

**Your Success Is Our Achievement**

**WINNER**

**SUCCESS**

**PROGRESS**

**EXECUTED**

**PLAN**

**IDEA**

*"ARISE AWAKE AND STOP NOT TILL THE GOAL REACHED"*

**EXCEL BIO - BOTANY 12**

**EXCEL**

**BIO - BOTANY**

**12**

**NEW SYLLABUS**

**A COMPLETE GUIDE**

- ★ Easy Study Materials
- ★ Text Book Evaluation
- ★ Additional Questions and Answers

**EASY CENTUM 100/100 BEST OF LUCKS**

Mobile : 8148527809

## EXCEL ★ XII BIO - BOTANY

## CHAPTER

## 1

ASEXUAL AND  
SEXUAL REPRODUCTION  
IN PLANTS

## EVALUATION

- Choose the correct statement from the following
  - Gametes are involved in asexual reproduction
  - Bacteria reproduce asexually by budding
  - Conidia formation is a method of sexual reproduction
  - Yeast reproduce by budding**
- An eminent Indian embryologist is
  - S.R.Kashyap
  - P.Maheswari**
  - M.S. Swaminathan
  - K.C.Mehta
- Identify the correctly matched pair
  - Tuber - Allium cepa
  - Sucker – Pistia
  - Rhizome – Musa**
  - Stolon - Zingiber
- Size of pollen grain in Myosotis
  - 10 micrometer**
  - 20 micrometer
  - 200 micrometer
  - 2000 micrometer
- First cell of male gametophyte in angiosperm is
  - Microspore**
  - megaspore
  - Nucleus
  - Primary Endosperm nucleus
- Match the following
 

I)	External fertilization	i)	pollen grain
II)	Androecium	ii)	anther wall
III)	Male gametophyte	iii)	algae
IV)	Primary parietal layer	iv)	stamens

	I	II	III	IV
a	iv	i	ii	iii
b	iii	iv	i	ii
c	iii	iv	ii	i
d	iii	i	iv	ii
- Arrange the layers of anther wall from locus to periphery
  - Epidermis, middle layers, tapetum, endothecium
  - Tapetum, middle layers, epidermis, endothecium
  - Endothecium, epidermis, middle layers, tapetum
  - Tapetum, middle layers, endothecium, epidermis.**
- Identify the incorrect pair
  - sporopollenin - exine of pollen grain
  - tapetum – nutritive tissue for developing microspores
  - Nucellus – nutritive tissue for developing embryo**
  - obturator – directs the pollen tube into micropyle
- Assertion :** Sporopollenin preserves pollen in fossil deposits  
**Reason :** Sporopollenin is resistant to physical and biological decomposition

**EXCEL ★ XII BIO - BOTANY**

- ❖ A pistil derived from a \_\_\_\_\_ - **Carpel**
- ❖ \_\_\_\_\_ secrete chemotropic substances that help to attract the pollentube - **Synergids**
- ❖ \_\_\_\_\_ guide the pollentube into the egg - **Synergids**
- ❖ Example for Epihydrophily - **Vallisneria spiralis**
- ❖ \_\_\_\_\_ is the common type of ovules found in dicots and monocots - **Anatropus**
- ❖ Example for monosporic embryo sac - **Polygonum**
- ❖ \_\_\_\_\_ produces (aerial and underground) two types of flowers - **Commelina**
- ❖ The plumule is surrounded by a protective sheath called - **Coleoptile**
- ❖ \_\_\_\_\_ The seed of paddy is one seeded and is called - **Caryopsis**
- ❖ In \_\_\_\_\_ reproduction which does not involve meiosis and syngamy - **Apomixis**
- ❖ Integumentary tapetum otherwise called - **Endothelium**
- ❖ Areca catechu is example for \_\_\_\_\_ endosperm - **Ruminate endosperm**

**Vegetative reproduction in stem**

- ◆ Rhizome - Musa paradisiaca, Zingiber officinale and curcuma longa
- ◆ Corm - Amorphophallus and Colocasia
- ◆ Tuber - Solanum tuberosum
- ◆ Bulb - Allium cepa and Lilium
- ◆ Runner - Centella asiatica
- ◆ Stolon - Mentha and Fragaria
- ◆ Offset - Pistia and Eichhornia
- ◆ Sucker - Chrysanthemum
- ◆ Bulbils - Dioscorea and Agave

- ❖ \_\_\_\_\_ also plays an important role in evolution - **Reproduction**
- ❖ \_\_\_\_\_ have been used by man for a long time and are called conventional methods - **Artificial propagation methods**
- ❖ In \_\_\_\_\_ method the stem is girdled at nodal region - **Air layering**
- ❖ The protoplast of all tapetal cells coalesces to form a \_\_\_\_\_ - **Periplasmodium**
- ❖ Generally at \_\_\_\_\_ stage the pollens are liberated from the anther - **2 celled stage**
- ❖ The megaspores are usually arranged in a \_\_\_\_\_ - **linear tetrad**
- ❖ Of the four megaspores \_\_\_\_\_ side one is develop into functional - **Chalaza**
- ❖ In \_\_\_\_\_ plants anthers burst violently and release the pollen into the air - **Utrica**
- ❖ Some plants of Araceae are pollinated by \_\_\_\_\_ - **Snails**
- ❖ Pollination by ant is called \_\_\_\_\_ - **Myrmecophily**
- ❖ Lever mechanism pollination occurs in \_\_\_\_\_ - **Salvia**
- ❖ As soon as the \_\_\_\_\_ disappear the growth of the pollen tubes stops - **Cap block**
- ❖ When the pollen tube enters through the integument is called \_\_\_\_\_ - **Mesogamy**
- ❖ \_\_\_\_\_ is a nutritive tissue and regulatory structure that nourish developing embryo - **Endosperm**

**EXCEL ★ XII BIO - BOTANY****6. Write reason for Mendel choose pea plant for his experiment**

- ◆ It is an annual plant and has clear contrasting characters that are controlled by a single gene separately
- ◆ Self-fertilization occurred under normal conditions in garden pea plants. Mendel used both self-fertilization and cross fertilization
- ◆ The flowers are large hence emasculation and pollination are very easy for hybridization.

**7. Write the uses of Test cross and Back cross**

- ◆ Test cross is used to identify whether an individual is homozygous or heterozygous for dominant character each other such that each gametes receives only one of the two factors.
- ◆ A homozygous parent produces similar gametes and a heterozygous parent produces two kinds of gametes each having one allele with equal proportion
- ◆ Gametes are never hybrid.
- ◆ From this, the alleles themselves remain discrete and unaltered proving the Mendel's Law of segregation. The phenotypic and genotypic ratio are the same. There is no blending genes
- ◆ The recessive back cross helps to identify the heterozygosity of the hybrid.

**8. Name the three types of Allelic interaction**

1. Dominant relationship
2. Lethal genes
3. Multiple alleles

**9. Write the types of lethal genes**

1. Dominant lethals
2. Recessive lethals
3. Conditional lethals
4. Sex linked lethals
5. Balanced lethals

**10. Write three examples for Codominance**

1. Red and white flowers of camellia
2. Inheritance of sickle cell haemoglobin
3. ABO blood group system in human beings

**11. What is meant by Dominant Epistasis?**

It is a gene interaction in which two alleles of a gene at one locus interfere and suppress or mask the phenotypic expression of a different pair of alleles of another gene at another locus.

**12. Differentiate Epistatic and Hypostatic**

- ◆ The gene suppresses or mask the phenotypic expression of a gene at another locus known as epistatic
- ◆ The gene whose expression is interfered by non-allelic genes and prevents from exhibiting its character is known as hypostatic.

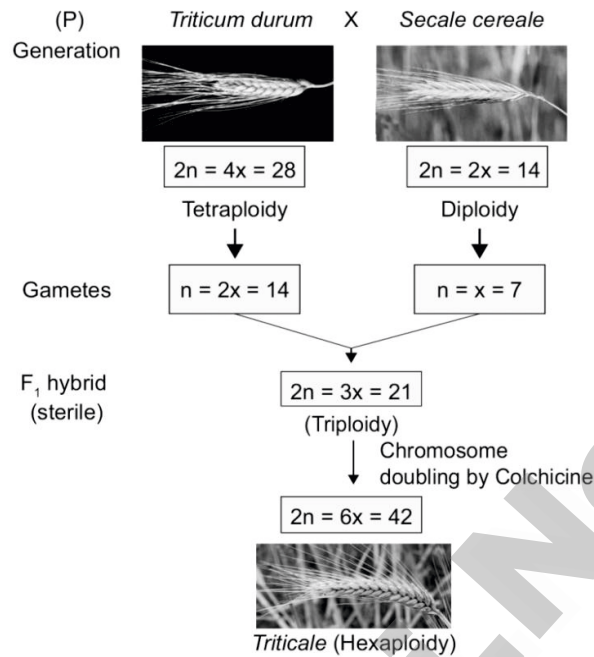
**13. Cytoplasmic inheritance is not through nuclear gene. Justify**

It is due to the chloroplast gene found in the ovum of the female plant which contributes the cytoplasm during fertilization since the male gamete contribute only the nucleus but not cytoplasm.

**14. Define Plasmogenes**

- ◆ It is independent, self replicating extra chromosomal unit
- ◆ It is located in the cytoplasmic organelles, (In chloroplast and mitochondrion) responsible for cytoplasmic inheritance. Such genes are called Plasmogene.



**EXCEL ★ XII BIO - BOTANY****ADDITIONAL QUESTIONS AND ANSWERS**

- ❖ The term 'Ecosystem' was proposed by \_\_\_\_\_ - **A.G. Tansley(1935)**
- ❖ An organism which possesses two complete basic set of chromosome are known as - **Diploid**
- ❖ \_\_\_\_\_ postulated that the chromosomes of a cell are responsible for transferring heredity - **Wilhelm Roux**
- ❖ \_\_\_\_\_ supported the idea that the chromosomes contain determiners - **T. Boveri**
- ❖ \_\_\_\_\_ & \_\_\_\_\_ independently proposed the chromosome theory of inheritance - **Sutton & Boveri**
- ❖ The genes which determine the character of an individual are carried by the \_\_\_\_\_ - **Chromosomes**
- ❖ *Lathyrus odoratus* commonly called \_\_\_\_\_ - **Sweet pea**
- ❖ Unlinked genes are otherwise called \_\_\_\_\_ - **Syntenic genes**
- ❖ \_\_\_\_\_ linkage was observed and reported in maize by Hutchinson - **Incomplete linkage**
- ❖ The term 'crossing over' was coined by \_\_\_\_\_ - **Morgan**
- ❖ \_\_\_\_\_ takes place during pachytene stage of prophase I of meiosis - **Crossing over**
- ❖ After \_\_\_\_\_ formation, the crossing over occurs in pachytene stage - **Tetrad**
- ❖ The unit of distance in a \_\_\_\_\_ is called a map unit - **Genetic map**
- ❖ One map unit is also called a \_\_\_\_\_ in honour of T.H.Morgan - **Centimorgan**
- ❖ The term mutation was introduced by - **Hugo de Vries**
- ❖ The plant *Oenothera lamarckiana* commonly called \_\_\_\_\_ - **Evening primrose**
- ❖ Mutational events that take place within individuals genes are called - **Gene mutations**
- ❖ Gene mutations otherwise called \_\_\_\_\_ - **Point mutations**

