CAREER POINT

MOCK TEST PAPER

CENTRAL BOARD OF SENIOR SECONDARY EXAMINATION

BIOLOGY

SOLUTIONS

Sol.1 Potato (stem) and sweet potato (root) = storage organ

Sol.2 Lipase, amylase.

Sol.3 Cyclosporin.

Sol.4 The bilobed anther can produce 1600 male gametophytes.

Sol.5 Pollen grains can be stored in viable condition in pollen bank for many years in liquid nitrogen (–196ºC) and can be used in crop breeding programmes.

Sol.6 It states that only 10% energy of a trophic level is transferred to the next higher trophic level.

Sol.7 Inflated pod.

Sol.8 Helper T-cells.

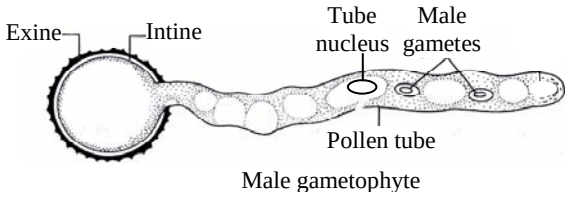
Sol.9 Yes. Amnicoentesis (alongwith sonography) is being misused to determine the sex of the foetus. Due to small family norm, along with religion and social practices, every family wants a male child. The female foetus is destroyed. This has resulted in decline in female population to less than 50 per 100 males in certain areas. Such an imbalance in sex ratio is bound to create social problems for the future generations. Therefore, the test has been banned.

Sol.10 Biofortification is a crop breeding programme that is aimed at increasing nutritional quality of the crop like high vitamin content, more minerals, complete proteins and healthier fats, e.g., lysine and tryptophan rich Maize, vitamin A enriched Carrot.

Sol.11 (a) Menarche : It is the first menstruation that occurs in the life of a young girl. Menarche is indication of the attainment of sexual maturity and beginning of fertile period.

(b) Menopause : It is the cessation of menstruation in the life of a women that marks the end of fertile period due to nonrelease of ova.

Sol.12



Male gametophyte

Sol.13 1. Antipodals, 2. Polar nuclei,
3. Central cell, 4. Egg cell

Sol.14 (i) Cauliflower varieties – Pusa shubhra and Pusa Snowball K-1

(ii) Brassica varieties – Pusa Swarnim(karan rai)

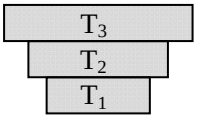
(iii) Wheat varieties – Himgiri

(iv) Rice varieties – Jaya and Ratana

(v) Chilli varieties – Pusa Sadabahar.

Sol.15 Crassulacean Acid Metabolism.

Sol.16 The pyramid is inverted because the biomass of fishes is much more than that of the phytoplanktons.



Fishes
Zooplanktons
Phytoplanktons

Sol.17

Red coloured × Pink coloured

RR Rr

Gametes R R, r

Progeny RR (Red) and Rr (Pink)

The progeny will have the

Genotype	RR 1	:	Rr 1
Phenotype	Red1	:	Pink 1

Sol.18 **Contact Inhibition** is the property by which contact with other cells inhibits their uncontrolled growth.

This phenomenon is absent in cancer cells.

Sol.19 According to Darwin, only fittest individual which shows adaptiability can undergo natural selection process end can produce large number of projeny. According to him, adaptiability which has genetic basis makes individual fit. Such individual are selected by nature and produce large number of projeny

Sol.20 **GEAC :** Genetic engineering Approval Committee.

Objectives :

(i) Examine the validity of GM research.

(ii) Inspect the safety of use of GMOs.

Sol.21 Indian Basmati Rice was crossed with a semi-dwarf variety and was claimed to be new scented variety for which patent was filed by a U.S.A. company.

Sol.22 GMOs are genetically modified organisms. They include plants, microbes and animals.

GM Plants :

(i) Tolerance of abiotic stresses.

(ii) Reduction of post harvest loss.

