UNNASE UACE 2019 #HILLARY

GUIDE

S.6 BIOLOGY P530/1

MARKING GUIDE

SECTION A (40 MARKS)

1.	**D**	11	**D**	21	**D**	31	**A**
2.	**C**	12	**A**	22	**C**	32	**B**
3.	**A**	13	**D**	23	**A**	33	**A**
4.	**C**	14	**C**	24	**D**	34	**C**
5.	**B**	15	**C**	25	**D**	35	**D**
6.	**B**	16	**A**	26	**D**	36	**B**
7.	**D**	17	**A**	27	**B**	37	**C**
8.	**B**	18	**C**	28	**C**	38	**A**
9.	**A**	19	**D**	29	**D**	39	**D**
10	**B**	20	**B**	30	**C**	40	**D**

SECTION B (60 MARKS)

41. (a) (i)DNA replication is the formation of copies of DNA; catalyzed by helicase, DNA polymerase and ligase; it occurs in the nucleus of eukaryotic cells.

@ 1 mark (max- 02 marks)

(ii) **Similarities**

- Both are copied during DNA from 5^1 to 3^1 direction by DNA polymerase
- Both are polynucleotides

@ 1 mark (max- 02 marks)

Differences

Leading strand	**Lagging strand**
- Copied by DNA polymerase continuously - Runs from 3^1 to 5^1 direction - No okazi fragments formed when it is copied - No DNA ligase involved when it is being copied	- Copied by DNA polymerase discontinuously - Runs from 51 to 31 direction - Okazaki fragments are formed when it is copied - DNA ligase is used when it is copied

@ 1 mark (max- 02 marks)

b(i) messenger RNA is destroyed; to prevent synthesis of excess polypeptides/proteins because excess proteins cannot be stored in cells.

@ 1 mark (max- 02 marks)

(ii) More than one codon can code for a particular amino acid in a genetic code therefore, a polypeptide can still be synthesized.

@ 1 mark (max- 02 marks)

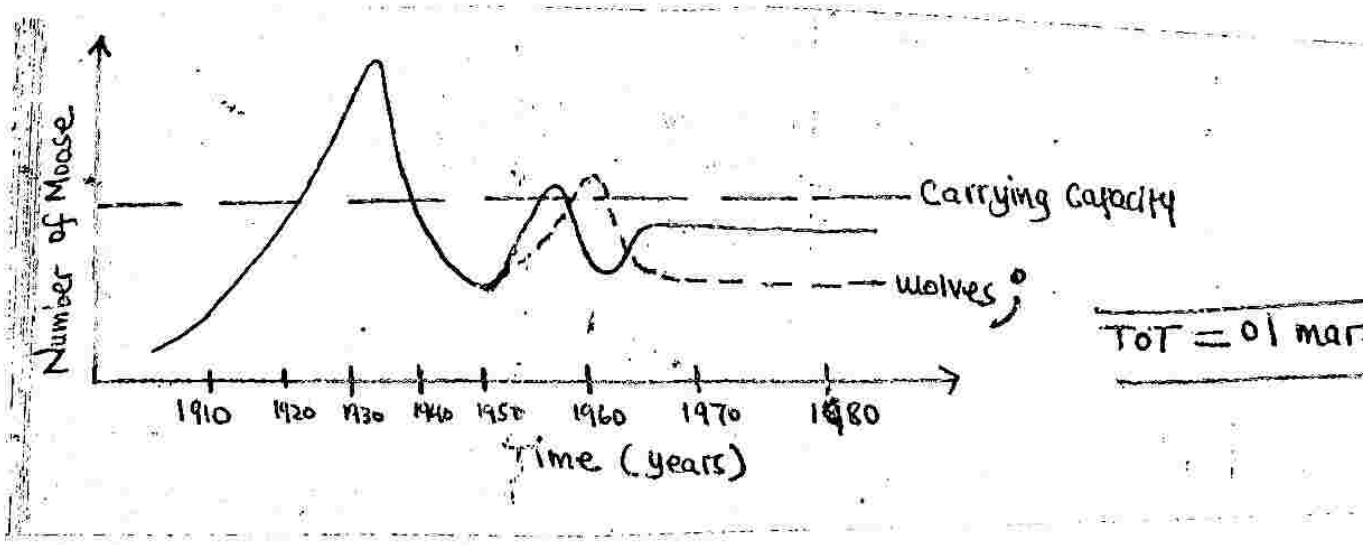
42. (a) from 1905 to 1930 , the number of moose increased up to the peak, due to absence of predators/ wolves.

From 1930 to 1940, the number of moose decreased rapidly due to over population above carrying capacity which led to depletion of vegetation /food resulting into intraspecific completion for food, and death from starvation of the weak moose.

From 1940 to 1952, the number of moose increased rapidly due to reappearance of vegetation.
From 1952 to 1960, the number of moose decreased rapidly due to rapid predation by wolves which kept the population of moose below carrying capacity up to 1980.