**EXCEL ★ XII BIO - BOTANY**

- 62. Identify the correct statement regarding Restriction Enzymes**  
 1. Exonucleases enzymes remove nucleotides from one end  
 2. Endonucleases enzymes break the internal phosphodiester bonds within DNA molecule  
 3. It joins the sugar and phosphate molecules  
 4. They function as a part of bacteria defence mechanism  
 a. 1 and 3                      b. 1,2 and 3                      c. 1,3 and 4                      **d. 1,2 and 4**
- 63. Identify the wrong statement regarding Alkaline phosphatase**  
 1. It is otherwise called molecular scissors                      2. It is a DNA modifying enzyme  
 3. It prevents self ligation                      4. It is purified from bacteria and calf intestine  
 a. 1 and 4                      b. 2 and 3                      c. 3 alone                      **d. 1 alone**
- 64. Select the correct restriction enzyme which breaks the phosphodiester bond within a DNA molecule**  
 1. Bal 31                      2. Hind II                      3. BamHI                      4. PvuI  
 a. 1 and 3                      b. 3 and 4                      c. 1,2 and 3                      **d. 2,3 and 4**
- 65. \_\_\_\_\_ is an alternative to liquid fossil fuels, the petroleum products**  
 a. Algal fuel                      b. Algal biofuel                      c. Algal oil                      **d. All the above**
- 66. Cohesive ends are \_\_\_\_\_**  
 a. Sticky ends                      b. Blunt end                      c. Flush end                      d. Symmetric cuts
- 67. Number of base pairs does pBR 322 plasmid contains \_\_\_\_\_**  
 a. 2345                      b. 3461                      c. 4361                      d. 2322
- 68. Self ligation prevented by \_\_\_\_\_ in genetic engineering**  
 a. Endonuclease                      **b. Alkaline phosphatase**  
 c. DNA ligase                      d. Exonuclease
- 69. Today more than \_\_\_\_\_ restriction enzymes have been isolated**  
 a. 600                      b. 360                      c. 760                      **d. 900**
- 70. A Vector is \_\_\_\_\_**  
 a. Self-replication                      b. Used as a carrier  
 c. Transporter of DNA fragment                      **d. All the above**

**Match the following:**

- 71.** 1. Southern Blotting - a. Transfer of Proteins  
 2. Northern Blotting - b. Cloning DNA  
 3. Western Blotting - c. Transfer of DNA  
 4. Vector - d. Transfer of RNA  
 a. 1-d, 2-b, 3-c, 4-a                      b. 1-a, 2-b, 3-c, 4-d                      **c. 1-c, 2-d, 3-a, 4-b**                      d. 1-d, 2-c, 3-b, 4-a
- 72.** 1. Herbicide Tolerant - a. Golden rice  
 2. Insect resistance - b. FlavrSavr Tomato  
 3. Genetic engineering - c. Basta  
 4. Biofortification - d. Bt Crops  
 a. 1-c, 2-d, 3-b, 4-a                      b. 1-a, 2-b, 3-c, 4-d                      c. 1-c, 2-d, 3-a, 4-b                      d. 1-d, 2-c, 3-b, 4-a

**EXCEL ★ XII BIO - BOTANY**

- ◆ Since this bacterium has the natural ability to transfer T-DNA region of its plasmid into plant genome, upon infection of cells at the wound site, it is also known as the natural genetic engineer of plants.

**28. Advantages of Agarose GEL Electrophoresis**

- ◆ The DNA bands can be readily detected at high sensitivity
- ◆ The bands of DNA in the gel are stained with the dye **Ethidium Bromide** and DNA can be detected as visible fluorescence illuminated in UV light will give orange fluorescence, which can be photographed.

**29. What is ELISA(Enzyme Linked Immuno Sorbent Assay)? write its use.**

- ◆ Elisa is a diagnostic tool for identification of pathogen species by using antibodies and diagnostic agents
- ◆ Use of ELISA in plant pathology especially for weeding out virus infected plants from large scale planting is well known

**30. Autoradiography**

A technique that captures the image formed in a photographic emulsion due to emission of light or radioactivity from a labelled component placed together with unexposed film

**31. Genome editing and CRISPR cas9**

- ◆ Genome editing is a group of technologies that has the ability to change and organism's DNA
- ◆ These technologies allow genetic material to be added, removed, or altered at particular locations in the genome

**32. What are the ways by which crops can be modified to be glyphosate-tolerant?**

- ◆ One strategy is to incorporate a soil bacterium gene that produces a glyphosate tolerant form of EPSPS( 5-enopyruvate shikimate-3 phosphate synthase)
- ◆ Another way is to incorporate a different soil bacterium gene that produces a glyphosate degrading enzyme.

**33. Write the role of Cry group of endotoxin**

- ◆ When insects eat the cotton plant the Cry toxin are dissolved in the insect's stomach
- ◆ The epithelial membranes of the gut block certain vital nutrients thereby sufficient regulation of potassium ions are lost in the insects and results in the death of epithelial cells in the intestine membrane which leads to the death of the larvae

**34. Disadvantages of Bt cotton**

- ◆ Cost of Bt cotton seed is high
- ◆ Effectiveness up to 120 days after that efficiency is reduced
- ◆ Affects pollinating insects and thus yield

**35. Write the method of normal Brinjal converted into Bt Brinjal**

The insertion of the crystal protein gene(Cry1Ac), along with other genetic elements such as promoters, terminators and an antibiotic resistance marker gene into the brinjal plant is accomplished using Agrobacterium-mediated genetic transformation.

**EXCEL ★ XII BIO - BOTANY**

2. **Selectable marker:** In addition to **ori** the vector requires a selectable marker, which helps in identifying and eliminating non-transformants and selectively permitting the growth of the transformants
3. **Cloning sites:** In order to link the alien DNA, the vector needs to have very few, preferably single, recognition sites for the commonly used restriction enzymes.

4. **Explain Replica plating technique**

- ◆ A technique in which the pattern of colonies growing on a culture plate is copied
- ◆ A sterile filter plate is pressed against the culture plate and then lifted. Then the filter is pressed against a second sterile culture plate
- ◆ This results in the new plate being infected with cell in the same relative positions as the colonies in the original plate
- ◆ Usually, the medium used in the second plate will differ from that used in the first
- ◆ It may include an antibiotic or exclude a growth factor. In this way, transformed cells can be selected.
- ◆ Then it is incubated at a specific temperature for the specified time
- ◆ The incubation may either be aerobic or anaerobic
- ◆ Withdrawal of product using downstream processing methods

5. **Explain Insertional Inactivation - Blue-White Colony Selection Method.**

- ◆ It is a powerful method used for screening of recombinant plasmid
- ◆ In this method, a reported gene **lacZ** is inserted in the vector.
- ◆ The lacZ encodes the  $\beta$  galactosidase and contains several recognition sites for restriction enzyme
- ◆  $\beta$  - galactosidase breaks a synthetic substrate called X-gal (5bromo-4-chloro-indolyl- $\beta$ -D-galacto-pyranoside) into an insoluble blue coloured product
- ◆ If a foreign gene will be inactivated. Therefore, no-blue colour will develop(white) because  $\beta$ -galactosidase is not synthesized due to activation of lacZ
- ◆ Therefore, the host cell containing r-DNA form white coloured colonies on the medium contain X-gal, whereas the other cells containing non-recombinant DNA will develop the blue coloured colonies
- ◆ On the basis of colony colour, the recombinants can be selected.

6. **Write the differences between three types of Blotting Techniques.**

	<b>Southern blotting</b>	<b>Northern blotting</b>	<b>Western blotting</b>
Name	Southern name of the inventor	Northern a misnomer	Western a misnomer
Separation of	DNA	RNA	Proteins
Denaturation	Needed	Not needed	Needed
Membrane	Nitrocellulose/ nylon	Amino benzyloxymethyl	Nitrocellulose
Hybridisation	DNA-DNA	RNA-DNA	Protein-antibody
Visualising	Autoradiogram	Autoradiogram	Dark room

**EXCEL ★ XII BIO - BOTANY**

- 39. Identify wrong statement regarding culture of protoplast**
- The cultures are incubated in light 1000-2000 lux at 25 °C
  - The cell wall formation occurs within 24-48 hours
  - New cells occurs between 2-7 days of culture
  - For solidification a gelling agent such as agar is added
- a. 1 and 2                      b. 3 and 4                      c. 1,2 and 3                      **d. 4 alone**
- 40. Match the following:**
- |                        |  |
|------------------------|--|
| I. Explant             | - a. Selected plant tissue transferred to culture medium |
| II. Differentiation-   | - b. Reversion of mature cells into meristem             |
| III. Dedifferentiation | - c. A cell develop into entire plant                    |
| IV. Totipotency        | - d. Biochemical and structural changes of cells         |
- a. I-a,II-b,III-c,IV-d      b. I-d, II-c,III-a,IV-b      **c. I-a,II-d,III-b,IV-c**      d. I-c,II-d, III-a,IV--b
- 41. The prevention of large scale loss of biological integrity \_\_\_\_\_**
- a. Biopatent                      **b. Biosafety**                      c. Bioethics                      d. Biofuel
- 41. The phenomenon of reversion of mature cells to meristematic state leading to callus formation is \_\_\_\_\_**
- a. Cell suspension culture                      b. Differentiation
- c. Dedifferentiation**                      d. Both b and c
- 42. Identify the wrong statement:**
- Glasswares and accessories are autoclaved
  - Culture rooms are UV radiated for 15 minutes
  - Explant are surface sterilized
  - Nutrient media must be electrophoresed
- a. 1 only                      b. 3 and 4                      c. 2 and 3                      **d. d only**
- 43. \_\_\_\_\_ can be useful for the production of secondary metabolites**
- a. organ culture                      b. Meristem culture
- c. Protoplast culture                      **d. Cell suspension culture**
- 44. Which statement is wrong, Regarding laboratory facilities for plant Tissue culture?**
- a. Washing facilities for glassware
- b. Medium preparation room with electrophoresis**
- c. High Efficiency Particulate Air filter to maintain aseptic condition
- d. Explant culture in a relative humidity of about 60%
- 45. Identify the correct sequence regarding steps involved in PTC**
- a. Inoculation - Induction - Sterilization - Hardening - Embryogenesis
- b. Sterilization - Incubation - Inoculation - Embryogenesis - Hardening
- c. Induction - Incubation - Inoculation - Hardening - Sterilization
- d. Sterilization - Inoculation - Incubation - Embryogenesis - Hardening**
- 46. Which of the following statement is correct related to protoplast?**
- a. Protoplasts are cells with a cell wall
- b. It unable to regenerate whole plants from single cell
- c. Protoplast not bound by plasma membrane
- d. Protoplast develop somatic hybrids**



**EXCEL ★ XII BIO - BOTANY****10. Embryoids**

Somatic embryogenesis is the formation of embryos from the callus tissue directly and these embryos are called Embryoids.

**11. Define Organogenesis**

The morphological changes occur in the callus leading to the formation of shoot and roots is called organogenesis

**12. Artificial Seeds**

Artificial seeds or synthetic seeds are produced by using embryoids obtained through in vitro culture

**13. What are the inert materials are used for coating the somatic embryoids to prepare artificial seeds?**

1. Agrose
2. Sodium alginate

**14. What is Biosafety?**

Biosafety is the prevention of large-scale loss of biological integrity, focusing both on ecology and human health.

**15. Define Bioethics**

Bioethics refers to the study of ethical issues emerging from advances in biology and medicine

**FOR CENTUM SCORERS****16. What are the fundamental principles used for Plant Tissue Culture technology?**

1. The plant part or explant must be selected and isolated from the rest of plant body
2. The explant must be maintained in controlled physically and chemically defined conditions

**17. Write about sterile room in plant tissue culture.**

Transfer area sterile room with laminar air-flow bench and a positive pressure ventilation unit called High Efficiency Particulate Air (HEPA) filter to maintain aseptic condition.

**18. Write the factors for the success of tissue culture**

The success of tissue culture lies in the composition of the growth medium, plant growth regulators and culture conditions such as temperature, pH, light and humidity

**19. Uses of Cell Suspension Culture**

- ◆ Production of secondary metabolites like alkaloids, flavonoids, terpenoids, phenolic compounds
- ◆ Production of recombinant proteins

**20. Germplasm conservation**

Germplasm conservation refers to the conservation of living genetic resources like pollen, seeds or tissue of plant material maintained (OR) Germplasm conservation resources is a part of collection of seeds and pollen that are stored in seed or pollen banks.

