TIME: 2 ½ HOURS P A P E R I I MARKS: 150

NAME:……..…….. *CLASS: ……..*

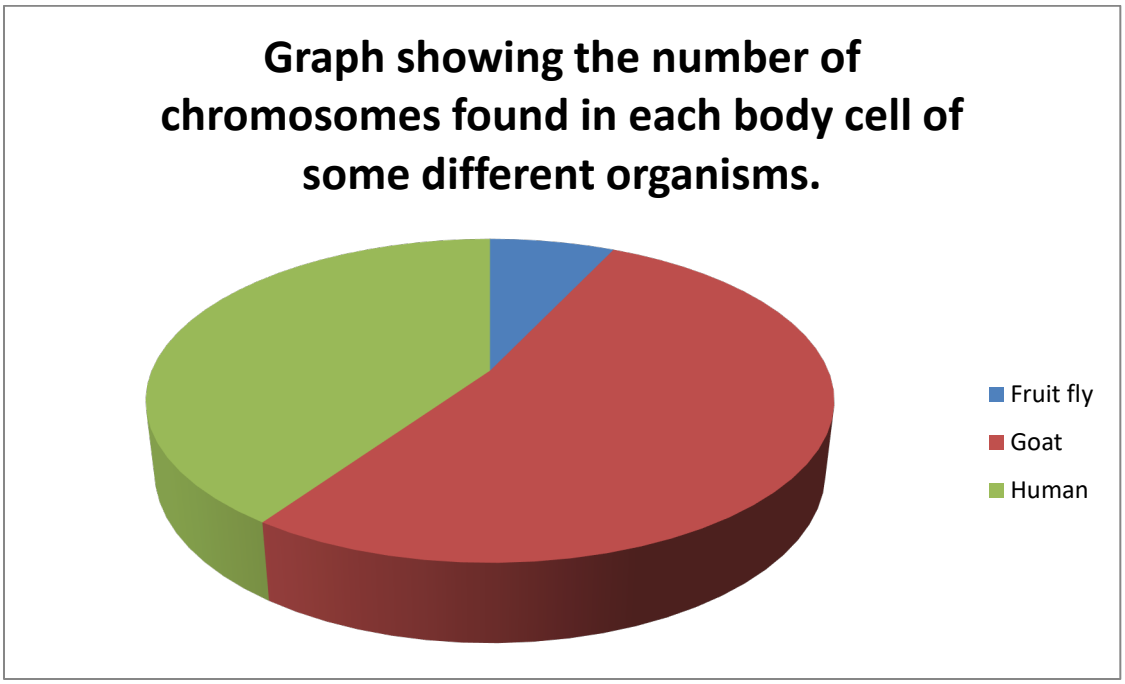
A	B	C	TOTAL : 150	%	SYMBOL

A N S W E R S H E E T

QUESTION 1.1					QUESTION 1.2	
1.1.1	A	B	C	**D**	1.2.1	Environmental Resistance
1.1.2	A	B	C	**D**	1.2.2	Peptide
1.1.3	A	B	**C**	D	1.2.3	Allele
1.1.4	A	B	**C**	D	1.2.4	Cancer
1.1.5	A	B	C	**D**	1.2.5	Equilibrium
1.1.6	A	B	**C**	D	1.2.6	Carrying capacity
1.1.7	A	B	C	**D**	1.2.7	Methane
1.1.8	A	B	**C**	D	1.2.8	Competitive exculsion
1.1.9	**A**	B	C	D		(8)
1.1.10	A	B	**C**	D		
10 X 2 (20)						

QUESTION 1.3							
1.3.1	A	1.3.5	C				
1.3.2	C						
1.3.3	C						
1.3.4	B			(10)			
				TOTAL [50]			

1.4.1



Working (1 mark)

(5)

1.4.2
- When they double and half again during mitosis – each new cell gets an even number of chromosomes
- To ensure even lining up of equator during meiosis
- Any logical answer

(2)

1.4.3
- Contain genetic information
- Blue print for life
- Undergoes replication to maintain chromosomes number
- Any logical answer

(1)

1.4.4
- Horse will contain a haploid number if 32
- Donkey will contain a haploid number of 31
- When they fertilize they will form a diploid number of 63
- 63 cannot form a viable haploid gametes – 31.5
- Don't have to use this terminology but anything that makes sense.

