**MID TERM SERIES TERM 1-2023**

**BIOLOGY PAPER 3**

**FORM 4**

**MARKING SCHEME**

# a.

|  |  |  |
| --- | --- | --- |
|  | Contents inside tubing | Iodine solution  Outside tubing |
| Before the experiment | Grey/cream | Brown; |
| After the experiment | Blue-black | Brown; |

1. Diffusion;
2. Iodine ions / particles are smaller in size and hence entered into the visking tubing by diffusion/ along concentration Gradient; through the pores; and reacted with starch solution/ solution L; While extract molecules/ solution L cannot come out since they are too large to diffuse out.
3. Lungs; Small intestines

(b)

|  |  |
| --- | --- |
| B Prophase I | Chromosomes have condensed/thickened;  Chromosomes beginning to pair up; |
| C Metaphase I | Spindle fibers fully formed; homologous chromosomes still associated as bivalents move to the equator of the spindle; |

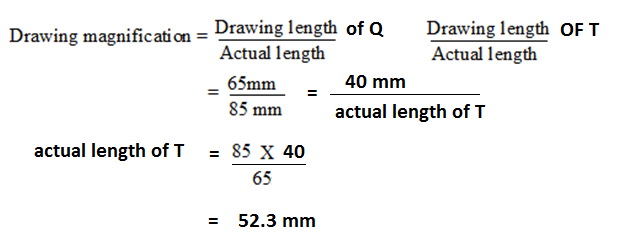
1. X(Centromere)

It is the site/ point of attachment of sister chromatids

It is the site for attachment of spindle fibre

Y (Spindle fibre)

Responsible for moving and segregating the chromosomes during nuclear division/ cell division

1. 
2. The abdomen has spiracles; and therefore gaseous exchange continued;

c)

1. (a) Animals with wings ................................................................................... go to 2

(b) Animals without wings ................................................................................ go to 3

2 (a) Animals with long limbs ............................................................................ Q

(b) Animals without long limbs ...................................................................... R

3 (a) Animals with four pairs of legs ..................................................................... S

(b) Animals with more than four pairs of legs ............................................... go to 4

4 (a) Animals with long Antenna ..................................................................... U

(b) Animals with short Antenna .................................................................... T

1. Brown/ camouflaged to blend with environment;

Hind limbs have spines for protection;

Hind limbs are large enabling the organism to jump;

1. (2mks)

|  |  |
| --- | --- |
| **Q** | **R** |
| * Spikes on legs * Hind less muscular * Two pairs of wings   -Biting and chewing mouth part | * No spikes on legs * Hind legs not muscular * One pair of wings * Piercing and sucking mouth part |

|  |  |  |  |
| --- | --- | --- | --- |
| **FOOD SUBSTANCE** | **PROCEDURE** | **OBSERVATION** | **CONCLUSION** |
| Starch | To 2cm3 of solution L add drops of iodine√1mk | Colour turns brown /yellow√1 mk | Starch absent1 mk |
| Reducing sugar | To 2cm3 of solution L ,add benedicts solution and boil√1 mark | Colour changes from blue to green to yellow/orange √1 mk | Reducing sugars present 1mk |
| proteins | To 2cm3 of solution L add 3 drops of NaOH followed by drops of CuSO4 and shake√1mk | solution remains blue  √1 mk | Protein absent 1mk |
| Ascorbic acid  (vitamin c) | To 2cm3 of solution DCPIP add solution L dropwise shaking till in excess √1mk | DCPIP decolourised  √ 1mk | Vitamin C /Ascorbic acid present 1mk |

3.

Mark Procedure, observation and conclusion

Food substance must be correctly entered to continue with marking