GX2392

OLLSCOIL NA hÉIREANN, GAILLIMH

NATIONAL UNIVERSITY OF IRELAND, GALWAY

SPRING EXAMINATIONS 2000

FIRST YEAR DIPLOMA IN NURSING EXAMINATIONS

BIOLOGICAL SCIENCES (BL188)

BIOCHEMISTRY/NUTRITION/GENETICS (NU189)

Professor C. Browne
Professor R.J. Mayer
Professor J.A. Houghton
Prof. J.P. Gosling
Ms. G. Nolan

Time allowed: 1½ Hours

Use a separate answer book for each section i.e. Biochemistry, Nutrition and Genetics.

All five questions should be attempted
The questions carry equal marks (20%) each

BIOCHEMISTRY

1. Answer five of the short questions below, confining your answers *to less than ten lines* or to *less than five lines if you also draw a diagram*.

1. Provide evidence that all living things are related.
2. The immune system itself may cause two main types of disease. What are they?
3. How can weak bonds like hydrogen bonds enable strong binding?
4. Write down the structure of glucose and describe in a few simple words what makes galactose different from glucose.
5. Write the general structure of an amino acid. Name three amino acids and one peptide or small protein.
6. Why can proteins have such a wide range of different functions?
7. Why is structural complementarity so important to living processes?
8. Explain how enzymes are remarkable catalysts.
9. Acetyl groups from acetyl coenzyme A are used to synthesize some important things. Name three.
10. How is glucose metabolized in a sprinter at the end of a race?

p.t.o.

2. **Answer <u>four</u> of the short questions below, confining your answers <u>*to less than ten lines*</u> or to <u>*less than five lines if you also draw a diagram*</u>.**

1. In DNA what base pairs with adenine and what base pairs with guanine? In RNA what base pairs with uracil? How many bases are there in a codon? What is the anticodon of the codon UGG?.
2. Why is DNA more suitable for storing genetic information than RNA?
3. What kind of viruses have a gene for an enzyme that catalyses the RNA-dependent synthesis of DNA? What is the name of the enzyme?
4. What is 'RNA processing'?
5. How many amino acyl synthetase enzymes are there and why are they important?
6. What are the three stages in the synthesis of a protein?
7. Why must the "reading frame" be correct for protein synthesis?
8. What is so special about proteins that protein synthesis should be so complicated?

NUTRITION

3. Write notes on

(a) Dietary treatment of diabetes.

OR

(b) Dietary treatment of obesity.

4. Write notes on diet for

(a) Elderly.

OR

(b) Weaning of babies.

GENETICS

5. Write a short essay on "The Causes and Consequences of Chromosomal Trisomy".

OR

6. Write a short essay on "Recessive Gene Disorders".

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