**21. Name the two banks involve in germplasm conservation**

1. Gene bank
2. DNA bank

**22. Cryoprotectants**

Protective agents like dimethyl sulphoxide, glycerol or sucrose are added before cryopreservation process. These protective agents are called cryoprotectants

## EXCEL ★ XII BIO - BOTANY

## CHAPTER

## 6

PRINCIPLES OF  
ECOLOGY

## EVALUATION

- Arrange the correct sequence of ecological hierarchy starting from lower to higher level.
  - Individual organism → Population Landscape → Ecosystem
  - Landscape → Ecosystem → Biome → Biosphere
  - Community → Ecosystem → Landscape → Biome
  - Population → organism → Biome → Landscape**
- Ecology is the study of an individual species is called
  - Community ecology
  - Autecology
  - Species ecology
  - Synecology
  - i only
  - ii only
  - i and iv only
  - ii and iii only**
- A specific place in an ecosystem, where an organism lives and performs its functions is
  - habitat
  - niche**
  - landscape
  - biome
- Read the given statements and select the correct option.
  - Hydrophytes possess aerenchyma to support themselves in water.
  - Seeds of *Viscum* are positively photoblastic as they germinate only in presence of light.
  - Hygroscopic water is the only soil water available to roots of plant growing in soil as it is present inside the micropores.
  - High temperature reduces use of water and solute absorption by roots.
  - i, ii, and iii only
  - ii, iii and iv
  - ii and iii only
  - i and ii only**
- Which of the given plant produces cardiac glycosides?
  - Calotropis**
  - Acacia
  - Nepenthes
  - Utricularia
- Read the given statements and select the correct option.
  - Loamy soil is best suited for plant growth as it contains a mixture of silt, sand and clay.
  - The process of humification is slow in case of organic remains containing a large amount of lignin and cellulose.
  - Capillary water is the only water available to plant roots as it is present inside the micropores.
  - Leaves of shade plant have more total chlorophyll per reaction centre, low ratio of chl a and chl b are usually thinner leaves.
  - i, ii and iii only**
  - ii, iii and iv only
  - i, ii and iv only
  - ii and iii only.
- Read the given statements and select the correct option.
 

**Statement A :** Cattle do not graze on weeds of *Calotropis*.

**Statement B :** *Calotropis* have thorns and spines, as defense against herbivores.

**EXCEL ★ XII BIO - BOTANY****41. How is rhytidome act as the structural defence by plants against fire?**

- ◆ Rhytidome is the structural defense by plants against fire.
- ◆ It is composed of multiple layers of suberized periderm, cortical and phloem tissues.
- ◆ It protects the stem against fire , water loss, invasion of insects and prevents infections by microorganisms.

**42. What is myrmecophily?**

- ◆ Sometimes, ants take their shelter on some trees such as Mango, Litchi, Jamun, Acacia etc.
- ◆ These ants act as body guards of the plants against any disturbing agent. the plants in turn provide food and shelter to these ants. this phenomenon is known as myrmecophily.
- ◆ Ex : Acacia and acacia ants.

**43. What is seed ball?**

- ◆ Seed ball is an ancient Japanese technique.
- ◆ Encasing seeds in a mixture of clay and soil humus (also in cow dung).
- ◆ This method is suitable for barren and degraded lands for tree regeneration.

**44. How is anemochory differ from zoochory?**

<b>Anemochory</b>	<b>Zoochory</b>
The dispersal fruits and seeds by wind	The dispersal fruits and seeds by Birds, animals and human.
Seeds are minute, have wings, feathery appendages etc.. for wind dispersal.	Seeds and fruit surface may have hooks, sticky hairs etc.. for dispersal

**45. What is co evolution?**

- ◆ The interaction between organisms, when continues for generations, involves reciprocal changes in genetic and morphological characters of both organisms.
- ◆ This type of evolution is called Co-evolution.
- ◆ Eg : Corolla length and proboscis length of butterflies and moths.

**46. Explain Raunkiaer classification in the world's vegetation based on the temperature.**

- ◆ Raunkiaer classification in the world's vegetation based on the temperature are four types.
  - Megatherms
  - Mesotherms
  - Microtherms
  - Hekistotherms.
- ◆ Based on the range of thermal tolerance, organisms are divided into eurythermals and stenothermals.

**Eurythermal**

- ◆ Organisms which can tolerate a wide range of temperature fluctuations.
- ◆ Example : Zostera

**Stenothermal**

- ◆ Organisms which can tolerate only small range of temperature variations.
- ◆ Example : Mango
- ◆ Mango plant does not grow in temperate countries like Canada and Germany.

**EXCEL ★ XII BIO - BOTANY****8. Define Ecosystem services proposed by Constanza et al.**

Ecosystem services are the benefits provided to human, through the transformation of resources (or) Environmental assets including land, water, vegetation and atmosphere into a flow of essential goods and services

**9. Name the various type of succession**

- |                          |                             |
|--------------------------|-----------------------------|
| 1. Primary succession    | 2. Secondary succession     |
| 3. Autogenic succession  | 4. Allogenic succession     |
| 5. Autotropic succession | 6. Heterotrophic succession |

**10. Name the three types of plant succession**

- |                     |                    |                    |
|---------------------|--------------------|--------------------|
| <b>1. Hydrosere</b> | <b>2. Mesosere</b> | <b>3. Xerosere</b> |
|---------------------|--------------------|--------------------|

**11. Name the three types of Xerosere**

- |                     |                    |                      |
|---------------------|--------------------|----------------------|
| <b>1. Lithosere</b> | <b>2. Halosere</b> | <b>3. Psammosere</b> |
|---------------------|--------------------|----------------------|

**12. Catabolism**

The decomposers produce some extracellular enzymes in their surroundings to break down complex organic and inorganic compounds into simpler ones, This is called catabolism

**FOR CENTUM SCORERS****13. How can decomposers helpful for plants?**

- ◆ Decomposers are organisms that decompose the dead plants and animals to release organic and inorganic nutrients into the environment which are again reused by plants
- ◆ Ex. Bacteria and Fungi

**14. Is energy dissipated during transfer in each trophic level? Justify**

- ◆ Yes
- ◆ Part of the energy obtained from the sun by producers is transferred to consumers and decomposers through each trophic level, while some amount of energy is dissipated in the form of heat.

**15. What is the basic unit of an ecosystem? what is its role?**

- ◆ Food web is the basic unit of an ecosystem, to maintain its stability in nature
- ◆ Which is also called homeostasis

**16. Why the pyramid of biomass in pond ecosystem is always inverted? justify**

In pond ecosystem, the bottom of the pyramid is occupied by producers, which comprise very small organisms possessing the least biomass and so, the value gradually increases towards the tip of the pyramid. Therefore, the pyramid of biomass is always inverted in shape

**17. Define Ecosystem Management**

It is a process that integrates ecological, socio economic and institutional factors into a comprehensive strategy in order to sustain and enhance the quality of the ecosystem to meet current and future needs

**EXCEL ★ XII BIO - BOTANY****5. Strategy of ecosystem management**

- ◆ It is used to maintain biodiversity of ecosystems
- ◆ It helps in indicating the damaged ecosystem
- ◆ It is used to recognize the inevitability of ecosystem change and plan accordingly
- ◆ It one of the tools used for achieving sustainability of ecosystem through sustainable development programme
- ◆ It is also helpful in identifying ecosystems which are in need of rehabilitation

**6. Characteristics of ecological succession**

- ◆ It is a systematic process which causes changes in specific structure of plant community
- ◆ It is resultant of changes of abiotic and biotic factors
- ◆ It transforms unstable community into a stable community
- ◆ It progress from simple food chain to complex food web
- ◆ It modifies the lower and simple life form to the higher life forms
- ◆ It creates inter-dependence of plants and animals

**7. Write the differences between primary and secondary succession**

	Primary succession	Secondary succession
1	Developing in an barren area	Developing in disturbed area
2	Initiated due to a biological or any other external factors	Starts due to external factors only
3	No soil, while primary succession starts	It starts where soil covers is already present
4	Pioneer species come from outside environment	Pioneer species develop from existing environment
5	It takes more time to complete	It takes comparatively less time to complete

**Table 1:** Differences between primary and secondary succession**8. Write short note on Biogeochemical cycle**

- ◆ Exchange of nutrients between organisms and their environment is one of the essential aspects of an ecosystem
  - ◆ All organisms require nutrients for their growth, development, maintenance and reproduction
  - ◆ Circulation of nutrients within the ecosystem or biosphere is known as biogeochemical cycle  
There are two basic types
1. **Gaseous cycle** - It includes atmospheric oxygen, carbon and nitrogen cycles
  2. **Sedimentary cycle** - It includes the cycles of phosphorus, sulphur and calcium - which are present as sediments of earth



**EXCEL ★ XII BIO - BOTANY**

- ◆ Nutrient cycling between species improves and organic matter is maintained.
- ◆ Trees provide micro climate for crops.
- ◆ Maintain O<sub>2</sub> – CO<sub>2</sub> balanced, atmospheric temperature and relative humidity.
- ◆ Suitable for dry land. (rainfall is minimum) It is a good system for alternate land use pattern.
- ◆ Multipurpose trees are used for wood pulp, tanning, paper and firewood industries.
- ◆ Ex : Acacia.
- ◆ It can be used as farm forestry, mixed forestry, shelter belts and linear strip plantation.

**ADDITIONAL QUESTIONS AND ANSWERS**

- ❖ The gases that capture heat are called \_\_\_\_\_ - **Green House Gases**
- ❖ Coral bleaching observed in \_\_\_\_\_ of Tamil Nadu - **Gulf of Mannar**
- ❖ Methane is \_\_\_\_\_ times as effective as Co<sub>2</sub> at trapping heat in the atmosphere - **20 times**
- ❖ \_\_\_\_\_ is produced by cars with catalytic converter - **N<sub>2</sub>O**
- ❖ \_\_\_\_\_ is a region of Earth's atmosphere that absorbs Sun's UV rays - **Ozone layer**
- ❖ The thickness of the ozone is measured in terms of \_\_\_\_\_ - **Dobson Units**
- ❖ World Ozone Day is \_\_\_\_\_ - **September 16**
- ❖ Clean Development Mechanism is defined in the \_\_\_\_\_ protocol - **Kyoto protocol**
- ❖ The production of woody plants combined with pasture is referred to \_\_\_\_\_ system - **Silvopasture**
- ❖ The Tank foreshore plantations have been a major source of \_\_\_\_\_ in T.N - **Firewood**
- ❖ The man who single handedly created a dense forest is \_\_\_\_\_ - **Jadav "Molai" Payeng**
- ❖ Forest man of India - **Jadav Payeng**
- ❖ Forest man of India award given by - **Indian Institute of forest Management**
- ❖ In 2015 he was honoured with - **Padma Shri Award**
- ❖ Eichhornia plant decreases the oxygen content of the waterbodies leads - **Eutrophication**
- ❖ Chipko movement started by - **Sundarla Bahuguna**
- ❖ Number of sacred grooves were documented throughout Tamil Nadu - **448**
- ❖ Appiko movement started in \_\_\_\_\_ state - **Karnataka**
- ❖ Any species found restricted to a specified geographical area is referred - **Endemic**
- ❖ Carbon capture and storage is also known as \_\_\_\_\_ - **Geological sequestration**
- ❖ \_\_\_\_\_ is a kind of charcoal used as a soil amendment - **Biochar**
- ❖ \_\_\_\_\_ is a satellite navigation system used to determine the ground position of an object - **Geographic Information system**

**EXCEL ★ XII BIO - BOTANY****16. Write about the advantages of Alien invasive species - i.e Prosopis juliflora**

- ◆ It is used to arrest wind erosion and stabilize sand dunes on coastal and desert areas
- ◆ It can absorb hazardous chemicals from soil and it is the main source of charcoal

**17. What is In-situ conservation ? Write with examples**

- ◆ It means conservation and management of genetic resources in their natural habitats
- ◆ Here the plant or animal species are protected within the existing habitat
- ◆ Ex. Forest trees, medicinal and aromatic plants under threat are conserved by this method

**17. Uses of sacred groves**

These groves provide a number of ecosystem services to the neighbourhood like protecting watershed, fodder, medicinal plants and micro climate control

**18. Ex-situ conservation**

- ◆ It is method of conservation where species are protected outside their natural environment
- ◆ This includes establishment of botanical gardens, zoological parks, conservation strategies such as gene, pollen, seed, in-vitro conservation, cryo preservation, seedling, tissue culture and DNA banks

**19. What are the important reasons for threatened majority of endemic species?**

Majority of endemic species are threatened due to their narrow specific habitat, reduced seed production, low dispersal rate, less viable nature and human interferences

