaped gland located in the neck, its two wings are represented by the left and right lobe (Figure 2). It utilises iodine