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5096 HUMAN AND SOCIAL BIOLOGY

5096/02

Paper 2 (Theory), maximum raw mark 100

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

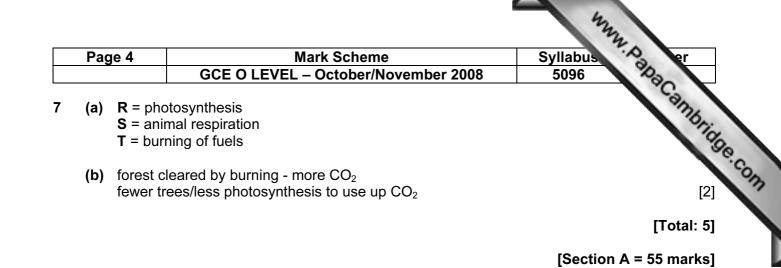
Mark schemes must be read in conjunction with the question papers and the report on the examination.

CIE will not enter into discussions or correspondence in connection with these mark schemes.

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| Page 2 | Mark Scheme | Syllabus er |
|----------------|--|--|
| | GCE O LEVEL – October/November 2008 | 5096 23 |
| (a) (i) | Α | PHA |
| (ii) | C | Stig |
| | В | |
| | C and D | Syllabus 5096 Bubacannbride [5] |
| (1•) | | [0] |
| | 1 - F to duodenum/ileum | |
| | 2 - P to stomach 3 - S to mouth | [3] |
| (ii) | stomach A P , S , F if labelling shown in (b)(i) is corre | |
| | mouth duodenum/ileum | |
| | auodenum/lieum | [3] |
| (c) villu | us - increase surface area | |
| | scle - move food along/mix contents <i>A peristalsis</i> cus - protect/lubricate lining | [3] |
| max | | [0] |
| (d) mito | ochondria release energy; powers active uptake | [2] |
| | | |
| (e) (i) | liver | |
| (ii) | gall bladder | [2] |
| (£) (:) | amulaitian fata/ON/TTE D discasta | |
| | emulsifies fats/OWTTE R digests | |
| (ii) | speeds/stimulates/strengthens peristalsis | [2] |
| | | [Total: 20] |
| (a) C +/ | o right ventricle | |
| H to | o left auricle/atrium | |
| | o one of the two venae cavae o one of four pulmonary veins | [4] |
| | | |
| (b) <u>wal</u> | l of left ventricle is thicker/has more muscle R stronger | [1] |
| | | |

| Page 3 | Mark Scheme | Syllabus of er |
|-----------------------------|---|---------------------------------------|
| • | GCE O LEVEL – October/November 2008 | 5096 23 |
| (a) (i) 3 | /4/5 | any |
| (ii) 1 | 4/15/16 | 3110 |
| (iii) 1 | 0/11/12 | Syllabus 5096 BDBCambrid [3] |
| (b) (i) o | vary/corpus luteum | |
| (ii) ∨ | ia the blood | [2] |
| (c) oestr | ogen | [1] |
| (d) (i) 1 | 0 | [1] |
| (ii) w | vorking: $\frac{3.50 + 1.25}{10} \times 100$; = 2 marks | |
| а | 10 nswer = 47.5% = 1 mark | [3] |
| | | [Total: 10] |
| athlete's f malaria | lia, red/green colour blindness, cystic fibrosis, etc. oot, ringworm, thrush | |
| | ckets, osteomalacia, anaemia, pellagra, beri-beri, kwashior herpes. <i>R HIV solus</i> | ⁻ kor [5] |
| | | [Total: 5] |
| (a) 2 = N 3 = N 4 = n | IN <i>R if letters other than N, n are used</i> | [4] |
| 8 = N | in | [4] |
| (b) (i) ½ | ź, 50%, 1 in 2, etc. | |
| (ii) ¹ ⁄ | ¼ , 25%, 1 in 4, 1:3 | [2] |
| | | [Total: 6] |
| (a) on F i | g. 6.1 , P to fovea O to edge of reting (join ends of recti to left of this | •) |
| | Q to edge of retina (join ends of recti to left of this R to blind spot | [3] |
| (b) M to | iris <i>R ciliary body area</i> | [1] |
| | | [Total: 4] |



Section B

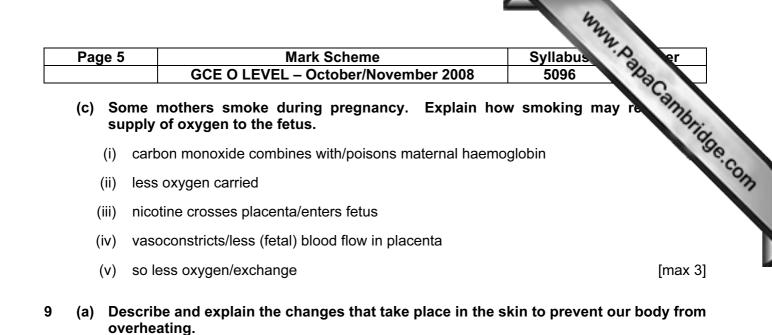
- 8 (a) In human reproduction fertilisation and implantation occur. Describe what is meant by the terms *fertilisation* and *implantation*.
 - (i) fertilisation is fusion of nuclei
 - (ii) of gametes/egg and sperm
 - (iii) takes place in oviduct/fallopian tube
 - (iv) forms zygote
 - (v) implantation is embedding of embryo A embryo
 - (vi) in lining of uterus/endometrium
 - (vii) occurs after fertilisation/equals start of pregnancy

[max 6]

(b) Describe fully the pathway taken by oxygen from the mother's lungs to the fetal tissues.