**20. Name the plant types have ability to mitigate carbon-di-oxide**

1. Macroalgae
2. Marine grasses
3. Mangroves

**21. Carbon sink**

- ◆ Any system having the capacity to accumulate more atmospheric carbon during a given time interval than releasing Co<sub>2</sub>
- ◆ Ex. Forest and Landfills

**22. Can lakes sequestration of carbon? Write other services of lakes**

- ◆ Yes. lakes can sequestration of carbon
- ◆ In terms of services lakes offer sustainable solutions to key issues of water management and climatic influences and benefits like nutrient retention, influencing local rainfall, removal of pollutants, phosphorus and nitrogen and carbon sequestration

**23. Define Environmental Impact Assessment(EIA)**

- ◆ Environmental Impact Assessment is an environmental management tool
- ◆ It helps to regulate and recommended optimal use of natural resources with minimum impact on ecosystem and biotic communities

**24. What is Biodiversity Impact Assessment?**

Biodiversity Impact Assessment can be defined as a decision supporting tool to help biodiversity inclusive of development, planning and implementation

**EXCEL ★ XII BIO - BOTANY****40. Identify the correct statements regarding Hybridization**

1. self pollinated crops - Intravarietal hybridization
  2. self pollinated and cross pollinated crops - Intervarietal hybridization
  3. *Gossypium hirsutum* X *Gossypium arboreum* - Intergeneric hybridization
  4. Crosses between two different genera is Interspecific hybridization
- a. 1 and 3                      b. 2 and 4                      **c. 1 and 2**                      d. 3 and 4

**41. Identify the incorrect statements regarding polyploidy breeding**

1. Polyploidy often increased heterozygosity
  2. Decreased tolerance to both biotic and abiotic stresses
  3. Buffering of deleterious mutations
  4. It reduced fertility due to meiotic error
- a. 1 and 3                      b. 2 and 4                      **c. 1 and 2**                      **d. 2 alone**

**42. Fine the correct statement regarding seedweed liquid fertilizer**

1. It is organic and also eco-friendly
  2. It react with metal in the soil
  3. It is useful for organic gardening
  4. Improves resistance of plants to frost and disease
- a. All the above**                      b. 1,2 and 3                      c. 2 and 4                      d. 1 alone

**Match the following:**

43. 1. Liquid fertilizer                      - a. Trichoderma  
 2. Bio-pesticides                      - b. provides carbohydrates  
 3. Green Manuring                      - c. Increase nitrogen in the soil  
 4. Beauveria                      - d. Entomo-pathogenic fungus
- a. 1-b, 2-a, 3-d, 4-c                      b. 1-d, 2-d, 3-b, 4-a                      **c. 1-b, 2-a, 3-c, 4-d**                      d. 1-c, 2-d, 3-a, 4-b

**44. Identify the wrong pair**

- a. N<sub>2</sub> fixing biofertilizer**                      - **Amantia**  
**b. P. Solubilizing biofertilizer**                      - Penicillium  
**c. P. Mobilizing Biofertilizers**                      - Glomus  
**d. N<sub>2</sub> fixing Bio fertilizer**                      - Anabaena azolla

**Find out the ODD word**

45. a. Mass selection                      b. Clonal selection                      c. Pure-line selection                      **d. Natural selection**
46. a. Emasculation                      **c. Bagging**                      c. Crossing                      **d. Green manuring**
47. **Azolla is best suited biofertilizer for cultivation**  
 a. Wheat                      b. Cotton                      c. Sugar cane                      **d. Paddy**
48. **Superiority of hybrids over parents only in vegetative growth but not in yield and adaptation**  
 a. Euheterosis                      b. Mutational Euheterosis  
 c. Balanced Euheterosis                      **d. Pseudoheterosis**
49. **Species are renewable sources that have provided food and other benefits to human**  
**a. Domesticated**                      b. Wild                      c. Amphibious                      d. Xerophytic
50. **Plant breeding methods**  
 a. Genetic Engineering                      b. Plant tissue culture  
 c. Protoplasmic fusion                      **d. All the above**

**EXCEL ★ XII BIO - BOTANY****FOR CENTUM SCORERS****11. Relationship between humans and plants**

- ◆ From the every early times, human beings have co-existed with plants which played a vital role in their survival
- ◆ Through a long process of trial and error, our ancestors have selected hundreds of wild plants from the various parts of the world for their specific use
- ◆ The knowledge of the plants and its applications have led to the development of the humans and their civilization in many ways

**12. Differentiate Green in-situ manuring and Green leaf manuring**

- ◆ Green in-situ manuring refers to the growing of green manuring crops in the border rows or as intercrops along with the main crops. Ex. Green gram
- ◆ Green leaf manuring is the application of green leaves and twigs of trees, shrubs, plants growing in wastelands and field bunds. Ex. Pongamia

**13. Name the techniques were designed to develop improved crop varieties based on the principles of genetics and cytogenetics breeding methods**

- ◆ Selection ◆ Introduction ◆ Hybridization ◆ Ploidy ◆ Mutation ◆ Tissue culture

**14. Conventional Plant Breeding Methods**

It develops new plant varieties by the process of selection and seeks to achieve expression of genetic material which is already present within the species

**15. How can be examined during Plant Introduction? Justify**

- ◆ All the introductions must be free from presence of weeds, insects and disease causing organisms . This has be carefully examined by the process called ‘ quarantine’
- ◆ Quarantine, a strict isolation imposed to prevent the spread of disease

**16. What is Secondary introduction?**

When the introduced variety is subjected to selection to isolate a superior variety and hybridised with a local variety to transfer one or a few characters to them

**17. Define Mass selection**

In mass selection a large number of plants of similar phenotype or morphological characters are selected and their seeds are mixed together to constitute a new variety

**18. Disadvantage of pureline selection**

- ◆ This type is that the new genotypes are never created
- ◆ Never created and they are less adaptable and
- ◆ Less stable to the environmental fluctuations

**19. Mutational Euheterosis**

Simplest type of euheterosis and results from the sheltering or eliminating of the deleterious, unfavourable often lethal, recessive, mutant genes by their adaptively superior dominant alleles in cross pollinated crops

**EXCEL ★ XII BIO - BOTANY****CHAPTER****10****ECONOMICALLY  
USEFUL PLANTS AND  
ENTREPRENEURIAL BOTANY****EVALUATION**

1. Consider the following statements and choose the right option.
  - i) Cereals are members of grass family.
  - ii) Most of the food grains come from monocotyledon.
  - a) (i) is correct and (ii) is wrong
  - b) Both (i) and (ii) are correct
  - c) (i) is wrong and (ii) is correct
  - d) Both (i) and (ii) are wrong
2. **Assertion :** Vegetables are important part of healthy eating.  
**Reason :** Vegetables are succulent structures of plants with pleasant aroma and flavours.
  - a) Assertion is correct, Reason is wrong
  - b) Assertion is wrong, Reason is correct
  - c) Both are correct and reason is the correct explanation for assertion.
  - d) Both are correct and reason is not the correct explanation for assertion.
3. **Groundnut is native of**
  - a) Philippines
  - b) India
  - c) North America
  - d) Brazil
4. **Statement A: Coffee contains caffeine Statement B: Drinking coffee enhances cancer**
  - a) A is correct, B is wrong
  - b) A and B – Both are correct
  - c) A is wrong, B is correct
  - d) A and B – Both are wrong
5. **Tectona grandis is coming under family**
  - a) Lamiaceae
  - b) Fabaceae
  - c) Dipterocarpaceae
  - d) Ebenaceae
6. **Tamarindus indica is indigenous to**
  - a) Tropical African region
  - b) South India, Sri Lanka
  - c) South America, Greece
  - d) India alone
7. **New world species of cotton**
  - a) Gossypium arboreum
  - b) G. herbaceum
  - c) Both a and b
  - d) G. barbadense
8. **Assertion : Turmeric fights various kinds of cancer**  
**Reason : Curcumin is an anti-oxidant present in turmeric**
  - a) Assertion is correct, Reason is wrong
  - b) Assertion is wrong, Reason is correct
  - c) Both are correct
  - d) Both are wrong
9. **Find out the correctly matched pair.**
  - a) Rubber - Shorea robusta
  - b) Dye - Lawsonia inermis
  - c) Timber - Cyperus papyrus
  - d) Pulp - Hevea brasiliensis
10. **Observe the following statements and pick out the right option from the following**  
Statement I – Perfumes are manufactured from essential oils.  
Statement II – Essential oils are formed at different parts of the plants.



**EXCEL ★ XII BIO - BOTANY****67. Identify the correct statements regarding Sorghum**

- |                              |   |
|------------------------------|---|
| 1. Rich in calcium and Iron  | 2. Source of fermented alcoholic beverage |
| 3. Have less glycaemic index | 4. Popular nutrient drink                 |
| <b>a. 1 and 2</b>            | <b>b. 3 and 4</b>                         |
| <b>c. 1,2 and 3</b>          | <b>d. 1,2 and 4</b>                       |

**68. Identify the wrong statement regarding Foxtail millet**

- |                           |   |
|---------------------------|---|
| 1. Strengthening of heart | 2. Given to lactating mother            |
| 3. Reduce blood sugar     | 4. Good diuretic and cures constipation |
| <b>a. 1 and 2</b>         | <b>b. 3 and 4</b>                       |
| <b>c. 1,2 and 3</b>       | <b>d. 1,2 and 4</b>                     |

**69. Identify the correct statement**

- Pepper also enhances the bio-absorption of medicines
- Curcumin is a very good anti-oxidant
- Capsaicin used in pain relieving palms
- d. All the above**

**70. Aloe vera has these properties such as**

- |                   |                   |                     |                         |
|-------------------|-------------------|---------------------|-------------------------|
| 1. Antibacterial  | 2. Antioxidant    | 3. Antifungal       | 4. Antiseptic           |
| <b>a. 1 and 2</b> | <b>b. 3 and 4</b> | <b>c. 1,2 and 3</b> | <b>d. All the above</b> |

**Match the following :**

- 71.** 1. Coffee - a. Poaceae  
 2. Groundnut - b. Arecaceae  
 3. Palmyra - c. Fabaceae  
 4. Sugarcane - d. Rubiaceae
- a. 1-a, 2-b, 3-c, 4-d**      **b. 1-d, 2-c, 3-a, 4-b**      **c. 1-d, 2-c, 3-b, 4-a**      **d. 1-b, 2-a, 3-d, 4-c**
- 72.** 1. Turmeric - a. Solanaceae  
 2. Chillies - b. Piperaceae  
 3. Cardamom - c. Malvaceae  
 4. Cotton - d. Zingiberaceae
- a. 1-a, 2-b, 3-c, 4-d**      **b. 1-d, 2-a, 3-d, 4-c**      **c. 1-d, 2-c, 3-b, 4-a**      **d. 1-b, 2-a, 3-d, 4-c**
- 73.** 1. King of Spices - a. Cardamom      2. Dates of India - b. Nilavembu  
 3. King of Bitter - c. Tamarind      4. Mouth freshener - d. Pepper
- a. 1-a, 2-b, 3-c, 4-d**      **b. 1-d, 2-c, 3-a, 4-b**      **c. 1-d, 2-c, 3-b, 4-a**      **d. 1-b, 2-a, 3-d, 4-c**

**Very Short Answers ( 2 Marks )****1. Name the nutrients provided by cereals**

The nutrients provided by cereals include carbohydrates, proteins, fibres and a wide range of vitamins and minerals

**2. Name the two types of cereals**

- Major cereals
- Minor cereals

**3. Write the uses of Foxtail millet**

- ◆ It supports in strengthening of heart and improves eye sight
- ◆ Thinai porridge is given to lactating mother

