Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) **Structure**

1. Nuclear envelope **and** pores
OR
Double membrane **and** pores;
Ignore porous for pores

2. Chromosomes/chromatin
OR
DNA with histones;
Ignore genetic material/information
Accept nucleoplasm
Ignore promoter regions OR genes OR alleles
Accept regulation of gene expression

3. Nucleolus/nucleoli

Function

4. (Holds/stores) genetic information/material for polypeptides (production)
OR
(Is) code for polypeptides;
Accept protein OR amino acid sequences OR primary structure for polypeptides

5. DNA replication (occurs);

6. Production of mRNA/tRNA
OR
Transcription (occurs);
Ignore mRNA leaves nucleus

7. Production of rRNA/ribosomes;

4 max

Max 2 for structure or function

(b) Cellulose (plant) **and**

Chitin (fungi);
For fungi accept N-acetylglucosamine

1

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(c) Individual organisms could not be identified/separated

OR

Too small/numerous to count individuals

OR

Too time consuming;

Ignore too difficult to identify/distinguish different species
Ignore too difficult to count unless qualified
Accept reference to fungi for plants

1

(d) Correct answer for 2 marks, 0.7– 0.71;;

Accept for 1 mark,

0.29 − 0.3 (correct calculation not subtracted from 1)

OR

120 (correct total shoot biomass)

A common correct answer is 0.707
Accept numbers rounding down to 0.71

2

[8]

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Q2.

(a) 1. Attachment proteins attach to receptors;

For 'attachment protein' accept gp41/gp120/ glycoprotein but ignore 'receptor protein' (on virus)

Accept bind for attach

2. (Viral) nucleic acid enters cell;

Accept references to engulfment OR injection for enters

Ignore references to virus DNA/RNA incorporated into cell genome/nucleus/chromosomes

Accept RNA/DNA/genetic material for 'nucleic acid'.

3. Nucleic acid replicated in cell

OR

Reverse transcriptase makes DNA from RNA;

Accept RNA/DNA/genetic material for 'nucleic acid'.

4. Cell produces (viral) protein/capsid/enzymes;

Accept capsomeres OR reverse transcriptase for protein

5. Virus assembled and released (from cell);

Accept lysis OR burst OR bud off OR emerge for released

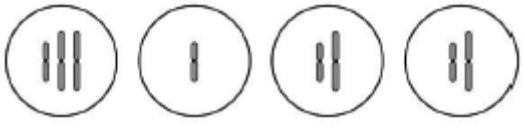
3 max

(b) One mark for each column;;

Feature	Cell cycle involving	
	Mitosis	Binary fission
Replication of linear DNA	✔	
Replication of circular DNA		✔
Produces 2 daughter cells	✔	✔
Produces 4 daughter cells		
Happens in prokaryotic cells		✔
Happens in eukaryotic cells	✔	

2

(c)



OR

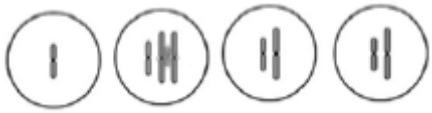


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OR



OR



1. 2 cells on left correct, ignore differences in chromosome length in drawn cells;

1. 2 cells on right correct, ignore differences in chromosome length in drawn cells;

2

(d) (Conclusion not valid because)

1. (MM1) 197/197.1;

   and

2. (MM2) 83/82.8;

   OR

   Correct answer for 2 marks,

114 − 114.3 (correct difference between MM1 and MM2)

Accept for 1 mark

259.2 **and** 345.6 (using total population size)

OR

MM2 is 86/86.4 bigger (using population totals)

2

[9]

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