For Performance Measurement

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

BIOLOGY 6030/1

PAPER 1 Multiple Choice

SPECIMEN PAPER 1 hour

Additional materials:
- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)
- Electronic calculator and/or Mathematical tables

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question there are four possible answers, **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.

This question paper consists of 13 printed pages and 3 blank pages.

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1 70s ribosomes and circular DNA are found in

A chloroplasts.
B eukaryotic cytoplasm.
C rough endoplasmic reticulum.
D smooth endoplasmic reticulum.

2 Which organelle is prominent in most secretory cells?

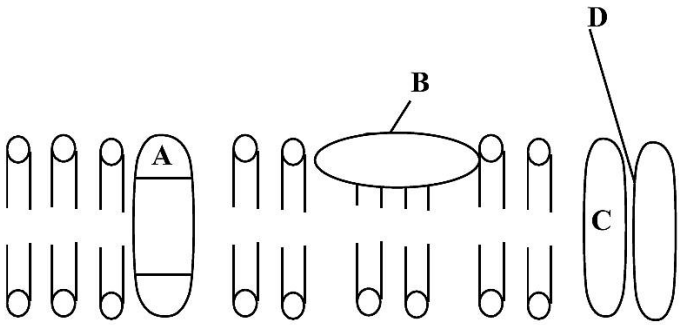
A centriole
B golgi body
C endoplasmic reticulum
D vacuole

3 A lysosome measures 0.5µm in diameter.

What is the diameter of the lysosome in nm?

A 5
B 50
C 500
D 5 000

4 The diagram shows the structure of a fluid mosaic model of the cell membrane.
In which one of the areas labelled **A**,**B**,**C**, or **D** do we find hydrophobic amino acids?



5 Which bond helps to decrease the fluidity of the cell surface membrane?

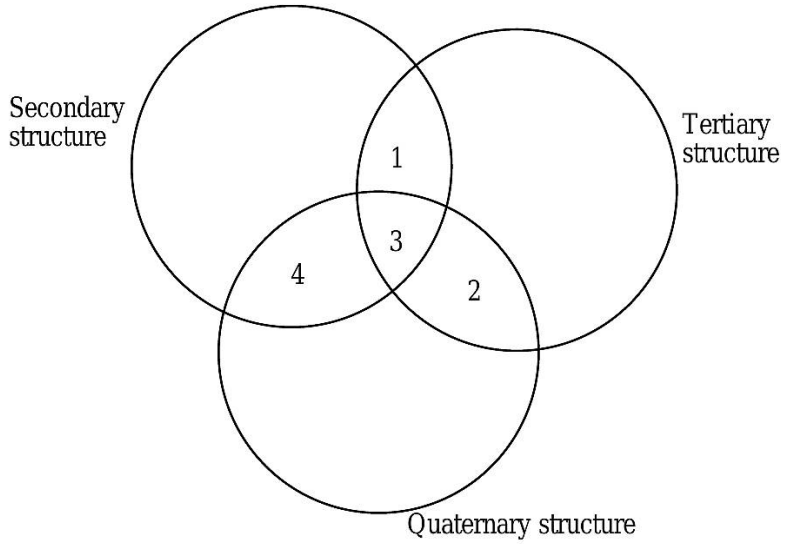
A C=O
B C−O
C C−C
D C=C

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6 Which property of water allows small animals to skate on water?

