

INTERNATIONAL INDIAN SCHOOL RIYADH

Chap-1 Reproduction in organisms

Worksheet No -1

1. Higher organisms have resorted to sexual mode of reproduction in spite of its complexity. why?
2. Explain why meiosis and gametogenesis are always inter linked.
3. Why are mosses and liverworts unable to complete their sexual mode of reproduction in dry conditions?
4. Why are large number of male gametes produced as compared to female gametes?
5. Rearrange the following events of sexual reproduction in the sequence in which they occur in a flowering plant: embryogenesis fertilisation, gametogenesis, pollination.
6. The number of chromosomes in the shoot tip of a maize plant is 20 . what will be the number of chromosomes in the microspore mother cell of the same plant.
7. Differentiate between oestrous cycle and menstrual cycle .give 2 examples for each.
8. What are vegetative propagules? Give any four along with their examples.
9. Give the scientific name of neelakuranji.
10. Some organisms like honeybees are called Parthenogenetic animals. Give reason
11. Why do vegetative propagules in sugarcane and ginger appear from the nodes?
12. Zygote forms the major link between one generation and those of the next generation organisms.what is the fate of zygote in organisms which show:(i) haplontic life cycle and(ii) diplontic life cycle
13. Suggest a possible explanation why the seeds in pea are arranged in row where as in tomato are scattered in the juicy pulp.
14. Cucurbits and papaya plants bear staminate and pistillate flowers. Mention the categories they are put under separately on the basis of the type of flower they bear.

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Chap:2 Sexual reproduction in flowering plants

Worksheet No :2

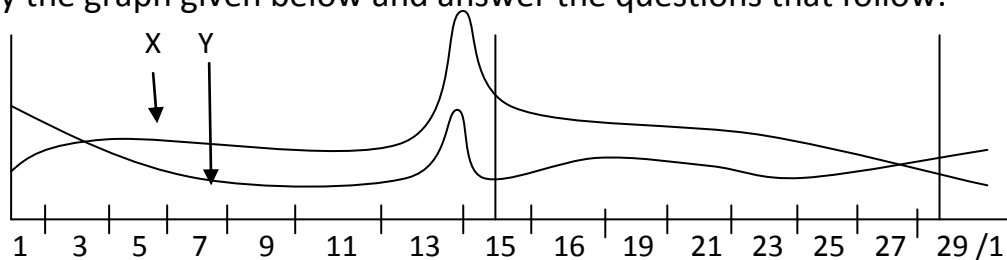
1. The meiocyte of rice plant has 24 chromosomes. How many chromosomes are present in its endosperm?
2. Between annual and perennial plant which has shorter juvenile phase? Give reason.
3. A bilobed, ditheous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce.
4. How many microspore mother cells would be required to produce 100 pollen grains in a pollen sac? And why?
5. Differentiate between parthenogenesis and parthenocarpic fruit. Give example for both.
6. Papaver and Michelia both have multicarpellary ovaries. How do they differ from each other?
7. Why is an Apple called the false fruit ?Which part of the flower develops into fruit?
8. Some angiosperm seeds are said to be 'albuminous, where as few others are said to have a perisperm. Explain each with an example.
9. How does the Mediterranean orchid Ophrys ensures its pollination by bees?
10. The flower of brinjal is referred to as chasmogamous while that of beans is cleistogamous .How are they different from each other?
11. Why is process of angiosperms termed as double fertilisation? Explain.
12. Draw neat labelled diagram of an angiospermic embryo sac where fertilisation is just completed. label the following parts (i) Micropylar end of the embryo.(ii) the part that develops into embryo, endosperm.(iii)The degenerating cells in the chalazal end. (iv) Globular embryonic stage of an angiosperm

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Chap:3 Human Reproduction

Worksheet No :3

1. Mention the location and function of leydig cells in humans
2. What is corpus luteum?
3. (a) Describe the events of spermatogenesis with the help of schematic representation.
(b) Write the differences between spermatogenesis and oogenesis
4. Study the graph given below and answer the questions that follow:



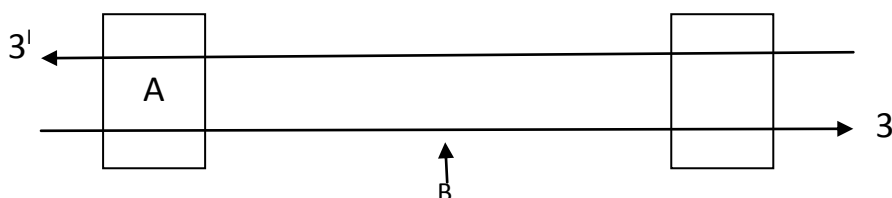
- (a) Name the hormones X and Y.
 - (b) Identify the ovarian phases during a menstrual cycle
 - (i) 5th day to 12th day of cycle.
 - (ii) 14th day of the cycle
 - (iii) 16th day to 25th day of the cycle.
 - (c) Explain the ovarian events (i)(ii)(iii) under the influence of hormones X and Y
5. Describe the structure of sperm with the help of diagram.
 - 6 (a). Draw a sectional view of ovary and label (i) primary follicle
(ii) Graffian follicle (iii) corpus luteum
(b) Mention the role of pituitary hormone on the parts labelled.
 7. Placenta acts as an endocrine tissue. Justify
 8. Draw a diagram of female reproductive system.
 9. Differentiate between Blastula and Gastrula.
 10. Write location and function of leydig cells, sertoli cells, primary oocyte