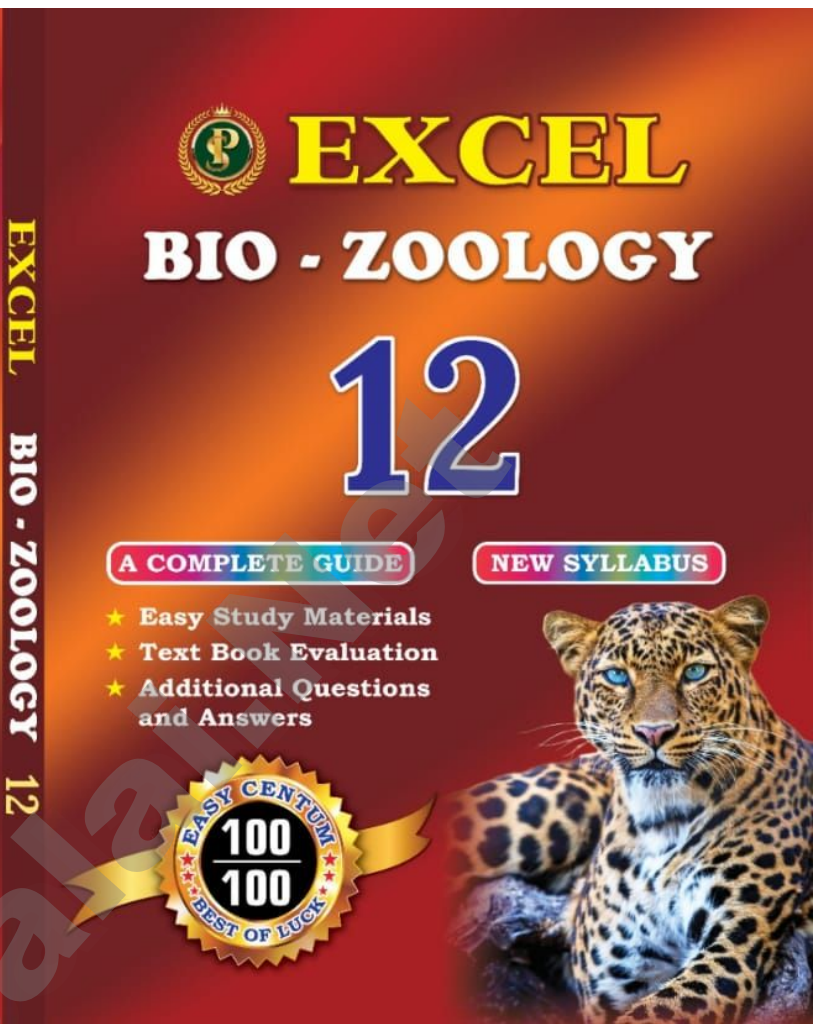


**Your Success  
Is  
Our Achievement**

**WINNER**  
**SUCCESS**  
**PROGRESS**  
**EXECUTED**  
**PLAN**  
**IDEA**

**"ARISE AWAKE  
AND  
STOP NOT TILL  
THE GOAL  
REACHED"**

Mobile : 8148527809




**EXCEL**  
**BIO - ZOOLOGY**  
**12**

**A COMPLETE GUIDE**      **NEW SYLLABUS**

- ★ Easy Study Materials
- ★ Text Book Evaluation
- ★ Additional Questions and Answers

**EASY CENTUM**  
**100**  
**100**  
**BEST OF LUCK**



## EXCEL GUIDE - XII BIO - ZOOLOGY

- ❖ from rete testis sperm enter \_\_\_\_ through the vas deferentia
  - ❖ \_\_\_\_ is the terminal portion of male reproductive system
  - ❖ Number of seminal vesicles
  - ❖ \_\_\_\_ enhances sperm motility
  - ❖ \_\_\_\_ is present inferior to the prostate gland
  - ❖ \_\_\_\_ encircle the urethra
  - ❖ prostate gland located just below the \_\_\_\_
  - ❖ glans penis is covered by a loose fold of skin called
  - ❖ The ovary is an elliptical structure about \_\_\_\_ cm long
  - ❖ Each ovary is covered by \_\_\_\_ epithelium
  - ❖ ovarian stroma encloses by \_\_\_\_
  - ❖ Below germinal epithelium is a dense connective tissue called
  - ❖ Ovary attached to pelvic wall by an ovarian ligament called
  - ❖ The proximal part of the fallopian tube bears a funnel shaped
  - ❖ The edges of the infundibulum have many finger like projections called
  - ❖ After ovulation, \_\_\_\_ helps in collection of the ovum
  - ❖ The infundibulum leads to a wider central portion called
  - ❖ The last part of the oviduct is the \_\_\_\_
  - ❖ The uterus opens into the vagina through a narrow \_\_\_\_
  - ❖ The \_\_\_\_ along with vagina forms the birth canal
  - ❖ Outermost serous layer of uterus is \_\_\_\_
  - ❖ Middle muscular layer of uterus is \_\_\_\_
  - ❖ Inner glandular layer of uterus is \_\_\_\_
  - ❖ The endometrium undergoes cyclic changes during the \_\_\_\_
  - ❖ \_\_\_\_ exhibits strong contractions during parturition
  - ❖ \_\_\_\_ are located posterior to the left and right of the opening of the vagina
  - ❖ Bartholin's glands homologous to the \_\_\_\_ of the male
  - ❖ \_\_\_\_ glands around the lower end of the urethra
  - ❖ Lubricating fluid of skene's gland homologous to the \_\_\_\_ of male
  - ❖ External genitalia partially closed by ring of tissue called
  - ❖ \_\_\_\_ is often torn during the first coitus
  - ❖ \_\_\_\_ modified sweat glands
  - ❖ \_\_\_\_ reduce cracking of the skin of the nipple
  - ❖ \_\_\_\_ is rudimentary in the males and functional in the females
  - ❖ \_\_\_\_ is the process of formation of gametes
  - ❖ \_\_\_\_ plays the most significant role in the process of gametogenesis
  - ❖ \_\_\_\_ migrate into the testes and become immature germ cells
  - ❖ sperm mother cells otherwise called
  - ❖ In the first stage spermatogonia migrate among \_\_\_\_ towards central lumen of seminiferous tubules
- Epididymis
  - urethra
  - 2 ( a pair )
  - Vesiculase
  - Bulbo urethral glands
  - prostate gland
  - urinary bladder
  - foreskin(or)prepuce
  - 2-4 cm
  - cuboidal
  - germinal epithelium
  - Tunica albuginea
  - mesovarium
  - Infundibulum
  - fimbriae
  - fimbriae
  - ampulla
  - Isthmus
  - cervix
  - cervical canal
  - perimetrium
  - myometrium
  - endometrium
  - menstrual cycle
  - myometrium
  - Bartholin's glands
  - Bulbourethral gland
  - skene's glands
  - prostate gland
  - Hymen
  - Hymen
  - mammary glands
  - sebaceous glands
  - mammary glands
  - gametogenesis
  - meiosis
  - primordial germ cells
  - spermatogonia
  - sertoli cells

## EXCEL GUIDE - XII BIO - ZOOLOGY

- ❖ \_\_\_\_ spermatocyte which are haploid with 23 chromosomes - **secondary**
- ❖ The spermatids transformed in to mature spermatozoa by the process called \_\_\_\_ - **spermiogenesis**
- ❖ The whole process of spermatogenesis takes about \_\_ days - **64 days**
- ❖ spermatogenesis starts at the age of puberty and initiated due to release \_\_\_\_ by the hypothalamus - **Gonadotropin releasing hormone**
  
- ❖ Testicular growth and enhances the production of Androgen Binding protein by the - **Sertoli cells**
- ❖ LH acts on the Leydig cells and stimulates synthesis of \_\_\_\_ - **Testosterone**
- ❖ Acrosome of the sperm formed by \_\_\_\_ - **Golgi body**
- ❖ Acrosome of sperm contains a proteolytic enzyme called - **Hyaluronidase**
- ❖ \_\_\_\_ helps to penetrate the sperm into the ovum - **Hyaluronidase**
- ❖ \_\_\_\_ gives rise to the axial filament of the sperm - **Distal centriole**
- ❖ In sperm mitochondria spirally twisted around axial filament by - **Nebkeren**
- ❖ \_\_\_\_ produces energy in the form of ATP for the movement - **mitochondrial spiral (or) Nebenkern.**
  
- ❖ other name of central axial filament (in the tail of sperm) - **Axoneme**
- ❖ \_\_\_\_ is the process of development of female gamete (or) ovum - **Oogenesis**
- ❖ Egg mother cells otherwise called \_\_\_\_ - **oogonia**
- ❖ The oogonial cells start dividing and enter into \_\_\_\_ of meiosis I - **prophase I**
- ❖ \_\_\_\_ are temporarily arrested at prophase I - **primary oocyte**
- ❖ primary oocyte surrounded by single layer of granulosa cells to form - **primary follicles**
- ❖ primary follicle surrounded by granulosa cells and theca form \_\_\_\_ - **secondary follicle**
- ❖ The tertiary follicle eventually becomes a mature follicle or \_\_\_\_ - **graafian follicle**
- ❖ \_\_\_\_ is non-cleidoic ,alecithal type - **Human ovum**
- ❖ \_\_\_\_ of human ovum otherwise called ooplasm - **cytoplasm**
- ❖ ooplasm contains a large nucleus called the \_\_\_\_ - **germinal vesicle**
- ❖ Human ovum is surrounded by \_\_\_\_ coverings - **three**
- ❖ \_\_\_\_ present between vitelline membrane and zona pellucida - **perivitelline space**
- ❖ menstrual cycle comprises \_\_\_\_ phases - **four**
- ❖ \_\_\_\_ is an indicator of normal reproductive phase - **cyclic menstruation**
- ❖ menstrual flow is due to the breakdown of \_\_\_\_ lining of uterus - **endometrium**
- ❖ breakdown of endometrium and blood vessels due to decline of \_\_\_\_ & \_\_\_\_ - **progesterone & oestrogen**
- ❖ In menstrual cycle \_\_\_\_ phase otherwise called proliferative phase - **follicular**
- ❖ The follicular phase extends from the 5th day of the cycle until the time of \_\_\_\_ - **ovulation**
- ❖ During follicular phase the \_\_\_\_ regenerates through proliferation - **endometrium**
- ❖ \_\_\_\_ & \_\_\_\_ hormone attain peak level in the middle of the menstrual cycle - **LH & FSH**

## EXCEL GUIDE - XII BIO - ZOOLOGY

37. The secondary spermatocyte undergo second meiotic division to produce
- four diploid spermatids
  - one polar body and one spermatids
  - four haploid spermatids**
  - four haploid spermatozoa
38. chromosome number in primary spermatocyte
- haploid
  - diploid
  - haploid with 23 pairs
  - diploid with 23 pairs**
39. chromosome number in secondary spermatocyte
- diploid
  - haploid with 23 chromosomes**
  - haploid with 23 pairs
  - diploid with 23 pairs
40. At the end spermatogenesis, secondary spermatocyte produce \_\_\_ haploid spermatids
- one
  - two
  - three
  - four**
41. spermiogenesis means
- formation of spermatids
  - spermatogonia forms primary spermatocyte
  - spermatid transformed into spermatozoa**
  - formation of testis
42. which activity helps in the process of spermiogenesis
- FSH stimulates testicular growth
  - FSH enhances the production of Lutenizing hormone
  - FSH enhances the production of Androgen Binding Protein by sertoli cells
  - Leydig cells stimulates the synthesis of Testosterone
- 1 alone
  - 2 alone
  - 1 & 3**
  - 3 & 4
43. \_\_\_ is present at tip of the nucleus of the sperm
- Acrosome**
  - spermatogonia
  - axeneme
  - polar body
44. \_\_\_ is otherwise called Axoneme
- mitochondrial spiral
  - central axial filament**
  - Nebenkern
  - proximal filament
45. Out of the following which one disintegrates during Oogenesis
- 1st polar body alone
  - 2nd polar body
  - graffian follicle
  - Both polar bodies**
46. The antrum present in the \_\_\_ follicle
- primary
  - secondary**
  - tertiary
  - Both secondary and tertiary
47. Find out the correct statement, If fertilization does not take place
- second meiotic division completed, egg will develop
  - After first meiotic division completed, egg disintegrates
  - second meiotic division is never completed and the egg disintegrates**
  - all the above
48. At the end of Oogenesis, each primary oocyte gives rise to \_\_\_\_\_
- Only one haploid ovum**
  - four haploid ovum
  - Only one diploid ovum
  - four diploid ovum



## EXCEL GUIDE - XII BIO - ZOOLOGY

## 49. Choose correct answers

- |                               |                         |
|-------------------------------|-------------------------|
| 1. Cytoplasm of ovum          | - a. corona radiata     |
| 2. inner transparent membrane | - b. zona pellucida     |
| 3. middle thick membrane      | - c. vitelline membrane |
| 4. outer thick membrane       | - d. ooplasm            |

