**BIOLOGY PAPER 1**

**SECTION A**

1. D 11. C 21. A 31. A

2. B 12. B 22. B 32. D

3. B 13. B 23. A 33. D

4. B 14. A 24. D 34. D

5. D 15. A 25. D 35. A

6. B 16. B 26. A 36. B

7. A 17. B 27. C 37. C

8. B 18 .B 28. C 38. C

9. B 19. A 29. B 39. C

10. B 20. C 30. B 40. A

**SECTION B ANSWERS**

41. a) Differences in cell division

|  |  |
| --- | --- |
| **Cell A formation** | **Cell D formation** |
| * Single division involved * Two daughter cells produced * Daughter cells diploid * Daughter cells genetically the same as mother cell * Daughter cells are similar * No crossing over * No bivalent form * No chiasmata formed etc | * Two successive division involved * Four daughter cells produced * Daughter cells haploid * Daughter cells genetically different from the mother cell * Daughter cells are variable * There is crossing over * Bivalent form * Chiasmata is forms etc |

N.B; Mark any two correct differences. The left solution must correspond to the right. (2mks)

b) Produces haploid gamates to maintain the diploid number of chromosomes

it produces variable gamates/increases variation to increase adaptability. (4mks)

c) Primodial germ cell/germinal epithelial cell. (1mk)

d)

|  |  |
| --- | --- |
| **In male** | **In female** |
| * Occurs throughout life * Short term process * Begins at puberty * Four functional cells * Occurs in testes * 2nd meiotic division complete before ejaculation * Many cells produced, etc | * Stops at menopause * Long term process * Begins before birth * 1 ovum, 3 polar bodies * Occurs in ovary * 2nd meiotic division occurs after fertilization * Few cells produced etc |

NB: Mark on correct differences. The left solution must correspond to the right. (1mk)

1. Secretes testosterone for secondary sex characteristics leads to increased sex drive leads to growth and development of testis

NB: Mark any two (max 2mks)

42. a) breakdown/oxidation of ribulosebisposphate to produce carbondioxide and water. (2mks)

b) Reduces the rate of photosynthesis

Reduces primary productivity (2mks)

c) By accumulating CO2 in their photosynthetic cells/bundle sheath cells which inhibits photo respiration. (1mk)

d)

|  |  |
| --- | --- |
| Mesophyll chloroplasts | Bundle sheath chloroplasts |
| * Large grana * Large quantities of ATP generated * NADP generated * Oxygen generated * Carbondioxide not used/no CO2 fixation * Little or no RUBP carboxylase | * Small grana/ no grana * ATP used up * NADP used up * No oxygen generated * Carbondioxide used/there is CO2 fixation * High concentration of RUBP carboxylase |

NB: Mark any correct four (3mks)

e) Rice, Maize, wheat, sugar cane, pineaples (1mk)

NB Any correct two @ ½ mark (1mk)

43. a)(i) Biomass in kilograms (1mk)

ii) From one trophic to another there is energy loss

Due to respiration, excretion, death and decay

Nb @ ½ a mark (2mks)

b) (i) From producers to subsequent consumers the concentration of DDT increases. (1mk)

(ii) DDT is non biodegradable/can not be metabolized and accumulates in the organisms of the animals. (1mk)

c) Carnivores 2

d) Use biological control to kill pastes, use alternative biogradable insecticide, use integrated control, cultural control. (any 3 = 3mks)

44. a) Because it shows a vertical section showing the various strata of sedimentary rocks. (1mk)

b) Mineralization preserved in peat bogs, petrification, preserved in amber, impression in rocks, impression in shells. (any 2 = 2mks)

c) Rodents appeared 60 million years ago

Mulltituberculates became extinct 50 million years ago

Rodents arouse from multituberculates. (3mks)

d) (i) The development of different structures from a common ancestor/from a common based pattern in order for the different structures to serve different purposes. (1mk)

(ii) The ancestral marsupial developed into herbivorous red kangaroo, tree climbing kangaroos, kola bear, and a carnivorous Tasmanian wolf, anteaters, moles, squirrels etc

NB should give 3 examples to get three marks. (3mks)

45. a) (i) Plants that can flower below a critical light period in the 24 hours life cycle. (2mks)

(ii) Plants whose flowering is not guided by the length of the light period in the 24 hour life cycle but flowering is stimulated by other environmental factors. (2mks)

1. (i) High concentration of pfr induces the production of the precursor of a hormone, this in turn induces the leaves to produce florigen that travels to the buds to cause flowering. (@ ½ mark = 2mks)

ii) Short day plants

Low concentration of pfr induces the production of the precursor of a hormone this in turn induces the leaves to produce florigen that travels to the buds to cause flowering.

c) Migrations, breeding seasons (2mks)

46. a)(i) Is an alternative form of a gene for character. (1mk)

(ii) Is a condition where two alleles express themselves equally in heterozygote/hybrid. (1mk)

b) Let : XG represent ginger gene dorminant

: XB represent black gene dorminant

: Y is genetically empty

Parental phenotypes : Female black x male ginger

Parental genotype :

Gametes : X

|  |  |  |
| --- | --- | --- |
| ♂  ♀ |  |  |
|  | XBXG | XBY |
|  | XB XG | XBY |

Fusion :

F1 genotype : XBXG, XBY

F1 phonotype : Female Male

Tortoise shell black

Selfing F1 offspring 1 1

F1 phenotypes : Female tortoise shell x Male black

F1 genotype : XB XG XBY

Gametes :

|  |  |  |
| --- | --- | --- |
| ♂  ♀ |  |  |
|  | XBXG | XBY |
|  | XB XG | XBY |

Fusion

F2 genotypes : XBXB, XBXG XBY XGY

F2 : female Female Male Male

Black Tortoise coat black ginger

Ratios 1 1 1 1 (1/2 @ = 8mks)

END