

| Question Number | Answer | Additional Guidance | Mark |
|-----------------|---|---|----------|
| 9(a) | <p>An answer that makes reference to the following:</p> <ul style="list-style-type: none"> • at the start of composting the percentage of organic carbon is less and the percentage of nitrogen is more when cow dung is added (1) • adding cow dung does not change the decrease in organic carbon (1) • adding cow dung causes {a slight / no change} to the increase in nitrogen (1) • adding cow dung has no significant effect on composting (of coffee husks) (1) | <p>e.g. 12.8% and 12.7%</p> <p>e.g. 0.43% compared with 0.47%</p> | 3 |

| Question Number | Answer |
|-----------------|--|
| *9(b) | <p>Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.</p> <p>The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.</p> <ul style="list-style-type: none">• standardisation of composition of compost heaps• identification of species• abundance of each species of organism in the sample• determination of C:N / set up compost heaps with different C:N ratios• time e.g. days / intervals / repetition of sampling• other factors to monitor or control e.g. water / gases / humidity / temperature / aeration / mass• sampling technique e.g. location of sample within compost heap / repetition of sampling |

| Level | Mark | Descriptor | |
|----------------|-------|---|---|
| 0 | Marks | No awardable content | |
| Level 1 | 1-2 | <p>An explanation of how the investigation should be modified may be attempted but with limited analysis, interpretation and/or evaluation of the scientific information. Generalised comments made.</p> <p>The explanation will contain basic information with some attempt made to link knowledge and understanding to the given context.</p> | <p>Measure / set up compost heaps with different C:N ratios</p> <p>Observe species present over time</p> |
| Level 2 | 3-4 | <p>An explanation of how the investigation should be modified will be given with occasional evidence of analysis, interpretation and/or evaluation of the scientific information.</p> <p>The explanation shows some linkages and lines of scientific reasoning with some structure.</p> | <p>Recording species present / numbers of each species / measuring C:N ratio</p> <p>Monitoring changes over time</p> <p>Control of relevant factors</p> |
| Level 3 | 5-6 | <p>An explanation of how the investigation should be modified is given which is supported throughout by evidence from the analysis, interpretation and/or evaluation of the scientific information.</p> <p>The explanation shows a well-developed and sustained line of scientific reasoning which is clear, coherent and logically structured.</p> | <p>Description of a suitable sampling technique</p> <p>Linking species present or species density to C:N measurements</p> <p>Use of a statistical test to compare changes of time / C:N ratio</p> <p>Use information on numbers of species and population sizes to demonstrate succession</p> |