# PREBOARD EXAM -1
## CLASS – XII     SUB: BIOLOGY
# MARKING SCHEME

| Q.NO | ANSWER | MARK |
|------|--------|------|
| SECTION –A ( 1 x 5=5) | | |
| 1. | Transposons or mobile genetic elements in viruses are the sources of the complementary ds RNA, that in turn binds/silences specific mRNA/ causes RNAi of the parasite. | ½+½ |
| 2. | Lead inactivates the catalyst in the converter ( which catalyses conversion of unburnt hydrocarbons into $CO_2$ and $H_2O$ | 1 |
| 3. | Leaf and strife  rust, Hill bunt | ½+½ |
| 4. | Life originated from pre-existing non living organic molecules | 1 |
| 5. | Test cross | 1 |
| SECTION –B  (2 x 5=10) | | |
| 6. | Vegetative cell -  bigger, irregular nucleus/ food reserve<br>Generation cell – smaller, floats/ spindle shaped/ dense cytoplasm and nucleus | ½+½<br>½+½ |
| 7. | X body/ X factor/ X chromosome   (1)<br>In insects the sex chromosome consists of XX female, XO male.   (1/2 +1/2) | ½+½ |
| 8. | Tetanus caused by deadly bacterium/ quicker response required / so preformed antibodies/ antitoxin is administered/ to neutralize the effect of the bacteria toxin | ½ x 4=2 |
| 9. | a) Spirulina – produces large quantities of food rich in protein, mineral, fats carbohydrates and vitamins.<br>b) Methylophilus methylotrophus -250gm of microorganism produces 25 tonnes of protein per day. | ½+½<br><br>½+½ |
| 10. | Sparrow / primary consumer. when eating seeds etc/ secondary consumer when eating worms etc (Any other omnivorc)<br>**OR**<br>Botanical garden. Zoological park, seed bank, cryopreservation | 1+½+½<br><br><br>½ x 4 |
| SECTION –C ( 3 x 9=27) | | |
| 11. | Form of asexual reproduction producing seeds without fertilization / type of asexual reproduction that mimics & reproduction to form seeds without fertilization.<br>Parental characters maintained in progeny ( as no meiosis)<br>Use of apomicts seeds by farmers to raise new crops year after year. | 1<br><br><br>1<br>1 |
| 12. | Haemophilia is a sex linked recessive disorder, The  female has XX sex chromosomes and if one of the 2X is normal, she is a carrier & not diseased<br>Non stop bleeding, no clotting . | 1+1<br><br>½+½ |
| 13. | a) they do not code for any proteins<br>b) They form large part of the human genome.<br>c) They show high degree of polymorphism/ specific to each individual. | 1 x 3 |
| 14. | Hardy Weinberg's principle / allele frequencies in a population are stable & is constant from generation to generation / 1 represents stable allele frequency in a population, indicating no evolution occurring / P2 frequency of homozygous dominant/ AA, 2pq frequency of heterozygous /Aa, q2 frequency of homozygous recessive/aa | ½ x 6=3 |
| 15. | MOET (Multiple ovulation Embryo Transfer)<br>FSH administered to cow/super ovulation/ artificial insemination/ transfer to surrogate mother | 1<br>½ x 4=2 |
| 16. | Life cycle of Anopheles mosquito(6 stages) | ½ x 6=3 |

| 17. | Streptococcus : Streptokinase, clot buster | ½+½=1 |
| | Monascus : Statin, blood cholesterol lowering agent | ½+½=1 |
| | Trichoderma Cyclosporine A, immunosuppressant | ½+½=1 |
| | **OR** | |
| | Anaerobic, Methane producing bacteria | ½ X 2=1 |
| | Generate biogas, when act on cellulose rich biowaste | 1+1 |
| 18. | Denaturation, Annealing, Extension (explain) | 1+1+1 |
| 19. | 2 chains of DNA sequence corresponding to A & B chains, introduced into E.coil plasmids, to produce A & B chains & extracted, combined by disulphide bonds | ½ X 4=2 |
| | Extra stretch of C peptide proinsulin | 1 |
| 20. | Cry genes introduced into cotton plant, Bt protoxin alkaline pH of insect gas activated, lysis & rupture of gut epithelial cells of insect | ½ X 4=2 |
| | Cry – II Ab & Cry – I Ac | 1 |
| 21 | Snail- aestivation, seeds – dormancy, Bear-hibernation , Zooplankton- Diapause, Fungi-spore, Bacteria-cyst | ½ X 6=3 |
| 22. | Water – Zooplankton - small fish- large fish –Fish eating birds | ½ X 4=2 |
| | (DDT.0003 ppb) (0.04 ppm) (0.5ppm) (2ppm) (5ppm) (with values) | 1 |

## SECTION –D ( 1 x 4=4)

| 23. | The issue of puberty and adolescence need to be addressed effectively/ bring awareness – about reproductive health/ address increase in sex abuse /myths related to reproduction (any 2) | 1+1 |
| | IUT & IUT (Difference) | 1+1 |

## SECTION –E ( 5 x3=15)

| 24. | NCERT for diagram ( 6 labels) | 6 x ½=3 |
| | Degeneration of anti podals & synergids, zygote formed, PEC formed, ovule becomes seed, micropyle remains, integument →seed coat | 4 x½=2 |
| | **OR** | |
| | Refer NCERT for diagram | ½ x 4=2 |
| | GnRH →anti pituitary(½)→(½)LH/FSH | ½ x 6=3 |
| | LH→Leydig (½)→spermatogenesis (½) | |
| | FSH → Sertoli (½)→spermiogensis( ½) | |
| 25. | a) Codes for methionine, initiation codon | ½+½=1 |
| | b) Universal + Degenerate | ½+½=1 |
| | UUU codes for phenyl alanine in all organism | ½ |
| | UUU & UUC both code for phenyl alanine | ½ |
| | c) a.a activated in the presence of ATP | 2 |
| | **OR** | |
| | Sequence Annotation – total DNA from a cell is isolated | ½x 2 =1 |
| | Converted into random fragments of relatively smaller sizes | ½ |
| | and cloned in suitable host using specialized vectors | ½ |
| | The cloning results in amplification of each piece of DNA fragment | ½ |
| | The fragments are sequenced using automated DNA sequencers, | ½ |
| | These sequences are then arranged bases on some over lapping regions (present in them) | ½ |
| | This requires generation of overlapping fragments | ½ |
| | Specialized computer based programmes are developed | ½ |
| | and these sequences are subsequently annotated and assigned to each chromosome | ½ |
| | OR | |

| | | |
|---|---|---|
| | For initiation, the ribosome binds to the mature m RNA at the start codon (AUG) that is recognized by the initiator +RNA. During Elongation, charged t-RNA sequentially binds to the appropriate codon in m-RNA with the anticodon present on t-RNA. The ribosome mores from one codon to another adding a.a one after the other to form polypeptide during termination, the release factor binds to stop codon, terminating translation and releasing the polypeptide chain | ½ x 10=5 |
| 26. | Population density, Birth rate, Death rate and Sex Ratio (Any 2)<br>Pop. Density is the number of individuals of a species per unit area<br>3 ways and 3 examples.<br><div align="center">OR</div><br>Pyramid of energy → Diagram with values of<br>Ex- Grassland ecosystem<br>Pyramid of Biomass → Upright diagram with values<br>Ex-Grass land ecosystem<br>Pyramid of Biomass – Inverted (Diagram with values)<br>Ex-Pond ecosystem | ½ x 2=1<br>1<br>½ x 6=3<br><br>1+½<br>½<br>1<br>½<br>1<br>½ |