A adhesion
B cohesion
C high surface tension
D maximum density at 4°C

7 The diagram represents the relationship between the levels of protein structure.

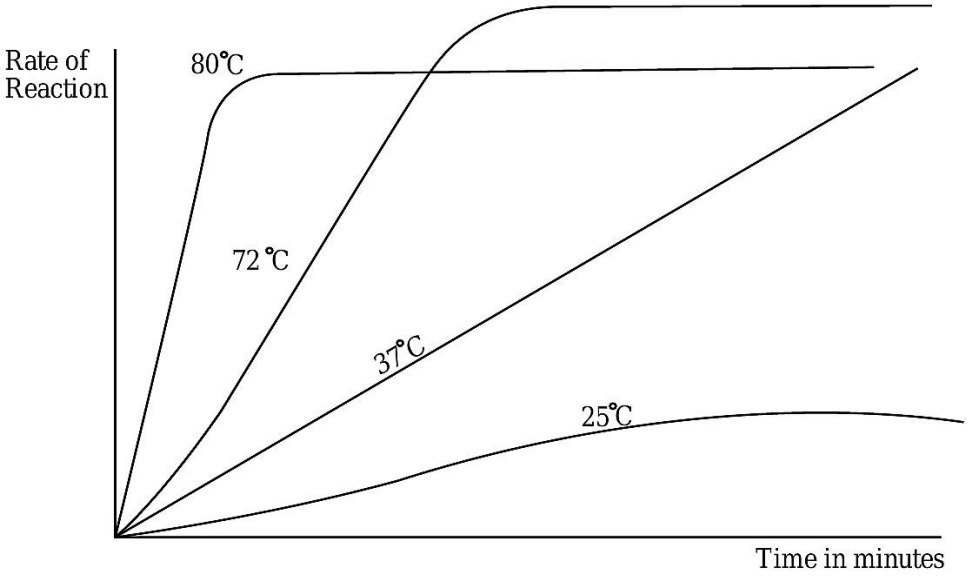


Which number represents the primary structure of a protein?

A 1
B 2
C 3
D 4

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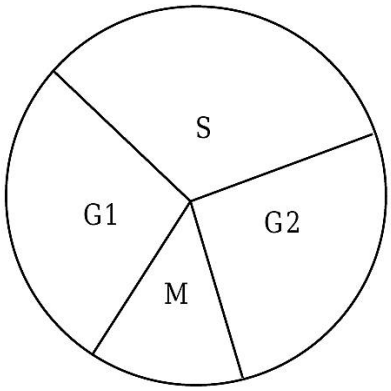
8 The diagram shows the time course of an enzyme reaction for a bacterium found in a hot spring.



What is the optimum temperature of this enzyme?

A 25°C
B 37°C
C 72°C
D 80^{0}C

9 The diagram shows an outline of the cell cycle.



At which stage does the cell synthesise more mitochondria?

A G1
B G2
C M
D S

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10 At which stage of tumour development do cancerous cells migrate to other body organs?

A cytokinesis

B meiosis

C metastasis

D mitosis

11 A ribosome has the following molecules **except**

A amino acids.
B nucleotides.
C phospholipids.
D nucleic acids.

12 In a DNA molecule the base sequence **AGA** codes for the amino acid serine. What is the base sequence of the anti-codon on tRNA to which serine becomes attached?

A ACU
B GAU
C TCA
D AGA

13 Transfer of recombinant DNA into Escherichia coli needs

A heat treatment.
B c_{acl2} treatment.
C x-ray treatment.
D uv treatment.

14 Which cell type would **not** be a direct target for gene therapy?

A endothelial cell
B liver cell
C muscle cell
D red blood cell

15 In dihybrid test crosses what is the expected phenotypic ratio?

A 1:1
B 3:1
C 1:1:1
D 9:3:3:1

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16 In a X^2- test, null hypothesis H_0 is supported when

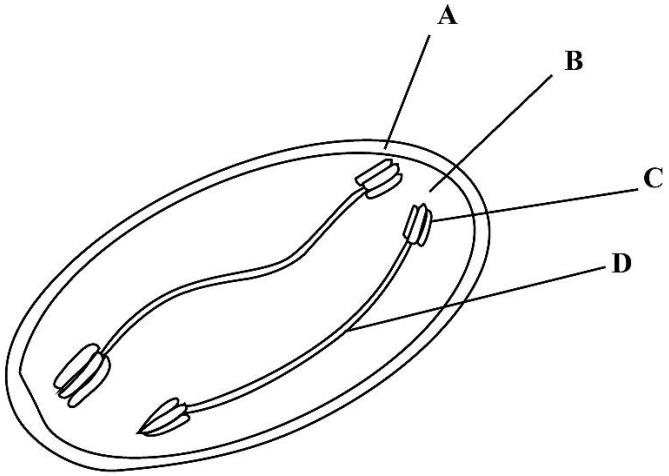
A X^2 calculated > 0.5.
B P (X^2 calculated) < 0.5
C P (X^2 calculated) > 0.5.
D X^2 calculated < 0.5.