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Chap :6 Molecular basis of Inheritance

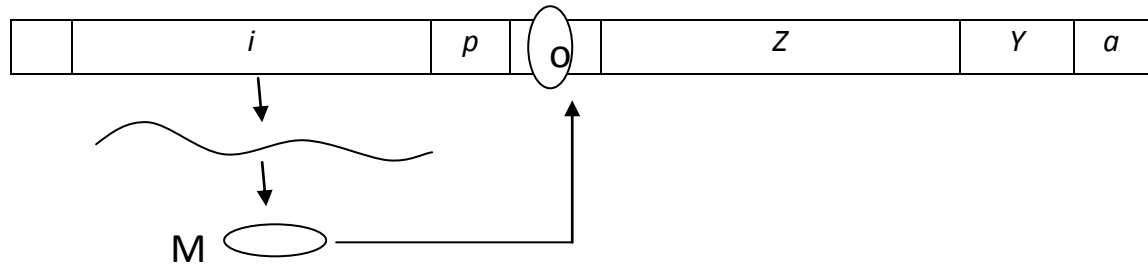
Worksheet No: 6

1. Name the parts A and B of the transcription unit given below.



2. At which end do capping and tailing of hnRNA occur respectively?
3. What are VNTRs?
4. Describe the experiment with *Streptococcus pneumoniae* that demonstrated the existence of some 'transforming principle'?
5. Explain the role of S^{35} and P^{32} in the experiment conducted by Hershey and Chase
6. Describe the experiment that demonstrated the semi conservative mode of DNA replication?
7. Draw a labelled schematic sketch of replication fork of DNA.
Explain the role of the enzymes involved in DNA replication.
8. Describe the discontinuous synthesis of DNA.
9. Explain the process of Transcription in a bacteria.
10. Explain the role of RNA polymerase in Transcription in bacteria.
11. Where does peptide bond formation occur in a bacterial ribosome and how?
12. Name the first two steps in DNA finger printing. Describe them briefly.
13. Genetic code can be Degenerate and universal. Write about them, giving one example of each.
14. Explain the steps involved in a polypeptide synthesis.

15. DNA polymerase and RNA polymerase differ in their requirement while functioning. Explain?
16. (a) Name the molecule 'M' that binds with the operator.
 (b) Mention the consequences of such binding.
 (c) What will prevent the binding of the molecule 'M' with the operator gene? Mention the event that follows.



17. DNA polymorphism is the basis of DNA fingerprinting technique. Explain.
18. Differentiate between Repetitive DNA & satellite DNA, mRNA & tRNA, Template strand and coding strand.
19. Write the Human chromosome with highest and least number of genes.
20. Differentiate between point mutation and frame shift mutation. Name one disease caused by frame shift mutation.

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Chap :7 Evolution

Worksheet No: 7

1. Why did Louis Pasteur's experiment on 'killed yeast' demonstrate? Name the theory that got disproved on the basis of his experiment.
2. State the significance of the study of fossils in evolution.
3. Name any two vertebrate body parts that are homologous to human fore limbs.
4. Identify the examples of convergent evolution from the following:
 - (a) Flippers of penguins and dolphins.
 - (b) Eyes of octopus and mammals.
 - (c) Vertebrate brains.
5. What is founder's effect?
6. What does Hardy-Weinberg's equation convey?
7. Convergent evolution and divergent evolution are the two concepts explaining organic evolution. Explain each one with example.
8. What is adaptive radiation? Explain with example where adaptive radiation has occurred to represent the convergent evolution.
9. What was proposed by Oparin and Haldane on origin of life?
10. Describe Miller and Urey's experiment and give its significance.
11. How does Darwin's theory of Natural selection explain the appearance of new forms of life on earth?
12. Explain giving two reasons why pollen grains can be best preserved as fossils.
13. In England, during the post-industrialised period, the count of melanic moth increased in urban areas but remained low in rural areas. Explain.

14. Are the thorns of Bougainvillea and Tendrils of cucurbita homologous or analogous? What type of evolution has brought such a similarity in them?
15. Mention how is mutation theory of Hugo de Vries different from Darwin's theory of Natural selection.
16. When does a species become founders to cause founder effect?
17. (a) How does the Hardy-Weinberg's expression ($p^2+2pq+q^2$) explain that genetic equilibrium is maintained in a population?
(b) List any two factors that can disturb the genetic equilibrium.