- (i) diffuses into red blood cells (of mother)
- (ii) combines with haemoglobin/forms oxyhaemoglobin
- (iii) in pulmonary vein
- (iv) into left auricle/atrium
- (v) into left ventricle
- (vi) into aorta
- (vii) into uterine artery/to placenta
- (viii) diffuses(unless used in (i) above)
- (ix) into fetal blood/fetal haemoglobin
- (x) via umbilical vein (to fetal tissues)

[max 6]



- (i) vasodilation/arterioles open
- (ii) more blood into capillaries/close to surface
- (iii) more heat lost
- (iv) by conduction/convection/radiation
- (v) more sweat secreted
- (vi) evaporates
- (vii) takes (latent) heat from blood/skin A cools
- (b) Explain the following:
 - (i) We can continue to lose heat even when the air temperature is above 40 °C.
 - (ii) Hot and humid conditions are less comfortable than hot and dry ones.
 - (iii) Babies may need a blanket when adults do not.
 - (iv) Sportsmen playing in the sun for several hours now coat exposed areas of their skin with protective sun creams.
 - (i) no conduction/convection/radiation now to air

but evaporation continues/is faster/easier

so heat still lost

(ii) evaporation slow/nil in humid conditions

sweat accumulates

no cooling effect

(iii) babies have larger relative surface area/larger surface to volume ratio

so lose heat easily/more quickly than adult

(iv) sunlight has damaging radiation

i.e. ultraviolet

causes mutations (in skin cells/DNA)

(seen as) skin cancers

[max 6]

| | 6 | Mark Scheme | Syllabus er |
|---------|---------|---------------------------------------|----------------------------------|
| | | GCE O LEVEL – October/November 2008 | 5096 73 |
|) Eithe | r | | and the |
| (a) | Descril | be the signs and symptoms of malaria. | Syllabus 5096 Bandranbride |
| . , | | | e e |
| (i |) nea | dache | |
| (ii |) high | n fever | |
| (iii |) (pro | fuse) sweating | |
| (iv |) (the | n) shivering | |
| (v |) feve | er periodic | [max 4] |

- (ii) so several kinds of antibodies needed
- (iii) parasite inside RBC's
- (iv) inside liver cells allow 1 for inside cells (unnamed)
- (v) little time/hours only free in blood
- (vi) so little time for immune system to attack
- (vii) credit refs. to changing surface antigens

(c) Give three reasons why not all mosquitoes are capable of infecting humans.

- (i) not all mosquito species carry malaria
- (ii) not all bite Man
- (iii) only adults bite
- (iv) only females bite
- (v) not all females infected

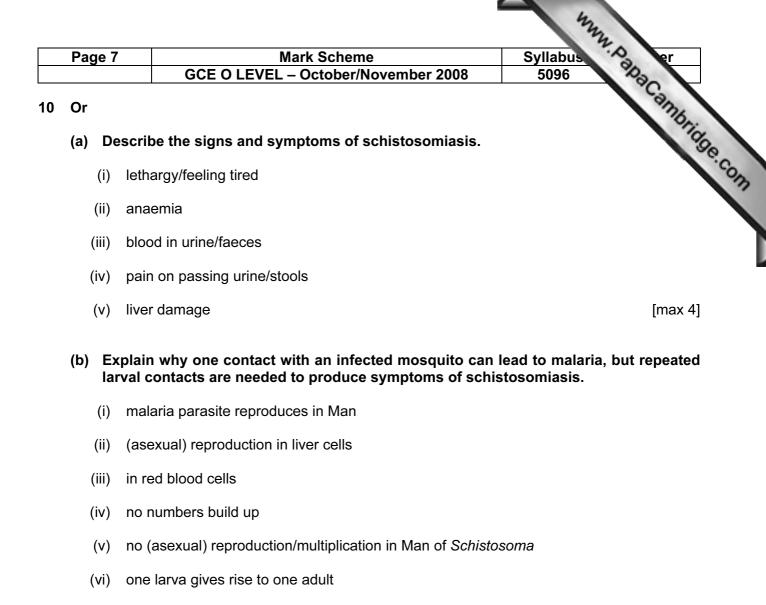
(d) List three ways of reducing the numbers of the mosquito.

- (i) drainage of swamps/speed flow in ditches/cover butts/empty tins
- (ii) oil on water surfaces
- (iii) insecticide in water sources
- (iv) insectivorous fish/gambusia
- (v) use of *Bacillus thuringiensis*
- (vi) (residual) insecticides on walls etc. inside houses
- (vii) catch males, sterilise and release, etc.

[max 5]

[max 3]

[max 3]



(vii) adults cause symptoms

(c) Explain why schistosomiasis is more common in children than in adults.

- (i) infection occurs in water
- (ii) by larvae penetrating skin
- (iii) children play/paddle in water
- (iv) more likely to be barefoot

(d) Several species of rat are referred to as a reservoir of infection for schistosomiasis. Explain fully what this means.

- (i) rats are source of eggs/worms
- (ii) even if parasite absent from humans
- (iii) so snails can be reinfected
- (iv) so human can be reinfected

[max 3]

[max 5]

[max 3]