17 Which of the following genotypes is used to determine an unknown genotype?

A AaBb
B AABB
C aabb
D AaBB

18 The diagram shows the structure of a chloroplast.

Which labelled part **A**, **B**, **C** or **D** is responsible for the production of NADPH_2?

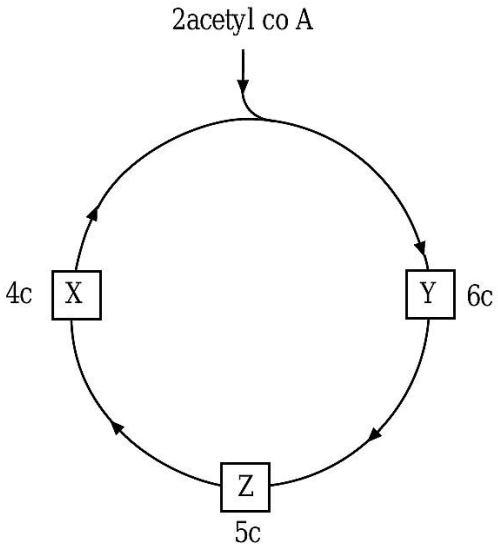


19 Which of the following is a product of cyclic photophosphorylation?

A NADPH_2
B ATP
C TP
D oxygen

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20 The diagram summarises a stage in aerobic respiration.



How many molecules of CO_2 are formed when molecule Y is converted to X

A 2
B 3
C 4
D 6

21 What is the effect of increasing oxygen around ribulose bisphosphate carboxylase oxygenase (RUBSCO)?

A increased production of RuBP
B increased production of GP
C reduced production of CO_2
D reduced production of TP

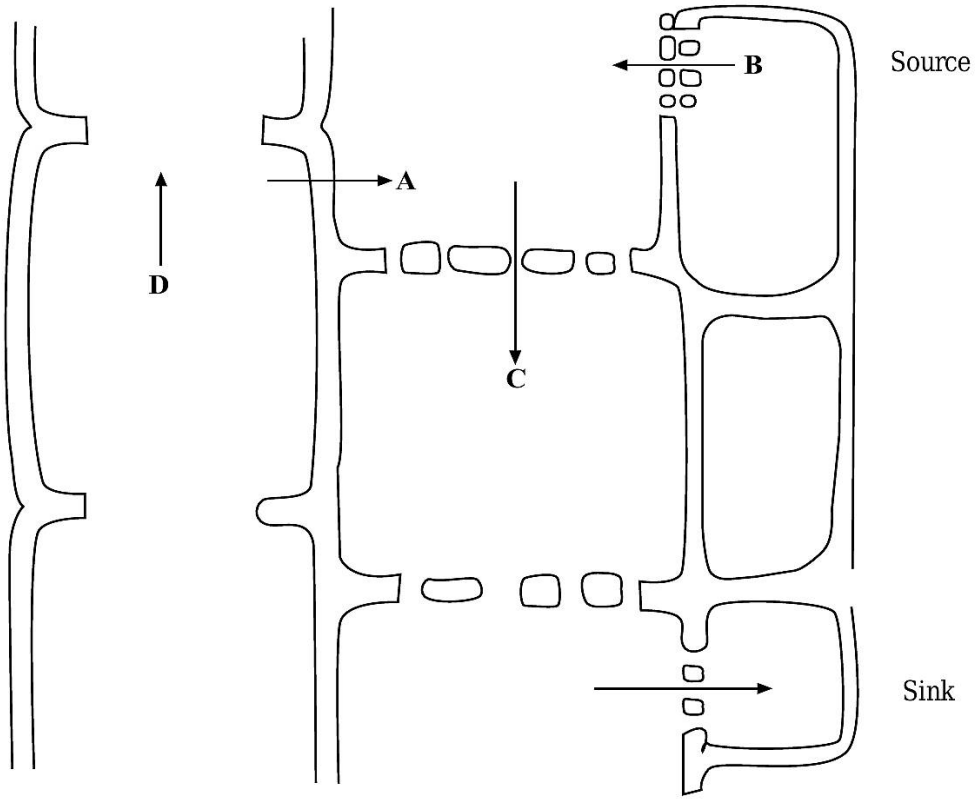
22 Which one of the following is not a function of the Casparian strip?