@1/2 mark Note – adjust ranges (4marks)

(b)



(1 mark)

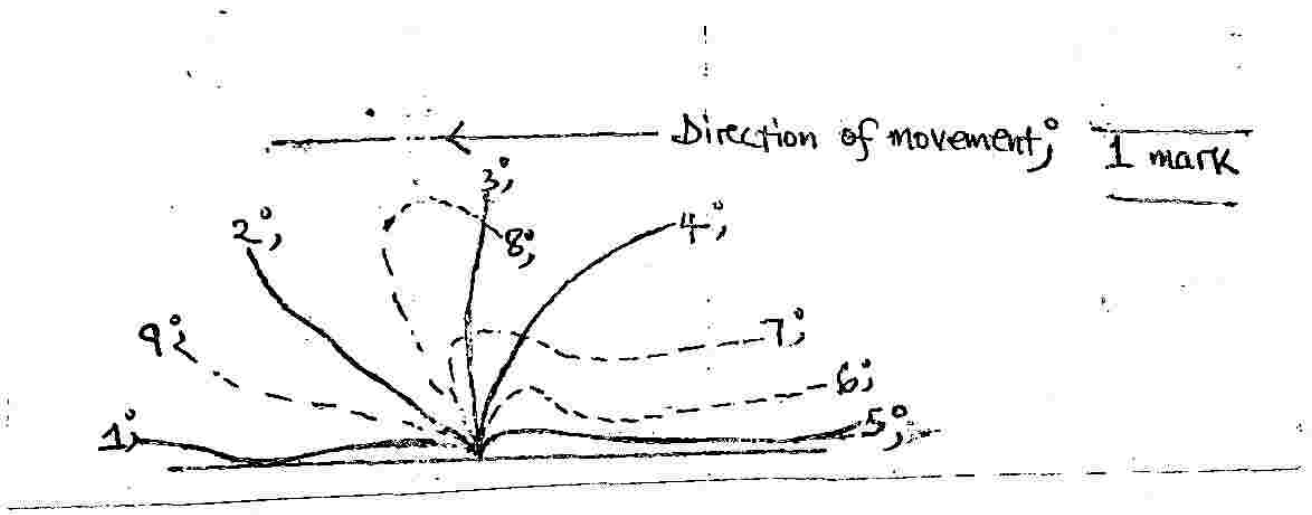
(c) Wolves are predators of moose, only well adapted moose survive and reproduce and pass their survival skills/genes to their offspring while less adapted moose are preyed on by wolves, thus their genes are lost from the population.

@ 1 mark (max=3marks)

(d) The number of wolves increase up to the peak due to presence of many moose/food supply is enough, then population of wolves decline due to reduction in food supply thus resulting into starvation and death of many wolves

@ 1 mark (max=2 marks)

43. (a)



@ Position ½ mark (max= 4marks)

(b)The cilium becomes straight and rigid then moves through an arc of 180° and exerts a push against a fluid /water /experiences high resistance, this results into a reaction and propulsive force

@ ½ mark (max= 2marks)

(c) on figure 9

(d) – Movement of material out of respiratory tract (like /foreign bodies) occurs by ciliary locomotion

- Generation of feeding currents which contain food particles at the oral groove of paramecium occurs by beating of cilia.
- Paramecium is able to locomote in its habitat by ciliary locomotion
- Movement of the ova into the fallopian tube form the ovary is by ciliary locomotion

@ 1 mark (max=3 marks)

44. (a) increase in temperature from 24°C to 30°C causes gradual increase in water loss because less wax melts away from the cuticle of nymph

Temperature of 30°C causes rapid loss of water, because it is the critical temperature. Most of the waxy melts which makes it more permeable to water.

Temperature above 30°C cause gradual loss of water because most of water has been lost from the body of the nymph

@ ½ mark (max= 4marks)

(b)During ventilation through the spiracles, they open which allows a certain amount of water to evaporate form the tracheal system of an insect

@ 1 mark (max= 3marks)

(c) Malpighian tubule is long and it is epithelial cells, bear numerous microvilli which increases surface for water reabsorption.

@ ½1mark (max= 3marks)

45. (a) heart rate $= \frac{number\ \ of\ \ beats}{time}$

$= \frac{1}{\left(\frac{0.8}{60}\right)}$

=75 beat per minute

@ 1 mark (max= 2marks)

(b) Depolarization of the cardiac muscle in the wall of the atrium /excitation of the atrium

@ ½ mark (max= 1 mark)

(c) **QRS** – is due to excitation/depolarization of ventricles

T- is due to depolarization of the ventricle

@ ½ mark (max= 2marks)

(d)(i) Higher blood pressure in ventricles than in the atria, causes closure of the atrio-ventricular valves

@ 1 mark (max= 2marks)

(ii) Higher blood pressure in aorta/pulmonary artery during ventricular diastole causes some blood to flow back towards the ventricles which forces the semilunar valves to close.

@ 1 mark (max= 3marks)

46. (a) Two fatty acid molecules, one phosphoric acid molecule and glycerol undergo condensation reactions to form a phospholipid.

@ 1 mark (max= 2marks)

(b)It has a channel protein, with a hydrophilic pore to allow ions and polar molecule sin and out of the cell

@ 1 mark (max= 2marks)

(c) peptide hormone is polar thus hydrophilic , it cannot pass through the membrane. Whose interior is mainly hydrophobic / non polar. However peptide hormone has a receptor in the membrane to which it binds to form receptor hormone complex that activates adenyl cyclase to convert ATP to cyclic AMP that cats as a second messenger.

@ 1 mark (max= 6marks)

END