		 						2	rude	MA		
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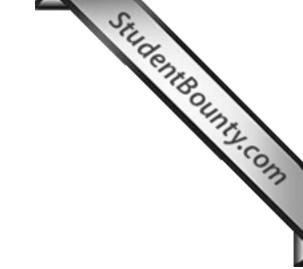
Paper 3 (Biology) Writing Time: $1\frac{1}{2}$ Hours

Total Marks: 80

READ THE FOLLOWING DIRECTIONS CAREFULLY:

- 1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **one and a half hours** to answer all questions.
- 2. Write your index number in the space provided on the top right hand corner of this cover page only.
- 3. In this paper, there are **two** sections: **A** and **B**. Section **A** is compulsory. You are expected to attempt **any four** questions from Section **B**.
- 4. The intended marks for questions or parts of questions, are given in brackets [].
- 5. Read the directions to each question carefully and write **all** your answers in the space provided in the **question booklet** itself.
- 6. Remember to write quickly but neatly.
- 7. **Do not** remove or tear off any pages from the question booklet.
- 8. **Do not** draw lines or pictures **on** or **in** the question booklet to beautify it.
- 9. **Do not** leave the examination hall before you have made sure that you have answered all the questions.

				For	Chie	f Mark	er's an	d Mar	kers' U	se Onl	!y		
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Award													Signature ↓
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SECTION A (40 Marks)

Question 1

		SECTION A (40 Marks)
		Compulsory: To be attempted by all candidates.
Ques	tion 1	
(a)		SECTION A (40 Marks) Compulsory: To be attempted by all candidates. ctions: Each question in this part is followed by four possible choices of answers. ose the correct answer and write it in the space provided. [15]
(i)	The	golgi bodies are related to
	A	respiration.
	В	circulation.
	\mathbf{C}	secretion.
	D	excretion.
	Ansv	ver:
ii)	The	combination of gene responsible for a particular characteristic in an individual is called
	A	alleles.
	В	genotype.
	\mathbf{C}	phenotype.
	D	autosomes.
	Ansv	ver:
iii)		not advisable to use excess of chemical fertilizers in the fields because the plants die due to
	A	active transport.
	В	endosmosis.
	\mathbf{C}	exosmosis.
	D	diffusion.
	Ansv	ver:
iv)	The	rate of transpiration decreases with the increase in
	A	humidity.
	B	temperature.
	C	light intensity.
	D	velocity of wind.

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		tic plants float in water during day time because
(v)	Aqua	tic plants float in water during day time because
	A	carbon dioxide produced during the day makes them buoyant.
	В	oxygen produced during the day makes them buoyant.
	C	they become lighter as they produce glucose.
	D	they enjoy the sunshine.
	Answ	/er:
(vi)	The	blind spot is a part in the eye where
	I.	rods are absent.
	II.	cones are absent.
	III.	brightest image is formed.
	IV.	maximum number of cones are present.
	The c	correct combination for the statement given above is
	A	I and II.
	B	I and IV.
	C	II and III.
	D	III and IV.
	Answ	/er:
(vii)	An in	ijury to the diencephalon may result in
	A	loss of sensation of heat.
	В	difficulty in breathing.
	\mathbf{C}	loss of intelligence.
	D	loss of memory.
	Answ	/er:
(viii)	Whi	ch of the following is NOT a condition caused by the under secretion of thyroxine?
	A	cretinism
	В	myxoedema
	C	simple goitre
	Ď	exopthalmic goitre

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		gestation period in human beings is completed in the organ called uterus. ureter. urethra. urinary bladder.
		CENTE
()	The	gestation period in human beings is completed in the organ called
	A	uterus.
	В	ureter.
	\mathbf{C}	urethra.
	D	urinary bladder.
	Ansv	ver:
)	The 1	release of ovum from the follicle is called
	A	menstrual cycle.
	В	fertilization.
	\mathbf{C}	oogenesis.
	D	ovulation.
	Ansv	ver:
.)	All o	f the following are contraceptive methods in females EXCEPT
	A	Copper 'T'
	В	vasectomy.
	\mathbf{C}	tubectomy.
	D	contraceptive pills.
	Ansv	ver:
i)	Anti-	evenine is used for
	A	tuberculosis.
	В	viral fever.
	\mathbf{C}	snake bites.
	D	dog bites.
	Ansv	ver:
ii)	The	vaccination to prevent a child from tuberculosis is
	A	BCG.
	В	DPT.
	D	
	C	BGC.
		BGC. DTP.