A to block the apoplast pathway.
B to block movement of water from xylem.
C to block the symplast pathway.
D to block the vacuolar pathway.

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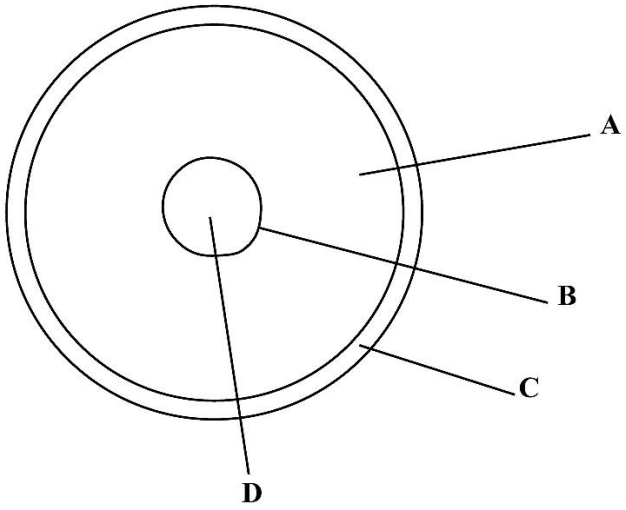
23 The diagram shows transportation of substances in vascular tissue.

Which letter **A**, **B**, **C** or **D** represents capillary action?



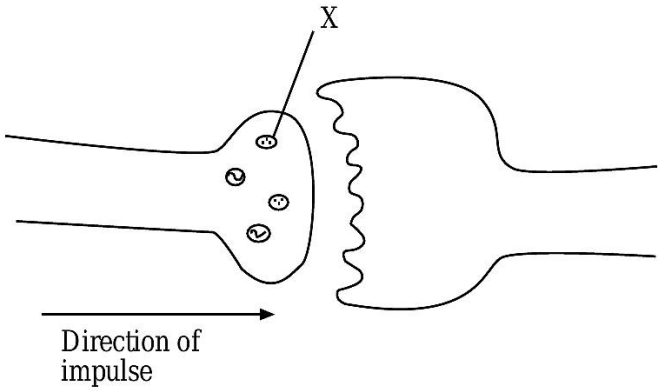
24 The diagram shows the cross section of an artery.

Which part **A**, **B**, **C** or **D** allows the artery to stretch without bursting?



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25 The diagram shows a cholinergic synapse.

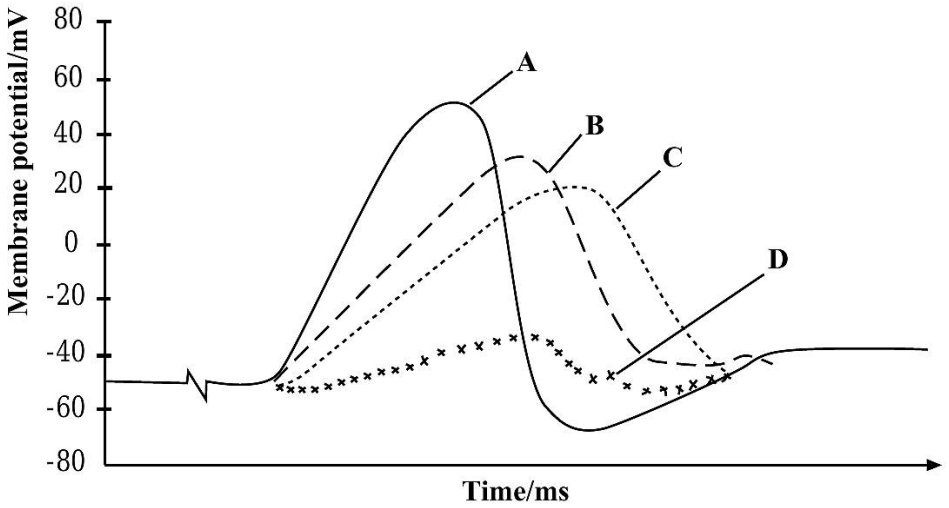


What is contained in X?