- |                            |                             |
|----------------------------|-----------------------------|
| a) I. d II. c III. b IV. a | b) I. d II. c III. a IV. b  |
| c) I. a II. b III. c IV. d | d) I. c II. a III. b. IV. d |

## 50. Choose the correct order of menstrual cycle:-

- |                              |                                      |               |               |
|------------------------------|--------------------------------------|---------------|---------------|
| 1. ovulatory phase           | 2. follicular or proliferative phase |               |               |
| 3. Luteal or secretory phase | 4. Menstrual phase                   |               |               |
| a) 1, 2, 3, 4                | b) 1, 3, 2, 4                        | c) 4, 2, 1, 3 | d) 2, 4, 3, 1 |

## 51. Menstrual flow due to the

1. breakdown of endometrial lining of the uterus
2. breakdown of endometrial blood vessels
3. decline in the level of progesterone & oestrogen
4. increasing level of progesterone & oestrogen

- |             |          |          |                  |
|-------------|----------|----------|------------------|
| a) 1, 2 & 3 | b) 1 & 2 | c) 3 & 4 | d) all the above |
|-------------|----------|----------|------------------|

## 52. Absence of menstruation due to

- |              |           |                      |            |
|--------------|-----------|----------------------|------------|
| 1. pregnancy | 2. stress | 3. hormonal disorder | 4. anaemia |
|--------------|-----------|----------------------|------------|

- |             |          |          |                  |
|-------------|----------|----------|------------------|
| a) 1, 2 & 3 | b) 1 & 3 | c) 2 & 4 | d) all the above |
|-------------|----------|----------|------------------|

## 53. The endometrium regenerates through proliferation in the \_\_\_\_ phase

- |                    |                     |
|--------------------|---------------------|
| a. Menstrual phase | b. Follicular phase |
| c. Ovulatory phase | d. Luteal phase     |

## 54. In the follicular phase, follicle cells stimulated by \_\_\_\_ hormones

- |        |             |       |                 |
|--------|-------------|-------|-----------------|
| a. FSH | b. FSH & LH | c. LH | d. progesterone |
|--------|-------------|-------|-----------------|

## 55. In the \_\_\_\_ phase ovary and uterus are induced by secretion of FSH and LH

- |                     |                    |
|---------------------|--------------------|
| a. follicular phase | b. menstrual phase |
| c. ovulatory phase  | d. luteal phase    |

## 56. FSH and LH increase gradually stimulates \_\_\_\_ and \_\_\_\_ by the follicle cells.

- |  |                      |
|--|----------------------|
| a. follicular development and secretion of oestrogen | d. none of the above |
| b. uterus and endometrium development                |                      |
| c. menopause and menarche                            |                      |

## 57. LH and FSH attain peak level in the middle of the menstrual cycle

- |                  |                   |                   |                   |
|------------------|-------------------|-------------------|-------------------|
| a. about 5th day | b. about 10th day | c. about 14th day | d. about 28th day |
|------------------|-------------------|-------------------|-------------------|

## 58. LH surge induces the rupture of the

- |                      |                        |
|----------------------|------------------------|
| a. graffian follicle | b. release of the ovum |
| c. Both a & b        | d. none of the above   |

## 59. Due to LH surge, ovum release from the ovary wall into the \_\_\_\_

- |                     |                      |                  |                    |
|---------------------|----------------------|------------------|--------------------|
| a. abdominal cavity | b. peritoneal cavity | c. pelvic cavity | d. pectoral cavity |
|---------------------|----------------------|------------------|--------------------|

## EXCEL GUIDE - XII BIO - ZOOLOGY

**CHAPTER****3****REPRODUCTION  
HEALTH****EVALUATION**

- Which of the following is correct regarding HIV, hepatitis B, gonorrhoea and trichomoniasis?
  - Gonorrhoea is a STD whereas others are not.
  - Trichomoniasis is a viral disease whereas others are bacterial.
  - HIV is a pathogen whereas others are diseases.**
  - Hepatitis B is eradicated completely whereas others are not.
- Which one of the following groups includes sexually transmitted diseases caused by bacteria only?
  - Syphilis, gonorrhoea and candidiasis
  - Syphilis, chlamydia and gonorrhoea**
  - Syphilis, gonorrhoea and trichomoniasis
  - Syphilis, trichomoniasis and pediculosis.
- Identify the correct statements from the following
  - Chlamydia is a viral disease.
  - Gonorrhoea is caused by a spirochaete bacterium, Treponema palladium.
  - The incubation period for syphilis is 2 to 14 days in males and 7 to 21 days in females.
  - Both syphilis and gonorrhoea are easily cured with antibiotics.**
- A contraceptive pill prevents ovulation by
  - blocking fallopian tube
  - inhibiting release of FSH and LH**
  - stimulating release of FSH and LH
  - causing immediate degeneration of released ovum.
- The approach which does not give the defined action of contraceptive is

a)	Hormonal contraceptive	Prevents entry of sperms, prevent ovulation and fertilization
<b>b)</b>	<b>Vasectomy</b>	<b>Prevents spermatogenesis</b>
c)	Barrier method	Prevents fertilization
d)	Intra uterine device	Increases phagocytosis of sperms, suppresses sperm motility and fertilizing capacity of sperms

- Read the given statements and select the correct option.  
**Statement 1:** Diaphragms, cervical caps and vaults are made of rubber and are inserted into the female reproductive tract to cover the cervix before coitus.

## EXCEL GUIDE - XII BIO - ZOOLOGY

**Statement 2:** They are chemical barriers of conception and are reusable.

- Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.
- Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.
- Statement 1 is correct but statement 2 is incorrect.**
- Both statements 1 and 2 are incorrect.

7. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Copper releasing IUD	i) LNG-20
B. Hormone releasing	ii) Lippes loop IUD
C. Non medicated IUD	iii) Saheli
D. Mini pills	iv) Multiload-375

- A-(iv), B-(ii), C-(i), D-(iii)
- A-(iv), B-(i), C-(iii), D-(ii)
- A-(i), B-(iv), C-(ii), D-(iii)
- A-(iv), B-(i), C-(ii), D-(iii).**

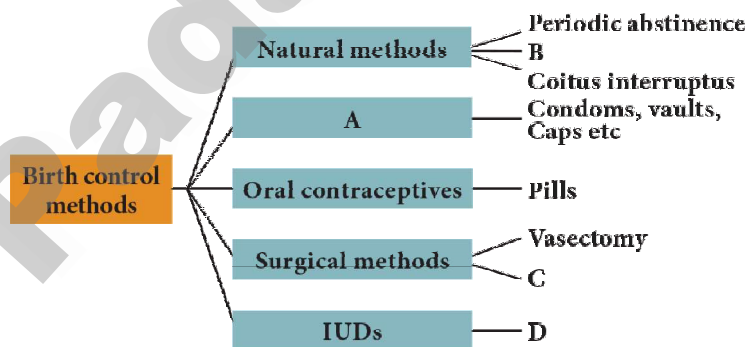
8. Select the incorrect action of hormonal contraceptive pills from the following

- Inhibition of spermatogenesis.**
- Inhibition of ovulation.
- Changes in cervical mucus impairing its ability to allow passage and transport of sperms.
- Alteration in uterine endometrium to make it unsuitable for implantation.

9. What is amniocentesis? Why a statutory ban is imposed on this technique?

Amniocentesis, the foetal sex determination test, is banned because this technique is misused for knowing the sex of the foetus followed by female foeticide

10. Select the correct term from the bracket and complete the given branching tree



(Barriers, Lactational amenorrhoea, CuT, Tubectomy)

**Answer: A. Barriers B. Lactational amenorrhoea C. Tubectomy D. CuT.**

11. Correct the following statements

- ❖ Transfer of an ovum collected from donor into the fallopian tube is called ZIFT.
- ❖ Transferring of an embryo with more than 8 blastomeres into uterus is called GIFT.
- ❖ Multiload 375 is a hormone releasing IUD.

## EXCEL GUIDE - XII BIO - ZOOLOGY

- 31. Incubation period of AIDS**  
 a. 2 to 3 weeks or upto 6 weeks                      b. 1-8 months  
 c. 2 - 21 days (average 6 days)                      d. **2 to 6 weeks even more than 10 years**
- 32. Identify the wrong statement regarding Cervical cancer**  
 a. **pectoral pain**    b. pelvic pain  
 c. increased vaginal discharge                      d. abnormal vaginal bleeding
- 33. Cervical cancer can be diagnosed by**  
 a. Papanicolaou smear(PAP smear)                      b. combined with an HPV test  
 c. **Both a & b**    d. a alone
- 34. Stages of cervical cancer can be determined by**  
 1. X-Ray                      2. CT scan                      3. MRI scan                      4. PET scan  
 a. 1 & 2 alone                      b. 2 & 3 alone                      c. 1 & 4 alone                      d. **all the above**
- 35. Cervical cancer can not be treated by \_\_\_\_ method**  
 a. radiation therapy    b. surgery                      c. chemotherapy                      d. **laproscopy**
- 36. out of the following which one minimize the risk of cervical cancer**  
 1. Healthy diet & regular exercise                      2. avoiding tobacco usage  
 3. preventing early marriages                      4. practicing monogamy  
 a. 1 alone                      b. 2 alone                      c. 3 & 4                      d. **all the above**
- 37. \_\_\_\_ damages many aspects of health especially the menstrual cycle**  
 a. Reproduction    b. Life style                      c. **Long-term stress**                      d. menopause
- 38. These factors causes Infertility**  
 1. Ingestion of toxins (heavy metal cadmium)                      2. Heavy use of alcohol  
 3. tobacco & marijuana                      4. injuries to the gonads and aging  
 a. **all the above**                      b. none of these                      c. 1 & 2                      d. 3 & 4
- 39. Initially, IVF is used to treat women with \_\_\_\_ fallopian tubes**  
 a. **blocked**                      b. damaged                      c. absent                      d. all the above
- 40. Most common causes of infertility in women**  
 a. Pelvic inflammatory disease(PID)                      b. Uterine fibroids  
 c. Endometriosis                      d. **all the above**
- 41. What will happen If a man wear tight clothing**  
 1. may raise the temperature in the scrotum    2. affect sperm production  
 3. may raise blood sugar level                      d. affect formation RBC and WBC  
 a. 1 alone                      b. **1 & 2 alone**                      c. 3 & 4                      d. none of these
- 42. \_\_\_\_ increases the chance of pregnancy in infertile couples**  
 a. Birth control method                      b. Intrauterine Devices  
 c. **Assisted reproductive technology**                      d. Amniocentesis
- 43. The basic steps in an IVF treatment cycle are**  
 1. Ovarian stimulation                      2. Egg retrieval & fertilization  
 3. Embryo culture                      4. Embryo transfer  
 a. none of the above                      b. 1 & 2                      c. 3 & 4                      d. **all the above**

## EXCEL GUIDE - XII BIO - ZOOLOGY

## 29. Identify the correct pair :

I Klinefelter syndrome - a) Trisomy-13

II Down's syndrome - b) 44+XO

III Turner's syndrome - c) 44-XXY

VI Patau's syndrome - d) Trisomy-21

a) **Ic, II d, III b, IV a** b) Id, II c, III b, IV a c) Ia, II b, III c, IV d d) Ib, II d, III a, IV c

## 30. Gynaecomastia means

a) Feeble breast

b) Webbed neck

c) rudimentary gonads

d) Malformation of brain

## 31. A marriage between a colourblind man and a normal woman produces.

a) 50% carrier daughters, 50% normal daughters

b) **All carrier daughters and normal sons**

c) 50% colourblind sons, 50% normal sons. d) All carrier offsprings

## 32. Co-dominant blood group is

a) A

b) B

c) **AB**

d) 0

## 33. People with \_\_\_ have 45 (44+XO) chromosomes

a) **Turner's syndrome**

b) Klinefelter's syndrome

c) Down's syndrome

d) Patau's syndrome

## 34. People with \_\_\_\_\_ have 47 chromosome (44+XXY)

a) Turner's syndrome

b) **Klinefelter's syndrome**

c) Down's syndrome

d) Patau's syndrome

## 35. Kin selection is seen in \_\_\_\_\_

a) Drosophila

b) **Honeybees**

c) Cockroach

d) Grasshopper

## 36. Match the correct pair

I. Chromosome 6 - a) Holandric genes

II. Hypertrichosis - b) Blood groups

III. Chromosome 11 - c) PAH genes

IV. Chromosome 12 - d) HBB genes

a) Ia, IIb, IIIc, IVd

b) **Ib, IIa, III d, IV c**

c) Id, IIc, IIIb, IVa

d) Ia, IIc, IIIb, IVd

## 37. Identify the correct statement :

1. People with  $I^B I^O$  Genotype have O blood group

2. Y linked genes are transmitted from mother to son

3. fertilised eggs develop into drones

4. Human Y chromosome is shorter than X chromosome

a) 1,4

b) 2,3,4

c) 1&amp;2

d) **4**

## 38. Find out the odd one

a) 21 trisomy

b) Patau's syndrome

c) **haemophilia**

d) Turner's syndrome

## 39. Find out the correct statement regarding haemophilia.

a) Dominant genes responsible present in X-chromosome

b) Dominant genes responsible present in Y-chromosome

c) **Recessive genes responsible present in X-chromosome**

d) Responsible dominant gene present in the autosomal chromosome



## EXCEL GUIDE - XII BIO - ZOOLOGY

### 16. Open reading frame.

Any sequence of DNA or RNA beginning with a start codon and which can be translated into protein.