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mortality rate and population density. natality rate and population density. natality rate and mortality rate. natality rate and demography. I of the following are the functions of the Red Cross EXCEPT collect and supply information about the occurrence of disease. extend relief and help to victims of war. educate people in accident prevention. look after maternal and child welfare.	The state of the s
natality rate and population density. natality rate and mortality rate. natality rate and demography. I of the following are the functions of the Red Cross EXCEPT collect and supply information about the occurrence of disease. extend relief and help to victims of war. educate people in accident prevention. look after maternal and child welfare.	
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educate people in accident prevention. look after maternal and child welfare.	
look after maternal and child welfare.	
nswer:	
ame the following.	[5]
The cell organelle responsible for intracellular digestion.	
The structure responsible for diffusion of nutrients and weste meterials between	
mother and foetus.	
The type of resource that can be replenished by reproduction or by recycling.	
Write TRUE or FALSE for the following statements.	[3]
The RECEPTOR is a muscle or gland that responds to a motor nerve impulse.	
) v	The cell organelle responsible for intracellular digestion. The wave of electrical disturbance that passes over the nerve cell. A deficiency disease which can be prevented by taking iodized salt. The structure responsible for diffusion of nutrients and waste materials between mother and foetus. The type of resource that can be replenished by reproduction or by recycling. Write TRUE or FALSE for the following statements.

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(ii)	MENARCHE is the permanent stoppage of menstruation.
(iii)	VAS-DEFERENS and sperm duct are one and the same thing.
(iv)	Human population increases in GEOMETRICAL PROGRESSION .
(v)	IMMUNISATION is the resistance to the onset of disease after infection by harmful germs.
(vi)	Typhoid, dysentery and cholera are WATER BORNE diseases.
II.	If false, rewrite the false statements in the correct form by changing only the words printed in BOLD letters. [3]
Fill i	n the blank. [5]
(i)	A fibre appears between two daughter centrioles during prophase.
(ii)	Wooden doors swell by absorbing water due toduring rainy season.
(iii)	The source of oxygen produced during photosynthesis is from
(iv)	The sensory cells in the eye concerned with colour vision are
(v)	Antibodies are produced on exposure to

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(d)

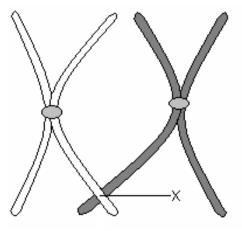
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(1)	Autosome and sex chromosom	e (number of chromosomes)			
(ii) Diffu	some	Sex chromosome			
(ii)	Diffusion and osmosis (type of	movements of molecules)			
Diffu	sion	Osmosis			
(iii)	Sympathetic nervous system ar	nd parasympathetic nervous system (action			
Symp	oathetic nervous system	Parasympathetic nervous system			
(iv)	Transpiration and guttation (ou	tlet of water)			

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(f) Observe the diagram given below and answer the questions that follow.



(i)	Name the type of cell division in which the above stage occurs.	[1]
(ii)	Name the part marked 'X' on the diagram.	 [1]
(iii)	Redraw the diagram to show how it would appear after the stage given above.	 [1]

(iv)	What is the importance of this stage in cell division?	[2]
•••••		•
		•
		•

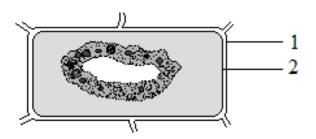
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SECTION B (40 Marks)

Attempt any four questions

Question 2

(a) The diagram given below shows a plant cell after being placed in a certain type of solution. Study the diagram and answer the questions that follow.



(i) 1	Label the parts numbered 1 and 2.	[1]
2		
(ii)	What is the state of the cell shown in the diagram?	[1]
(iii)	Name the tonicity of the solution in which the cell was placed.	[1]
(iv)	How can the cell be brought back to its original condition? Explain.	[1]
		••••
(v)	Explain the process that has taken place in the diagram above.	[1]

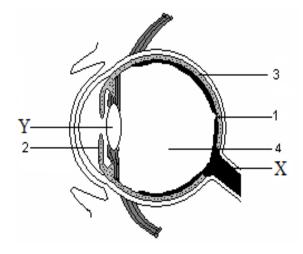
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Student Bounty Com (b) Define the following. (i) Alleles [1] Bleeding (ii) [1] (iii) Active transport (iv) Natality [1] Prophylaxis [1] (v)

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Question 3

a) The diagram given below shows the vertical section of a mammalian eye.