A acetylcholinesterase
B neurotransmitter
C calcium ions
D sodium ions

26 The graph shows membrane potentials recorded from squid axons bathed in water samples with different sodium ion concentrations.

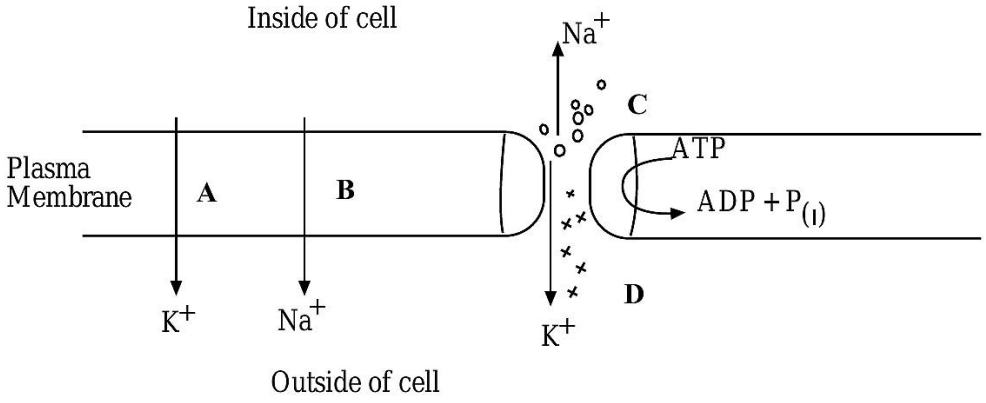
Which of the axons is bathed in water with the highest sodium concentration?



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27 The diagram shows active and passive movement of ions through a nerve membrane at rest.

Which arrow **A**, **B**, **C** or **D** shows the correct movement of ions?



28 Double fertilisation in plants means that

A two male gametes fuse with two female gametes.
B two pollen grains germinate at the same time and fertilise two female gametes.
C one male gamete fuses with the ovum and another fuses with the diploid nucleus in the embryo sac.
D one male gamete fuses with the ovum and the pollen tube nucleus in the embryo sac.

29 Spermatogenesis and oogenesis are similar in that

A both processes start as from puberty.
B primary spermatocytes and primary oocytes are haploid cells.
C four gametes are produced in each case from one gamete mother cell.
D germinal epithelial cells multiply before maturing into gamete mother cells.

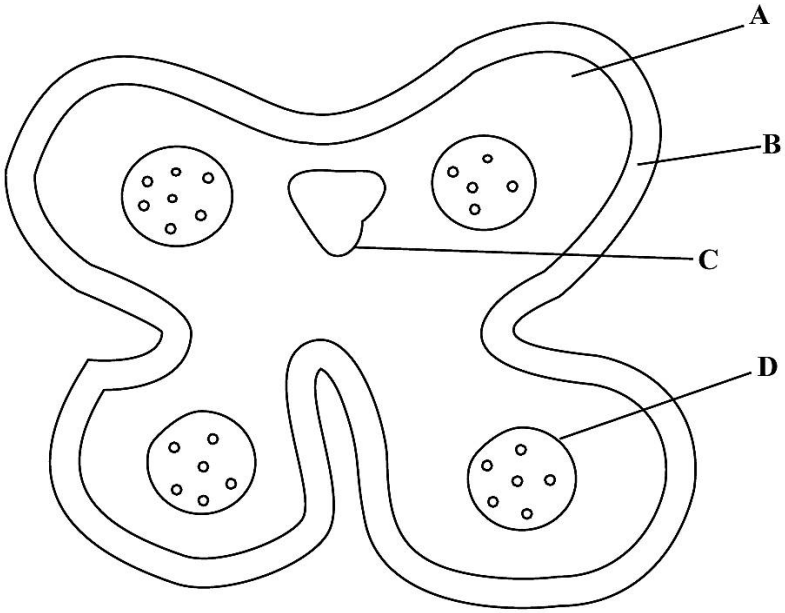
30 Fertility drugs used in the IVF technique to stimulate ovaries may contain

A LH.
B FSH.
C GH.
D GnRH.