(2)

/10/

2.1.1 a) Thymine

b) Phosphate

c) Guanine (3)

2.1.2 TWO DIFFERENCES BETWEEN DNA AND A POLYPEPTIDE

DNA	POLYPEPTIDE
○ One type of DNA ○ Hydrogen bonds ○ Nitrogen bases ○ Sugar – phosphate backbone ○ No amino acids ○ Influences by DNA Polymerase ○ Any logical answer that has been taught	○ Many types of polypeptides ○ Peptide bonds ○ No nitrogen bases ○ No backbone ○ Contain amino acids ○ Influences by DNA Polymerase ○ Any logical answer that has been taught

- 1 if table untidy
- 1 if no heading (4)

2.2.1 Serine (1)

2.2.2 UAG (1)

2.2.3 Codon (1)

2.2.4 a) Met – Ser – His – Isol (4)

b) 3 (1)

2.3 1 & 2:

Original Amino Acid sequence = Gln – Arg

1 becomes = Gln – Pro (change to protein – mutation)

2 becomes = Gln – Asp (change to protein – mutation) (5)

[20]

3.1.1 4.5 – 3 = 1.5 arbitrary units (1)

3.1.2 Meal intake (2)

3.1.3 1. Absorbed by cells
2. Converted into glycogen (2)

3.1.4 ○ Blood glucose levels were low

○ Islets of Langerhans/ Alpha cells/ pancreas stimulated to produce glucagon

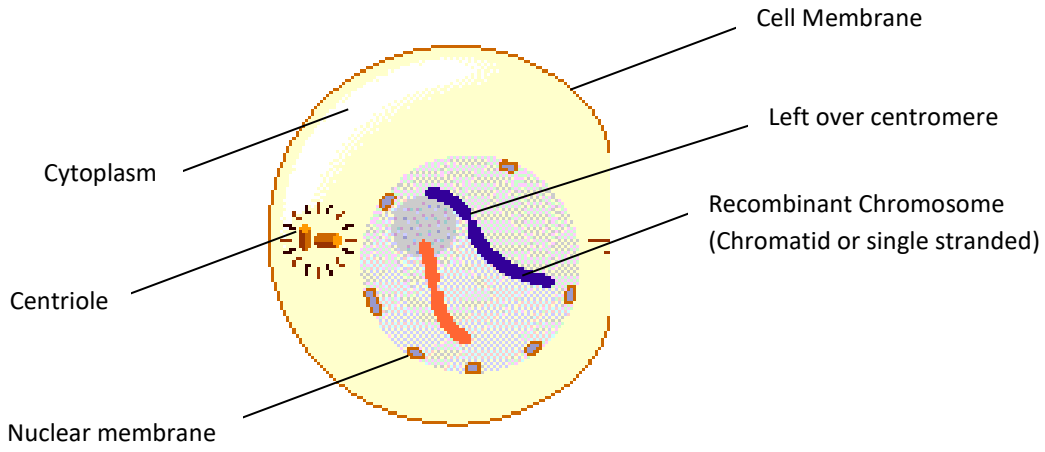
○ To cause the breakdown of glycogen to glucose in the liver

○ Until there was sufficient glucose, (4)

3.2.1 a) Spindle fibre
b) Centromere (2)

3.2.2 a) Metaphase II
b) Anaphase I (2)

3.2.3 DIAGRAM SHOWING TELOPHASE II



- 1 (Too Small)
- 1 (wrong chromosome number) (4)

3.3.1 Accept 96 – 100 mins ~ Distance between chromatids is getting further away (2)

3.3.2 Interphase ~ chromosomes have not been formed yet (2)

/4/

[20]