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Chap :8 Human Health and Diseases

Worksheet No: 8

1. What are primary lymphoid organs?
2. Name any two techniques that serve the purpose of early diagnosis of some bacterial/viral human diseases.
3. What are interferons?
4. In what way are monocytes a cellular barrier in immunity?
5. State the function of mast cells in allergy response.
6. What is an autoimmune disease? Give example.
7. Expand each one to its full form: MALT, CMI, AIDS, NACO, HIV.
8. How do B-cells direct humoral immunity?
9. Name the type of immunity that is present at the time of birth in humans . Explain any two how it is accomplished.
10. Name the different types of cells providing cellular barrier responsible for innate immunity in humans.
11. (a) Name the agent that causes Amoebiasis and the human body organ that it infects.
(b) Write the symptoms and mode of transmission of the disease.
- 12.(a) Name the respective form in which the malarial parasite gains entry into (i) human body (ii) body of female anopheles mosquito.
(b) Name the hosts where the sexual and the asexual reproductions of malarial parasites occur respectively.
(c) Name the toxin responsible for the appearance of symptoms of malaria in humans. Why do these symptoms occur periodically?
13. Explain the process of replication of a retrovirus after it gains entry into the human body.

14. (a) what is meant by addictive disorder?
- (b) Name any 2 opiate Narcotics.
- (c) Mention any 2 ways how opiate narcotics affect human body.
15. What are hallucinogens? Give their 2 examples. Mention their clinical use.
16. Differentiate between active immunity and passive immunity.
17. Name the bacterium that causes typhoid. Mention two diagnostic symptoms. How is this disease transmitted to others?
18. (a) Highlight the role of thymus as a lymphoid organ.
- (b) Name the type of cells that are released from the above mentioned glands. Mention how they help in immunity.
19. Name the parasite that causes filariasis in humans. Mention its two diagnostic symptoms. How is this disease transmitted to others?
20. Explain the role of the following in providing defence against infections in human body:
- (i) Histamines
- (ii) B-cells
- (iii) interferons.

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Chap:9 Strategies for Enhancement in food

Production

Worksheet No: 9

1. How are somaclones cultured from explants in in vitro conditions? Why are somaclones so called?
2. How does culturing spirulina solve the food problems of the growing human population?
3. (a) Mention the property of plant cells that has helped in growing crops by tissue culture.
(b) Explain how it is possible to grow on a commercial scale:
 - (i) Banana crop.
 - (ii) virus free crop plants from virus infected good quality crop plants.
4. How are biofortified maize and wheat considered nutritionally improved?
5. Differentiate between inbreeding and out breeding in cattle. State one advantage and disadvantage for each one of them.
6. What effect does inbreeding depression have on cattle population and how is it overcome?
7. Expand MOET with reference to animal breeding. Describe the process and use of it.
8. What is mutation? What is its significance in the biological world? Name any two agents that induce mutations.
9. What is SCP? What is the significance of such protein?
10. (i) Name the Indian scientist whose efforts brought 'green revolution' in india.

(ii) Mention the steps that are essentially carried out in developing a new genetic variety of crop under plant breeding programme.

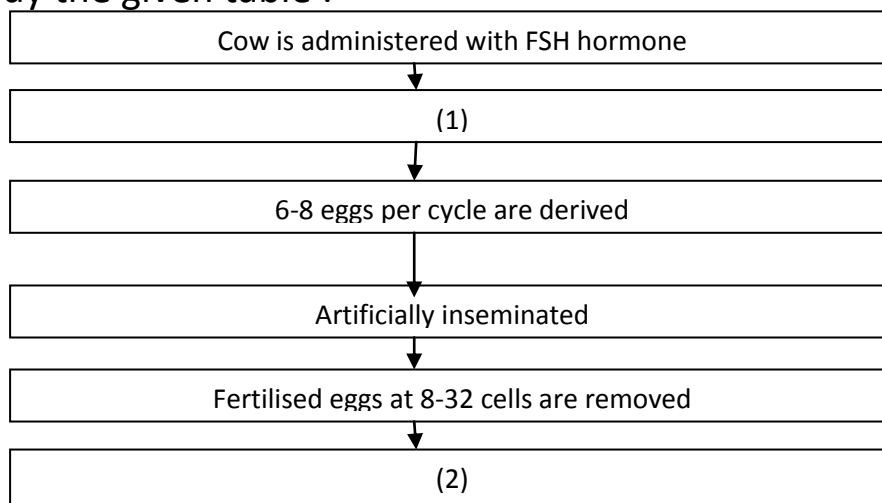
11. What is interspecific hybridisation? Give one example of a crop in which it is practised and mention one advantage derived from it.

12. Identify A,B,C and D

Crop	Variety	Resistance to disease
Wheat	A	Leaf and stripe rust
B	Pusa shubra	Black-rot
Cow pea	Pusa komal	C
Brassica	Karan rai	D

13. Enumerate in sequential order the steps that a plant breeder should follow to obtain a disease resistant crop.

14. Study the given table :



(i) Identify the stages that take place at stages (1) and (2) respectively.

(ii) State the importance of technology explained above.

15. Why is it necessary to emasculate a bisexual flower in a plant breeding programme? Mention the condition under which emasculation is not necessary.