### 17. What is the function of Deoxynucleotide triphosphate in replication?

Deoxynucleotide triphosphate act as substrate and also provides energy for polymerization reaction.

### 18. Write the some events of eukaryotic replication

1. Unwinding of DNA.
2. Joining of okazaki fragments
3. Addition of nucleotides to new strand
4. Correcting the repair.

### 19. What is repetitive DNA?

In the DNA sequence, at specific regions, a small stretch of DNA is repeated many times is known as repetitive DNA.

### 20. Operons.

The clusters of gene with related function are called operons.

### 21. What is charging or aminoacylation?

The process of addition of amino acid to tRNA is known as charging or aminoacylation.

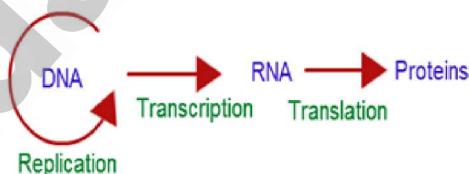
### 22. Okazaki fragments.

The discontinuously synthesized fragments of the lagging strand are called the okazaki fragments are joined by the enzyme DNA ligase.

## FOR CENTUM SCORERS

### 23. Who proposed the central dogma? Won't its concept.

- ❖ Francis crick.
- ❖ The central dogma in molecular biology which states that genetic information flows as follows



### 24. What is TATA box? State its function?

- ❖ In Eukaryotes, the promoter has AT rich regions called TATA box or Goldberg - Hogness box
- ❖ It acts as a binding site for RNA polymerase.

### 25. Structural gene of eukaryotic differ from prokaryotes. How?

- ❖ In Eukaryotes the structural gene is monocistronic coding for only protein.
- ❖ In prokaryotes the structural gene is polycistronic coding for many proteins.

### 26. Exons and Introns.

- ❖ Expressed sequences( coding sequences) of an eukaryotic gene called Exons.
- ❖ Intervening sequences (non-coding sequences) of an eukaryotic gene called introns.

## EXCEL GUIDE - XII BIO - ZOOLOGY

43. \_\_\_\_ mature into large cells are called macrophages.  
 a) Lymphocytes      b) **monocytes**      c) neutrophil      d) Eosinophil
44. An \_\_\_\_ is represented by  $H_2L_2$   
 a) Antigen      b) Immunogen      c) **Antibody**      d) Haptens
45. The binding force between antigen and antibody is due to \_\_\_\_  
 1. Closeness between antigen and antibody  
 2. non covalent bonds or inter molecular forces  
 3. Affinity of antibody      4. Phagocytosis  
 a) 1,4      b) 3,4      c) 2,4      d) **1,2,3**
46. It is not live attenuated vaccines.  
 a) Measles      b) Mumps      c) **Salk's polio**      d) Rubella
47. Toxoid vaccines is DPT means.  
 1. Diphtheria      2. Pertussis      3. Tetanus      4. Palagia  
 a) 1&2 above      b) 3&4      c) 2&4      d) **1,2,3**
48. \_\_\_\_ and \_\_\_\_ some common examples of allergy  
 a) AIDS and cholera      b) Typhoid and cold  
 c) **Hay fever and asthma**      d) malaria and filaria
49. Secondary immune deficiencies arise due to various reason, they are  
 1. Radiation      2. Use of cytolytic drugs  
 3. Immuno suppressive drugs      4. infections  
 a) 2&3 alone      b) 1&2 alone      c) 4 alone      d) **all the above**
50. Size of the HIV virus is \_\_\_\_  
 a) 100m      b) **100-120nm**      c) 100-140m      d) 41-120nm
51. \_\_\_\_ is one of the strongest pain killer and is used during surgery.  
 a) Charas      b) Opioids      c) ganja      d) **Morphine**
52. \_\_\_\_ causes serious physical and psychological problems including hallucinations and paranoia  
 a) morphine      b) charas      c) **Cocaine**      d) opioids
53. Are antibiotic used to treat common cold?  
 a) Yes      b) **no**      c) sometimes      d) often
54. The highest occurrence of Amoebiasis found in \_\_\_\_ organ  
 a) Kidney      b) Lungs      c) **Large Intestine**      d) heart
55. Most dangerous form of malaria cused by.  
 a) P.Vivax      b) **P.Falciparum**      c) P.Ovale      d) P.Malariae
56. Match the Following  
 i) Salmonella typhi      - a) Lock jaw  
 ii) Yersinia restis      - b) Bacillary dysentery  
 iii) Shigella species      - c) enteric fever  
 iv) Clostridium tetani      - d) Black death  
 a) i-a,ii-b,iii-c,iv-d      b) i-d,ii-c,iii-b,iv-a      c) **i-c,ii-d,iii-b,iv-a**      d) i-a,ii-d,iii-b,iv-c

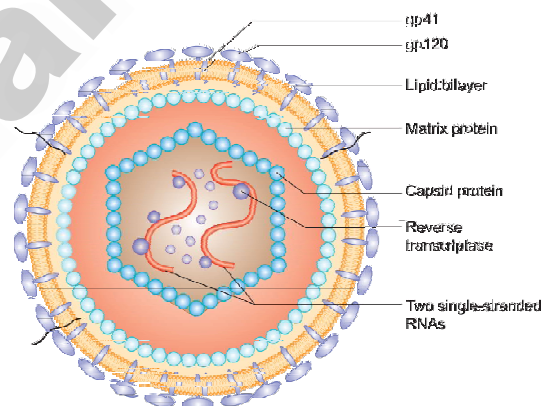
## EXCEL GUIDE - XII BIO - ZOOLOGY

## 5. Write the differences between primary immune and secondary immune.

Sl.No	Primary Immune Response	Secondary Immune Response
1	It occurs as a result of primary contact with an antigen.	It occurs as a result of second and subsequent contacts with the same antigen.
2	Antibody level reaches peak in 7 to 10 days.	Antibody level reaches peak in 3 to 5 days.
3	Prolonged period is required to establish immunity.	It establishes immunity in a short time.
4	There is rapid decline in antibody level.	Antibody level remains high for longer period.
5	It appears mainly in the lymph nodes and spleen.	It appears mainly in the bone marrow, followed by the spleen and lymph nodes.

## 6. Describe the structure of HIV with a diagram

- ❖ The human immunodeficiency virus belongs to the genus Lentivirus.
- ❖ HIV is a spherical virus, 100-120 nm in diameter, containing a dense core surrounded by a lipoprotein envelope. The envelope has glycoprotein (gp) spikes termed gp 41 and gp 120.
- ❖ At the core, there are two large single stranded RNA. Attached to the RNA are molecules of reverse transcriptase.
- ❖ It also contains enzymes like protease and ribonuclease.
- ❖ The core is covered by a capsid made of proteins. This is followed by another layer of matrix proteins.



## 7. Describe the structure of thymus.

- ❖ The thymus is a flat and bilobed organ located behind the sternum, above the heart.
- ❖ Each lobe of the thymus contains numerous lobules, separated from each other by connective tissue called septa.
- ❖ Each lobule is differentiated into an outer cortex and inner medulla.
- ❖ Outer cortex is densely packed with immature T cells called thymocytes.
- ❖ The inner medulla is sparsely populated with matured thymocytes.

## 8. Write short note on Ring worm.

- ❖ Ringworm is one of the most common fungal disease in humans.
- ❖ Appearance of dry, scaly lesions on the skin, nails and scalp are the main symptoms of the disease.
- ❖ Heat and moisture help these fungi to grow and makes them to thrive in skin folds such as those in the groin or between the toes.

## EXCEL GUIDE - XII BIO - ZOOLOGY

**CHAPTER****8****MICROBES IN  
HUMAN WELFARE****EVALUATION**

- Which of the following microorganism is used for production of citric acid in industries?
  - Lactobacillus bulgaris
  - Penicillium citrinum
  - Aspergillus niger
  - Rhizopus nigricans
- Which of the following pair is correctly matched for the product produced by them?
  - Acetobacter aceti - Antibiotics
  - Methanobacterium - Lactic acid
  - Penicillium notatum - Acetic acid
  - Saccharomyces cerevisiae - Ethanol
- The most common substrate used in distilleries for the production of ethanol is \_\_\_\_\_
  - Soyameal
  - Groundgram
  - Molasses
  - Corn meal
- Cyclosporin – A is an immunosuppressive drug produced from \_\_\_\_\_
  - Aspergillus niger
  - Manascus purpureus
  - Penicillium notatum
  - Trichoderma polysporum
- CO<sub>2</sub> is not released during
  - Alcoholic fermentation
  - Lactate fermentation
  - Aerobic respiration in animals
  - Aerobic respiration in plants
- The purpose of biological treatment of waste water is to \_\_\_\_\_
  - Reduce BOD
  - Increase BOD
  - Reduce sedimentation
  - Increase sedimentation
- The gases produced in anaerobic sludge digesters are
  - Methane, oxygen and hydrogen sulphide.
  - Hydrogen sulphide, methane and sulphur dioxide.
  - Hydrogen sulphide, nitrogen and methane.
  - Methane, hydrogen sulphide and CO<sub>2</sub>.
- How is milk converted into curd? Explain the process of curd formation.
  - ❖ The LAB bacteria grows in milk and convert it into curd, thereby digesting the milk protein casein.
  - ❖ A small amount of curd added to fresh milk as a starter or inoculum contains millions of Lactobacilli, which under suitable temperature ( $\leq 40^{\circ}\text{C}$ ) multiply and convert milk into curd.
  - ❖ Curd is more nutritious than milk as it contains a number of organic acids and vitamins.
- Give any two bioactive molecules produced by microbes and state their uses.
  - ❖ Streptokinase produced by the bacterium Streptococcus and genetically engineered Streptococci are used as "clot buster" for removing clots from the blood vessels of patients who have undergone myocardial infarction.