4.1.1 Logistic/S - shaped (1)

4.1.2 a) Animals acclimatizing to new environment/finding mates/finding food/finding habitats (1)
b) Birth rate higher than death rate (1)
c) Death rate higher than birth rate – lack food, space, habitats, disease (1)

/4/

4.2.1 3% (1)

4.2.2 30 – 35 years (1)

4.2.3 1% (1)

4.2.4 A (1)

4.2.5 A (1)

4.2.6 Any ONE logical Answer:

- Larger number of people reaching old age
- Slow population growth
- Greater food sources would be available
- Better medical facilities

(1)

/6/

4.3.1 Ecological succession (1)

4.3.2 Climax community (1)

4.3.3 Pioneer: Soil bare/Lichens present/physical weathering breaks down rocks to form soil

Climax: Rich nutrients in soil/wide variety of herbivores and carnivores (2)

/4/

4.4.1 Inject with saline (salt water)/water (1)

4.4.2 Age/health/species/diet (any TWO) (2)

4.4.3 The volume of the tumour has greater density than the length

It looks at the width and height as well as the length in determining factors (1)

4.4.4 No spindle results in NO mitosis – cells cannot line up on equator and cannot be pulled to the poles. (2)

/6/

5.1.1 Any TWO logical answers:

- Large number of cars on the road
- Large amounts of pollution
- Large number of factories
- Large number of poor who use wood and coal for energy
- Increased use of pesticides and fertilizers (2)

5.1.2 Greenhouse Gases:

- Solar radiation from the sun passes freely to the earth warming the earth's surface
- Infared radiation is trapped as greenhouse gasses have accumulated in atmosphere
- Heating up the planet. (2)

5.1.3 Any TWO logical answers:

- Reduce
- Reuse
- Recycle
- etc (2)

5.1.4 Carbon footprint – the calculated amount of total greenhouse gases/ carbon dioxide that is released by an individual/ organization/ human activities/ food wastage into the air (2)

/8/

5.2.1 0.35 x 23 = 805 0000 tons (2)

5.2.2a) Any ONE:

- Less collected waste
- Less landfills
- Prevents soil pollution
- No bad smells
- Decrease in pests and scavengers (1)

b) Fertilizers (any logical answer) (1)

c) Prevents pest infestation/unsightly and smelly/susceptible to fires/prevent underground pollution (any TWO) (2)

/6/

5.3.1 X – Runoff

Y – Underground water system (accept leaching into soil) (2)

5.3.2 Absorbed by plants/denitrifying bacteria (2)

5.3.3 Any TWO:

- Top layer of water gets covered with algae due to algal bloom
- Plants cannot get light for photosynthesis and die
- Decomposers use all oxygen during decomposition of dead algae
- All organisms in water system die
- Food chains collapse (2)

/6/

[20]

6. Temperature:

Hypothalamus detects high temperature sends signal sent to blood vessels so:

- Dilation occurs and more blood flows to the skin and more heat is lost through radiation
- Increase sweating increases heat loss
- Because heat used to evaporate water
- Erector hair muscles relax and body hairs lie flat decreasing warming of hair close to skin
- Increased conduction/convection Min 3/Max 6

CO_2:

- Hypothalamus detects low pH/increased acidity in blood
- Increase in respiration
- Increase in oxygen concentration in the blood (lowers pH)
- Cardiovascular system is stimulated
- Cardiovascular muscles contract and relax
- Heart rate increases
- Increase in flow of bood to lungs for oxygenation and exhalation
- Respiratory centre is stimulated
- Resporatory muscles contract and relax
- Rate of breathing increases
- More CO_2 exhaled
- CO_2 concentration goes back to normal Min 3/Max 7

Water Levels Drop Below Normal:

- Hypothalamus detects lower blood pressure/volume
- Pituitary gland secretes ADH
- ADH causes kidney tubules to come more permeable to water
- More water is reabsorbed from kidney tubules into blood
- Blood water levels go back to normal Min 2/Max 4