

Sri Lankan Biology Olympiad 2010



Answer sheet

| | | | | | | | | | | | |
|------|--------------|--------------|--------------|--------------|--------------|------|--------------|--------------|--------------|--------------|--------------|
| (01) | 1 | 2 | 3 | 4 | 5 | (21) | 1 | 2 | 3 | 4 | 5 |
| (02) | 1 | 2 | 3 | 4 | 5 | (22) | 1 | 2 | 3 | 4 | 5 |
| (03) | 1 | 2 | 3 | 4 | 5 | (23) | 1 | 2 | 3 | 4 | 5 |
| (04) | 1 | 2 | 3 | 4 | 5 | (24) | 1 | 2 | 3 | 4 | 5 |
| (05) | 1 | 2 | 3 | 4 | 5 | (25) | 1 | 2 | 3 | 4 | 5 |
| (06) | 1 | 2 | 3 | 4 | 5 | (26) | 1 | 2 | 3 | 4 | 5 |
| (07) | 1 | 2 | 3 | 4 | 5 | (27) | 1 | 2 | 3 | 4 | 5 |
| (08) | 1 | 2 | 3 | 4 | 5 | (28) | 1 | 2 | 3 | 4 | 5 |
| (09) | 1 | 2 | 3 | 4 | 5 | (29) | 1 | 2 | 3 | 4 | 5 |
| (10) | 1 | 2 | 3 | 4 | 5 | (30) | 1 | 2 | 3 | 4 | 5 |
| (11) | 1 | 2 | 3 | 4 | 5 | (31) | 1 | 2 | 3 | 4 | 5 |
| (12) | 1 | 2 | 3 | 4 | 5 | (32) | 1 | 2 | 3 | 4 | 5 |
| (13) | 1 | 2 | 3 | 4 | 5 | (33) | 1 | 2 | 3 | 4 | 5 |
| (14) | 1 | 2 | 3 | 4 | 5 | (34) | 1 | 2 | 3 | 4 | 5 |
| (15) | 1 | 2 | 3 | 4 | 5 | (35) | 1 | 2 | 3 | 4 | 5 |
| (16) | 1 | 2 | 3 | 4 | 5 | (36) | 1 | 2 | 3 | 4 | 5 |
| (17) | 1 | 2 | 3 | 4 | 5 | (37) | 1 | 2 | 3 | 4 | 5 |
| (18) | 1 | 2 | 3 | 4 | 5 | (38) | 1 | 2 | 3 | 4 | 5 |
| (19) | 1 | 2 | 3 | 4 | 5 | (39) | 1 | 2 | 3 | 4 | 5 |
| 20) | 1 | 2 | 3 | 4 | 5 | (40) | 1 | 2 | 3 | 4 | 5 |

Part B – Short Answer Questions

1. (2 points)

| Composition | Structure | Found in | Function | Substance |
|-------------|------------------|---------------------------|--------------|-----------|
| C, H, O | branched chain | animals microorganisms | food storage | H |
| C, H, O | unbranched chain | animals microorganisms | Protection | -- |
| C, H, O, N | unbranched chain | plants | Protection | — |
| C, H, O, N | Globular | animals | Food storage | E |

2. (2 points)

| | Present (+) or absent (-) in Cyanobacteria | Contain (+) or do not contain (-) nucleic acids | Contain (+) or do not contain (-) enzymes | Mainly anabolic (+) or catabolic (-) in function |
|--------------|---|--|--|---|
| Ribosomes | + | + | – | + |
| Lysosomes | – | – | + | – |
| Mitochondria | – | + | + | – |
| Chloroplasts | – | + | + | + |

3. (3 points)

| | C3 photosynthesis | C4 photosynthesis |
|-----------------------|-------------------|-------------------|
| Phosphoglycerate | + | + |
| phosphoglycolate | + | – |
| phosphoglyceraldehyde | + | + |
| Phosphoenol puruvate | – | + |
| Pyruvate | | |
| Ribulose bisphosphate | + | + |

4. (2 points)

B C D F G H

.....

5. (2 points)

B

.....

6. (4 points)

| Position | Water Potential |
|---------------------|-----------------|
| Soil solution | D |
| Root hair cell | A |
| Xylem vessel | B |
| Leaf mesophyll cell | C |

7. (2 points)

1. E 2. BC 3. D 4. A 5. GF

8. (2 points)

1. E 2. AC 3. B 4. AD

9. (4 points) C D G H

10. (3 points)

| Type of heart. | Type of circulation | | | |
|---------------------------------|---------------------|--------|--------|--------|
| | Open | Closed | Single | double |
| Several pairs of lateral hearts | | ✓ | ✓ | |
| Dorsal tubular heart | ✓ | | ✓ | |
| Ventral muscular heart | | ✓ | ✓ | ✓ |

11. (5 points)

Vertebrates B C

Cephalopods C

Asteroids C

Polychaetes A

Crustaceans B

12. (2 points) D

13. (3 points)

1. J 2. C 3. E 4. G 5. H 6. D

14. (5 points)

1. C 2. G 3. I 4. F 5. D

15. (5 points)

1. × 2. ✓ 3. ✓ 4. ✓ 5. ×

16. (2 points)

a. C b. C D E

17. (2 points)

1. A 2. A 3. D 4. C 5. B

18. (4 points)

| | Proterozoic (Precambrian) | Paleozoic | Mesozoic | Cenozoic |
|------------|------------------------------|-----------|----------|----------|
| Amphibians | | ✓ | ✓ | ✓ |
| Algae | ✓ | ✓ | ✓ | ✓ |
| Trilobites | ✓/✗ | ✓ | | |
| Dinosaurs | | | ✓ | |
| Mollusks | ✓/✗ | ✓ | ✓ | ✓ |
| Insects | | ✓ | ✓ | ✓ |
| Apes | | | | ✓ |

19. (5 points)

| | | | |
|-------------|----------------|-----------------------|---------------|
| Mammalia | 2 | Insecta | 7 |
| Gastropoda | 10 | Bivalvia (Pelecypoda) | 9 |
| Cephalopoda | 8 | Amphibia | 4 |
| Reptilia | 3 | Annelida | 5 |
| Aves | 1 | Crustacea | 6 |

20. (2 points)

| | Increase | Decrease |
|-------------------------------|----------|----------|
| Evapo-transpiration | | ✓ |
| Surface run-off | ✓ | |
| Flash floods | ✓ | |
| Oxygen released by vegetation | | ✓ |
| CO2 absorbed by vegetation | | ✓ |
| Landslides | ✓ | |
| Leaching of minerals | ✓ | |
| Surface temperature | ✓ | |