## EXCEL GUIDE - XII BIO - ZOOLOGY

- ❖ Production of insulin by recombinant DNA technology started in the late \_\_\_\_\_ - **1970s**
- ❖ In 1986 human insulin was marketed under the trade name \_\_\_\_\_ - **Humulin**
- ❖ \_\_\_\_\_ and \_\_\_\_\_ in 1921, isolated insulin from dog - **Best & Banting**
- ❖ Anti viral protein is \_\_\_\_\_ - **Interferon**
- ❖ Interferon is \_\_\_\_\_ in nature - **proteinaceous**
- ❖ Interferon stimulate to produce antiviral enzymes which inhibit \_\_\_\_\_ - **Viral replication**
- ❖ \_\_\_\_\_ vaccines are generally of uniform quality and less side effects as compared to the vaccines produced by conventional methods - **Recombinant vaccines**
- ❖ \_\_\_\_\_ vaccines are relatively easy and expensive to design and produce \_\_\_\_\_ - **DNA vaccines**
- ❖ Live vaccines are referred to as \_\_\_\_\_ - **Attenuated recombinant vaccines**
- ❖ Edible vaccines are prepared by \_\_\_\_\_ - **molecular pharming**
- ❖ Edible vaccines are \_\_\_\_\_ targeted vaccines - **Mucosal**
- ❖ Genetic immunization by using \_\_\_\_\_ - **DNA vaccines**
- ❖ Recombinant hepatitis B vaccine produced from \_\_\_\_\_ yeast - **Saccharomyces cerevisiae**
- ❖ The recombinant vaccine for hepatitis B (Hbs Ag) was first synthetic vaccine launched in \_\_\_\_\_ - **1997**
- ❖ The first Clinical gene therapy was given in \_\_\_\_\_ - **1990**
- ❖ Adenosine deaminase (ADA) deficiency otherwise called \_\_\_\_\_ - **SCID**
- ❖ Bone marrow transplantation method is essential for cure \_\_\_\_\_ disease - **SCID**
- ❖ \_\_\_\_\_ cells are capable of self renewal and exhibit cellular potency” - **Stem cells**
- ❖ \_\_\_\_\_ are undifferentiated cells found in most of the multi cellular animals - **stem cells**
- ❖ \_\_\_\_\_ stem cells are pluripotent and multipotent - **Embryonic (ES cells) stem cells**
- ❖ somatic stem cells otherwise called \_\_\_\_\_ - **Adult stem cells**
- ❖ ES cells are isolated from the \_\_\_\_\_ of the inner cell mass of a blastocyst - **Epiblast tissue**
- ❖ The \_\_\_\_\_ is a rich source of adult stem cells - **Red bone marrow**
- ❖ \_\_\_\_\_ is a important used diagnostic tool to determine if a person is HIV positive or negative - **ELISA**
- ❖ Polymerase chain reaction (PCR) technique was developed by \_\_\_\_\_ - **Kary mullis (1983)**
- ❖ In PCR, the denature the target DNA into single strands that will act as a \_\_\_\_\_ - **template for DNA synthesis**
- ❖ In PCR, \_\_\_\_\_ is otherwise called primer annealing - **renaturation**
- ❖ In PCR, \_\_\_\_\_ is otherwise called primer extension - **synthesis**
- ❖ mRNA converted to complementary DNA by the enzyme \_\_\_\_\_ - **reverse transcriptase**



**EXCEL GUIDE - XII BIO - ZOOLOGY**

- 21. Transgenic animals have been very useful in**  
 a) Biotechnological research                      b) Biomedical research  
 c) Biological research                                d) **all the above**
- 22. Most popular sources of stem cells in cord blood banking.**  
 a) Amniotic fluid            b) Amniotic sac  
 c) Placenta                    d) **Umbilical cord**
- 23. Identify the wrong pair.**  
 a) ELISA                      - HIV antibodies  
**b) PCR technique        - RNA replication**  
 c) Humulin                    - E.coli  
 d) Interferons                - Saccharomyces cervisiae
- 24. Find out the ODD ONE not related to molecular diagnostics**  
 a) rDNA technology    b) ELISA                    c) PCR                    d) **MRI scan**
- 25. Most of the adult stem cell are \_\_\_ and can act as a repair system of the body.**  
 a) Pluripotent              b) Totipotent              c) **Multipotent**              d) Oligopotent
- 26. Myeloid stem cells can differentiate into B and T cells but not RBC**  
 a) Unipotency              b) **Oligopotency**              c) Totipotency              d) Pleuripotency
- 27. Find the correct pair.**  
 a) Totipotency              - Single cell to produce a whole organism  
 b) Unipotency                - Stem cell differentiate into one cell type  
 c) Oligopotency              - Stem cell differentiate into few cell tupe  
 d) Pluripotency              - Stem cell differentiate into anykind of germ layers  
 a) 1&2                        b) 3&4                        c) 2,3,4                        d) **all the above**
- 28. In Pre-pro insulin \_\_\_ is removed after translation**  
 a) Leader squnce        b) C Chain                    c) **Both a & b**                    d) A & B polypeptide chain
- 29. The purpose of using enzyme in the ELISA test is \_\_\_\_\_**  
 a) to show the antigen - antibody reation        b) **to show the coloured product**  
 c) to show the immobilised antigen                d) to show the immobilised hepatic cell
- 30. Match the following**  
 I. Stem cells                    - a) Pluripotency  
 ii. GMO                         - b) Rosie  
 iii. PCR                         - c) Finger printing  
 iv. ELISA                        - d) HIV antibodies  
 a) i-a,ii-b,iii-c,iv-d    b) i-b,ii-d,iii-a,iv-c    c) i-d,ii-c,iii-b,iv-a    d) **i-a,ii-c,iii-b,iv-d**
- 31. \_\_\_ cells are immortal**  
 a) **Embryonic stem cells**    b) Adult stem cells    c) pancreatic cells    d) plasmid cells
- 32. \_\_\_ is an autosomal recessive metabolic disorder disease.**  
 a) AIDS                        b) Syphilis                    c) Athlet's foot              d) **SCID**
- 33. \_\_\_ laboratory techniques are indirect and not always specific.**  
 a) microscopic examinations    b) serum analysis    c) urine analysis    d) **all the above**

**EXCEL GUIDE - XII BIO - ZOOLOGY**

- 29. Identify the wrong statements**
- Rapidly growing population will have more young individuals
  - A stable population will have various age classes
  - A declining population tends to have more older individuals
  - Rapidly growing population will have less young individuals.**
- 30. Find out the ODD ONE**
- Space
  - diseases**
  - shelter
  - weather
- 31. It is not intrinsic factors**
- Competition
  - Predation
  - emigration and immigration
  - diseases
  - weather**
- 32. Find the correct sequence in ascending order of population**
- Population → Community → species → biome
  - Community → Population → biome → Species
  - Biome → species → Community → Population
  - Species → Populaion → Community → biome.**
- 33. Pick out the Eurythermal organism**
- Tiger**
  - fish
  - Lizards
  - Frogs
- 34. Birds sitting on crocodile to eat insects is an example for**
- Amensalism
  - Commensalism
  - Competition
  - Mutualism**
- 35. Birds compete with squirrels for nuts and seeds is an example for \_\_\_\_\_**
- Predation
  - Competition**
  - Parasitism
  - Mutualism
- 36. i. Crocodile and bird      a) Commensalism**  
**ii. Suckerfish on shark      b) Parasitism**  
**iii. Lion and deer            c) Mutualism**  
**iv. Tapeworm in human      d) Predation**
- i-a, ii-b, iii-c, iv-d
  - i-c, ii-a, iii-d, iv-b**
  - i-d, ii-c, iii-b, iv-a
  - i-d, ii-c, iii-a, iv-d
- 37. Identify the correct statement**
- Warm blooded animals, living in colder climates, have long limbs, ears
  - Eurythermal organism can survive narrow range temperature
  - Stenothermal organism can tolerate narrow range of temperatures
  - The birds and mammals attain greater body size in colder regions
- 38. \_\_\_\_\_ is one of the main agents in paedogenesis**
- Water**
  - Wind
  - Animals
  - all the above
- 39. \_\_\_\_\_ biome has long and cold winters**
- Taiga**
  - Tundra
  - Alpine
  - Grassland
- 40. \_\_\_\_\_ biome often they are characterized by high winds.**
- Taiga
  - Tundra
  - Alpine
  - Grassland**
- 41. where different species live together but do not affect each other**
- Neutral**
  - positive
  - Negative
  - none of these

## EXCEL GUIDE - XII BIO - ZOOLOGY

---

### 17. Sanctuaries.

Sanctuaries are tracts of land where wild animals and fauna can take refuge without being hunted or poached.

### 18. Gene banks

Gene banks are a type of biorepository which preserve genetic materials.

### 19. What are the two aspects of conservation of biodiversity?

1. In-situ conservation
2. Ex-situ conservation.

### 20. Name the two methods of in-situ conservation.

1. Wildlife sanctuaries
2. Biosphere reserve.

### FOR CENTUM SCORERS

### 21. Name any two Exotic animal species introduced in India.

1. Tilapia fish
2. African apple snail.

### 22. List some of the factors that determine biodiversity distribution patterns.

Temperature, precipitation, distance from the equator altitude from sea level

### 23. When a species is considered as locally extinct?

A species is considered to be locally extinct when it is no longer found in an area it once inhabited but is still found elsewhere in the wild.

### 24. What is anthropogenic extinction?

Anthropogenic extinctions are abetted by human activities like hunting, habitat destruction, over exploitation, urbanization and industrialization.

### 25. How is said to be the species extinct in the wild?

If individuals of a species remain alive only in captivity or other human controlled conditions, the species is said to be extinct in the wild.

### 26. Functions of biosphere reserve.

Biosphere reserve are designated to deal with the conservation of biodiversity, economic and social development and maintenance of associated cultural values.

### 27. International union for conservation of nature (IUCN).

It is an organization working in the field of nature conservation and sustainable use of natural resources.

### 28. What is most serious aspect of the loss of biodiversity?

1. The most serious aspect of the loss of biodiversity is the extinction of species
2. The unique information contained in its genetic material(DNA) and the niche it possesses are lost forever.

### 29. Name the two endemic organisms of Western Ghats.

1. The grizzled squirrel
2. Lion tailed macaque

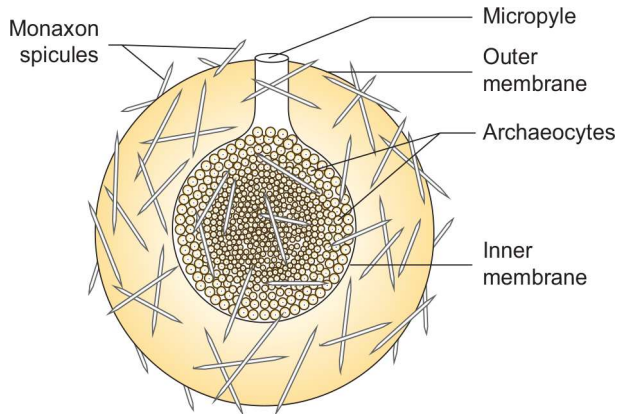
### 30. Alpha diversity :

It is measured by counting the number of taxa (usually species) within a particular area, community or ecosystem.

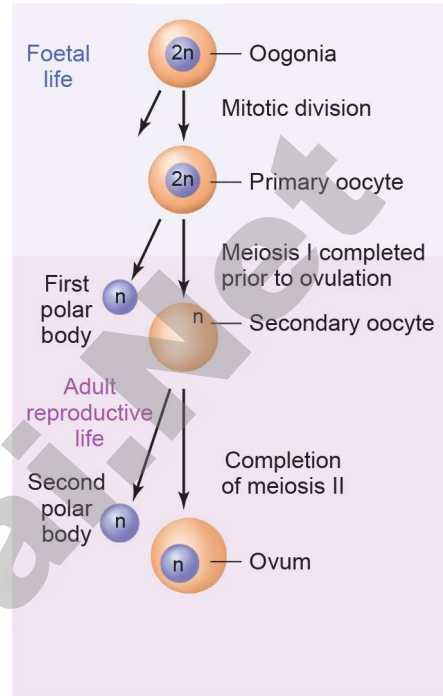
EXCEL GUIDE - XII BIO - ZOOLOGY

Diagrams for Draw Labeled sketch

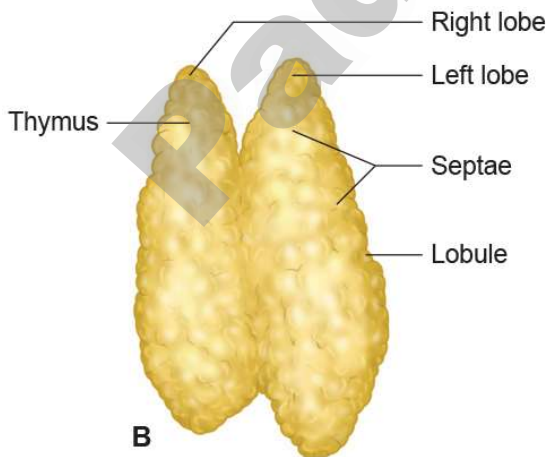
Gemmule



Oogenesis



Structure of Thymus



J and S - shaped growth curve