(i) 	Name the parts numbered 1 – 4.	[2]
(ii)	Write the functions of the parts labelled 2 and 3.	[2]
••••		
(iii) (iv)	Name the eye defect when the part marked 'Y' becomes opaque. What will happen if the part marked 'X' is cut off and why?	[½] [1½]

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(b)	Give	Give appropriate terms for the following: (i) Type of protein found in the cell membrane.					
	(i)	Type of protein found in the cell membrane.	3				
	(ii)	The inward diffusion of water through a semi-permeable membrane.					
	 (iii)	Number of individuals per square km at any given time.					
	 (iv)	Type of vaccine in which extracts of toxin secreted by bacteria are used.					
Ques	stion 4						
(a)	A het	terozygous dominant tall pea plant is crossed with another heterozygous dominant tall lant.					
	(i)	Draw a chart to show the possible inheritance of height in their off-springs.	1]				
	(ii)	Find out the proportion of genotypes and phenotypes in the off-springs.	2]				
	•••••						
	•••••						

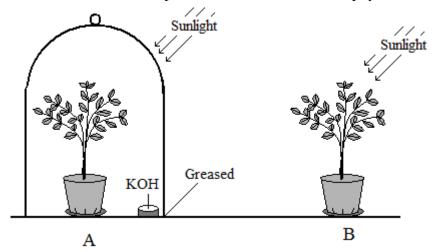
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Student Bounty.com Name the hormone responsible for the following functions: (b) (i) Maintains glucose level in the blood. 2. Prepares the body during an emergency. 3. Responsible for normal growth of the whole body (ii) Explain briefly: any two importance of transpiration. [2] 1. 2. [2] any **two** methods adopted by plant to reduce transpiration.

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Question 5

Student Bounty.com (a) Karma took two-healthy green plants from his garden and placed in a dark room for 24 h He then set-up the experiment as shown in the figure below and left for 6 hours. He took a leaf from each plant and removed the chlorophyll.



(i)	What is the aim of the above experiment?	[1]
(ii)	How is the chlorophyll removed?	[1]
(iii)	Which of the two set-ups - A or B is the control?	[1/2]
(iv)	Why is the KOH placed in the set-up A?	[1]
(v)	What result would Karma get for – leaf A from set-up A and leaf B from set-up B after doing the iodine test? Explain the result.	[1½]
• • • • • •		

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		Stude	000
•••••	• • • • • • •		
•••••	• • • • • • •		• • • • • •
•••••	• • • • • • • •		• • • • • •
(i)	Why	y is the gray matter of cerebrum folded to form convolutions?	
	• • • • • • • •		
	• • • • • • •		
•••••	• • • • • • •		• • • • •
•••••	• • • • • • •		• • • • • •
(ii)	Why	y is it harmful to use a sharp object to remove the wax from the ear?	•••••
			• • • • •
	• • • • • • • • • • • • • • • • • • • •		• • • • •
(iii)	Nam	ne the type of reflexes in each of the following actions.	• • • • •
(111)	1.	Mouth salivating at the smell of delicious food.	
	2.	Knee-jerk as a result of a sharp tap.	
			•••••
	3.	Closing of the eye lids in strong light.	
			• • • • •
	4.	Knitting without looking.	

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			Tadent	
Question 6 (a) (i)		Drav	a neat diagram of a matured human sperm cell and label the following part	
		1.	tail	9
		2.	acrosome	١
		3	mitochondria	

nucleus

4.

	What is the function of:		[2]	
	1.	acrosome?		
	2.	mitochondria?		
 (iii)	Wha		the sperm after fertilization?	 [1]
	•••••			
Writa	-41			
VV IIIC	at leas	st <i>two</i> differences for the fo	ollowing pairs in the table given below.	[4]
(i)	at leas	st <i>two</i> differences for the fo	ollowing pairs in the table given below.	[4]
(i)		st <i>two</i> differences for the fo	Passive Immunity	[4]
(i)				[4]
(i)				[4]
(i)				[4]

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(ii)

Stomatal transpiration

Lenticular transpiration

Question 7

(a)	Give	reasons for the following: [5	
	(i)	Mother's blood doesn't circulate directly through the embryo.	
	•••••		
	•••••		
	(ii)	Human red blood cells are circular and biconcave in shape.	
	•••••		
	•••••		
	······	Discovery of antihistics and variation has lad to the sharp rise in normalities	
	(iii)	Discovery of antibiotics and vaccination has led to the sharp rise in population.	
	•••••		
	•••••		
	•••••		
	(iv)	Abnormally large number of WBCs in the blood are usually an indication	
	()	of some infection in the body.	
		······································	

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Student Bounty Com Pancreas is both a duct gland as well as a ductless gland. (v) (b) Write down any two functions of the WHO. [2] Explain how the following factors may lead to population explosion in Bhutan. (c) [3] Illiteracy (i)

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	•	Stilde
(ii) 	Desire for male/female child	SHIIDENHOUNKY.COM
•••••		J. COM
(iii)	Lack of recreation	
•••••		

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