P530/1 BIOLOGY PAPER ONE (S.6)

Proposed GUIDE

UNNASE 2022

SECTION A (40 MARKS)

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

SECTION B (60 MARKS)

41 (a)

Instinctive	learned
- Stereotyped/Permanent;	Temporary / not stereotyped
- species specific;	- Individual specific / Varies among individuals of the same species
- Fixed / Not adaptable;	- Adaptable / not fixed
- Inborn / Inherited;	- Acquired / Developed due to experience
- Involves complex Pattern of behaviour;	- Involves simple pattern of behaviour

03 max

b) (i) Kinesis; 1mk

(ii) - Is fast response;
- Response depends on intensity of stimulus; 02

Ignore inborn & other features of innate behaviour

01 (iii) Presence of light increases (rapidly) rate of movement;

(iv) In presence of light, rate of movement increases to allow the organism quickly move from light to dark; preventing / reducing exposure to predators; In dark, rate of movement slows down ~~to~~ keeping the organism in dark; where it is less exposed to predators; 3 max

42 a) Is increase in population / number of pest following application of a pesticide; 01

(b) - The pest may kill the natural predators of the pest; increasing chances of survival of the pest
- It may result into resistance to the pestricide; 02

(c) (i) occurs by random mutation; by chance before use of the warfarin; 02

(ii) When warfarin is used, only non-resistant mice are killed; while the resistant ones are not killed / survive; and reproduce passing gene for resistance to their offspring; overtime frequency increases. 03

d) - Does not pollute the environment;
- Does not cause pest resistance;
- 02

X/10

43(a) Adaptation is decline in size of generator Potential / response by receptors due to sustained / Prolonged stimulation by a strong stimulus; while a generator potential is a local change in membrane potential of a receptor due to stimulation; 02

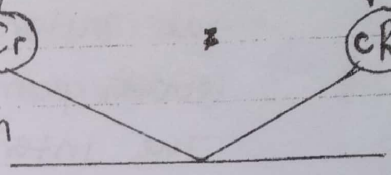
(b) When light of low intensity (dim light) falls on rods, rhodopsin is bleached to form opsin and retinene; in the outer segment. This causes closure of the sodium ion channels; in the membrane of the outer segment. Influx of Na^+ ions into the outer segment stops; yet in the inner segment; ~~evaporation~~ pumping of the Na^+ ions from the cell occurs; The interior of the rod cell becomes more negative (hyperpolarised); The rod cell stops releasing transmitter substance; leading to formation of action potential by the ganglion cell; 05 max

(c) - It eliminates the effect of the blind spot;
- It allows clear vision in three dimension;
- In case of damage of one eye, the effect is compensated by the second eye;
- Does not cause pest resurgence; 03 max

X/10

44(a) - For development of better varieties of crops and animals;
- Used for diagnosis and treatment of crop/and animal diseases; 02

(b) Parent phenotypes : white flowered X white flowered
parent genotypes: CCrr x ccRR
Meosis
Gametes all Cr x cR



F_1 genotypes all CcRr
F_1 phenotypes all red flowered
On selfing the F_1
F_1 phenotypes : red flowered X red flowered;
F_1 genotypes : CcRr x CcRr;
Meiosis

Gametes: CR Cr cR cr x CR Cr cR cr

Random fertilisation using a punnett square to show F_2 genotypes;

	CR	Cr	cR	cr
CR	CCRR	CCRr	CcRR	CcRr
Cr	CCRr	CCrr	CcRr	Ccrr
cR	CcRR	CcRr	ccRR	ccRr
cr	CcRr	Ccrr	ccRr	ccrr

F_2 Phenotypic ratio 9 red flowered : 7 white flowered
05

c) Deletion cause change in entire sequence of bases in DNA (frame shift) which alters the entire sequence of amino acids in a polypep usually leading to formation of non functional prote while substitution may only affect a singl

45 a) The seed coat is less permeable to oxygen; so oxygen intake in inadequate; to sustain aerobic respiration leading to anaerobic respiration; 03

(b)(i) R.Q decreases rapidly; due to conversion of stored lipids to sugars; 02

(ii) R.Q increases rapidly; because when foliage leaves grow, photosynthesis increases; producing more sugars and oxidation of sugars increases; 02 max

(c) Lipids; 01 accept oils
rej. Fats

d) - A mixture of respiratory substrates is normally used;
- Respiratory substrates are rarely oxidised fully; 02

X/10

46 (a) - Bind food particles together; slowing down movement of food through the gut; which increases time for food digestion;
- They also provide surface for grip of enzymes during digestion; 04

b) Bile salts; in bile bind (with) around fatty acids; preventing them from recombining with glycerols; to allow their diffusion into the epithelial cells.; 02

c)(i)- Cholecystokinin stimulates release of pancreatic juice rich in enzymes / digestive components from the pancreas;
- It also causes contraction of smooth muscles in the wall of the gall bladder to cause release of bile; 02

(ii) It allows secretion of intestinal juice for a long (Prolonged) period of time; to allow completion of food digestion in the ileum; 02

X/10