NANDI CENTRAL DISTRICT JOINT MOCK 2013
231/2 – BIOLOGY PAPER 2 MARKING SCHEME

1. (a) B – Cerebellum;
C – Medulla oblongata;

(b) Control locomotion / motor area / sends impulses to effectors; controls voluntary / vision / hearing / smell / taste;
Controls personality speech;
Mediates cranial; (any 3x1 = 3mks)

(c) Loss of muscle co-ordination;
Loss of balance;

2. (a) R - Sieve pore;
S – Cytoplasmic strands / filaments;
Cell T – companion cell;

(b) Translocation;
(c) They are thickened; and lignified;
(d) (i) Active transport will not occur;
(ii) Reason: Because of lack of energy;

3. (a) Albinism; sickle cell anaemia; Haemophilia; colour blindness;
(b) (i) Inversion
- Occurs when chromatids break at two places; and when rejoining the middle piece rotates and joins in an inverted position;

(ii) Translocation
- Occurs when a section of chromatid breaks off; and becomes attached to another chromatid of another chromosome;

(c)

	♂		♀
Parental phenotype	Black fur		Black fur
Parental genotype	Bb	x	Bb

Gametes B b B b

Fusion

F1 generation BB Bb Bb bb

$^1/_4$ x ~~100~~ = 25%

OR

	Male		Female
Genotype	Bb	x	Bb

♂ \ ♀	B	b
B	BB	Bb

b	Bb	bb

¼ x ~~100~~ = 25%

*Penalise at parental genotype if other letters are used.
*Maximum of 1 mark if wrong symbols used for correct crossing.

4. (a) (i) C;
(ii) It is the uterine wall where implantation occurs;

(b) Part b secretes the hormones oestrogen and progesterone before 4 months of pregnancy; This role is taken over by placenta hence no active role; progesterone and oestrogen maintain pregnancy.

(c) (i) Treponema pallidum rej. names that are not underlined (i & ii)
- other rules spelling of binomial nomenclature
(ii) Neisseria gonorrhoea
(iii) Human immune deficiency virus rej. HIV

(d) Lack of pollution;
Low chances of fertilization;

5. (a) Solution A;

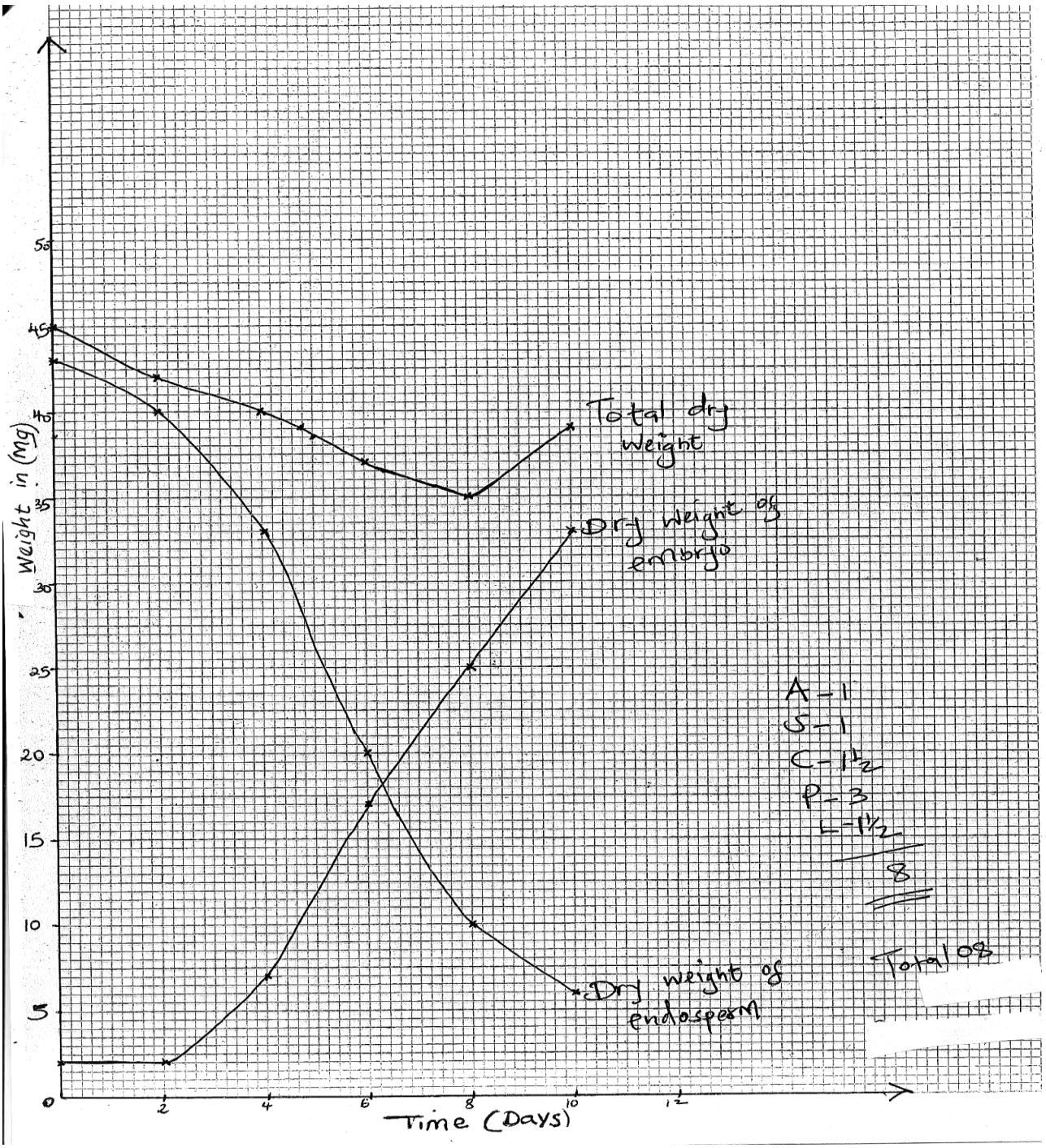
(b) Solution B;