(iii) Increased efficiency of mineral utilisation.

(iv) Better nutritional value.

(v) Viral, herbicide and pest resistance

(vi) New pharmaceutical and other commercial products, e.g., Flavr Savr Tomato, Bt Cotton, Golden Rice

GM Microbes :

(i) Biochemicl factories, e.g., insulin, human growth factor, interferon.

(ii) Environmental protection, e.g., Pseudomonas, Trichoderma.

GM Animals :

(i) Greater yield

(ii) Biological products.

(iii) Study of diseases and vaccine safety testing.

Sol.23 (i) Slower decline in birth rate and sharper decline in death rate.

(ii) Improved health facilities and longer life span.

Sol.24 The cross between two individuals of different species of the same genus is called interspecific hybridisation. Saccharum officinarum × sacchaum barbari. Advantage is that a disease resistance variety high yielding variety can obtained.

Sol.25 The process of mating more closely related animal within same breed is called inbreeding. The recessive alleles become homozygous and express themselves. These are then eliminated by selection.

Sol.26

– The genes for haemophilia and colour blindness are present on the X-chromosome.

– A male has one X-chromosome and the Y-chromosome has no corresponding alleles for these genes and hence males are pure for the character.

– A female has two X-chromosomes, received and one form each of the parents and she has to be homozygous for the defective alleles to express the character.

Sol.27 Garden Pea

Seed colour

Parent Yellow seeds × Green Seeds

YY yy

Gametes Y y

F_1 generation Yy (yellow seeds)

Selfing Yy × Yy

Gametes Y, y Y, y

F_2 generation

	Y	y
Y	YY yellow seeds	Yy yellow seeds
y	Yy yellow seeds	yy yellow seeds

Phenotypic ratio

Yellow seeds	:	Green seeds
3	:	1

Genotypic ratio

YY	:	Yy	:	yy
1	:	2	:	1

Sol.28 T

	Diagnostics	Therapeutics
1.	It finds out the cause and nature of the disease.	It treats patients to cure them of the disease.
2.	It is based on signs and symptoms, history of the progress of the disease, laboratory and special tests	It is based on diagnosis and the known effectiveness of therapy for curing the disease.
3.	It provides logic basis for treatment. Example : ELISA test for HIV	It provides relief from the disease. Example : Antibiotic for bacterial infection

Sol.29 (i) Somatic hybrid : Somatic hybrid is a product obtained by the fusion of somatic cell protoplast obtained from two different varieties or species of plants cultured on a suitable nutrient medium under sterile conditions.

(ii) Micropropagation : Micropropagation is the method of producing thousands of plant through tissue culture method.

(iii) Explant : The part of the plant from which a new plant is generated by the method of tissue culture is called explant.

(iv) Somaclones : The genetically identical plant developed from any part of the plant by tissue culture or micropropagation is called somaclones.

(v) Tissue culture : The technique to generate whole plant from an explant with in vitro conditions on a suitable synthetic medium is called tissue culture.

Sol.30 An ecosystem consists of two types of components, i.e., biotic or living and abiotic or non-living. There are three main types of biotic components on the basis of mode of obtaining their food- producers, consumers and decomposers.

(i) Producers (autotrophs): They are photosynthetic or autotrophic plants that synthesise their own organic food from inorganic raw materials with the help of solar radiations. Common producers are algae, plants and photosynthetic bacteria. Phytoplanktons are the producers of aquatic ecosystems.

(ii) Consumers (heterotrophs): They are animals which feed on other organisms or producers for obtaining their nourishment. Common consumers are deer, goat, etc.

(iii) Decomposers: They are saprotrophs which obtain nourishment from organic remains. They release digestive enzymes to digest the organic matter. Common decomposers are detrivores, e.g., earthworm. Abiotic component of ecosystem consists of non-living substances and factors which are as follows:

(a) Temperature (b) Light

(c) Wind (d) Humidity

(e) Precipitation (f) Water, etc.