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31 The diagram shows a cross section of an anther.

Which labelled part **A**, **B**, **C** or **D** contains haploid cells?



32 Ecology can be defined as the study of

A the environment.
B communities .
C a community of organisms and their behaviour.
D the relationship between living organisms and their environment.

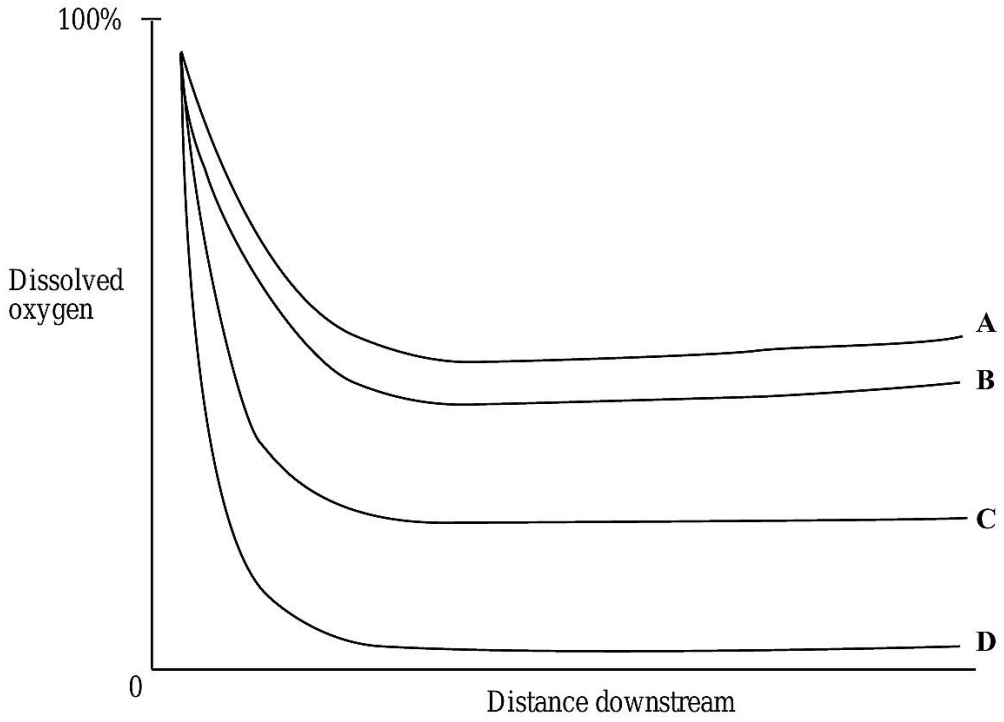
33 Two different bird species which **do not** compete for resources occupy

A different niches in the same ecosystem.
B different niches in the same habitat.
C the same niche in the same ecosystem.
D the same niche in a different habitat.

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34 The diagram shows the effect of organic discharge on the oxygen content of river water.

Which graph **A**, **B**, **C** or **D** indicates the highest level of eutrophication?



35 Which feature is **not** found in prokaryotes?

A plasmids
B ribosomes
C flagella
D cellulose cell wall

36 Which of the following shows importance of bacteria **only**?

A food spoilage
B manufacture of human hormones
C disease causing
D recycling of nutrients in ecosystems

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37 Alcohol is considered as a socially acceptable drug in many communities because

A it is non-addictive.
B it is taken as a mood altering drug.
C fewer people die from alcohol related diseases.
D when taken in moderation it has few adverse effects.

38 Physical dependence on a drug occurs when it is

A needed in metabolism.
B needed to attain a state of euphoria.
C taken in larger doses.
D implicated in social problems.

39 What is the role of T cells in immunity?

A to release antibodies
B to produce cytokines
C to offer non specific immunity
D to secrete compliment proteins

40 After taking one unit of alcohol, blood alcohol concentration (BAC) in men is about $15 mg 100 cm^{-3}$ and in women it is about $25 mg 100 cm^{-3}$.

This difference is due to the fact that

A generally men have a larger liver.
B women have less alcohol dehydrogenase.
C men have smaller quantity of water in their bodies.
D women have a higher BMR compared to men.

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