(c) Arrow from A Pointing B;

(d) Cell membrane / Plasma membrane;

(e) - Absorption of water from the soil;
- Osmoregulation in the kidneys;
- Opening and closing of stomata;

6. (a)



(b) 38.5,g Acc $\pm$ 0.5;

(c) (i) Hydrolysis of starch into simple sugars; which are translated to the embryo;
(Respiration to give energy). Accept simple sugars oxidized rej. oxidation of starch.

(ii) New materials are synthesized from protein; bringing about growth of embryo;

(iii) The rate of respiration is faster; than that of synthesis of materials for growth;

(iv) First leaf carried out photosynthesis leading to growth;

(d) (i) - Presence of absiscic acid / Germination inhibitors;]
- Embryo not fully developed;
- Absence of hormones / enzymes to stimulate germination;
- Impermeable seed coat; rej. hard seed coat. (any one)

(ii) - Unsuitable / unfavourable temperature;
- Absence of light;
- Lack of water;
- Lack of oxygen; (any one)

7. (a) When the temperature is low (cold), the erector pilli muscles contract; making the hair follicles to stand erect; The hair follicles trap a layer of hair; between them which reduces heat loss due to poor heat conduction through them; when the temperature is high, the erector pilli muscles relax; thus making the hair to lie flat; thus reducing the air trapped and more heat will be lost to the environment;

   Skin has sweat glands which secrete sweat; when temperatures are high; water from the sweat evaporates; taking away latent heat of vapourization; when temperature is low, no sweat is produced;

   When temperature is high, the blood vessels vasadilate; and this encourages loss of heat; as more blood flow close to the skin surface; when temperatures are low, blood vessels vasoconstrict; less blood flows close to skin surface; hence less heat is lost to the environment;

   Skin has an adipose tissue for insulation against heat loss;

   (b) Skin has a cornified layer made of dead cells; which protects the entry of bacteria; and inner tissues from mechanical damage; the sebaceous gland, secret sebum; which has antiseptic properties; hence protects the body from bacteria. The skin has melanin pigment; which protect the body from harmful U.V rays;

8. <u>Wind dispersal</u>
   - Some seeds / fruits have parachute (hair like structures extending from the seed coat / fruit wall; which increases the surface area for floating in air; to be blown over a long distance e.g. in sow thistle;
   - Some seeds have papery extensions (winged seed / fruits); to increase the surface for floating in air so that they can easily be carried by wind; e.g. jacaranda; spatholea sp;
   - Some plants have ovaries which are capsule shaped; which on drying up burst open along lines of weakness thus scattering the seed, into the air; This is called censor mechanism e.g. simsim;
   - Some seeds are light in weight; to be easily blown by wind;

   <u>Animal dispersal</u>
   - Having hooks on the ovary wall or calyx; which stick on the fur / clothes of animals passing by; e.g. black jack fruit; devils horsewhip fruit;
   - Being succulent / fleshy; to attract animals to feed on them as the seeds are dispersed;
   - Seed, having a hard indigestive seed coat; which passes through the animal's digestive system undigested; e.g. in Guavas;
   - Being brightly coloured when ripe; to attract animals; e.g. oranges, guavas, tomatoes;
   - Being large in size and conspicuous; to be seen by animals easily; e.g. oranges;

   <u>Water dispersal</u>
   - Having fibrous walls containing many air pockets; for easy floating on water; so that it can be carried by water waves / scattered;

ANSWERS:

Order a copy of answers from www.schoolsnetkenya.com/order-e-copy

NB> We charge Kshs. 100 ONLY to meet website, e-resource compilation and provision costs