BRAIN INTERNATIONAL SCHOOL

SESSION 2024-25

CLASS: XII **TERM 1 REVISION SHEET** **SUBJECT: BIOLOGY(044)**

CHAPTER 1: SEXUAL REPRODUCTION IN FLOWERING PLANTS

Mcqs

1. Haploid plants develop by pollen are called ……..
(a) Emasculation (b) Parthenocarpy (c) androgenesis (d) somatic hybridization

2. Even in absence of pollinating agents seed-setting is assured in
(a) Commelina (b) Zostera (c) Salvia (d) Fig

3. When the pollen of a flower is transferred to the stigma of another flower on the same plant, the process is known as
(a) Autogamy (b) Geitonogamy (c) Xenogamy (d) Cleistogamy

4. An embryo may sometimes develop from any cell of embryo sac other than egg. It is termed as
(a) apospory (b) apogamy (c) parthenogenesis (d) parthenocarpy

CASE STUDY QUESTION

5. Sexual reproduction involves two fundamental processes: meiosis, which rearranges the genes and reduces the number of chromosomes, and fertilization, which restores the chromosome to a complete diploid number. In between these two processes, different types of plants and algae vary, but many of them, including all land plants, undergo alternation of generations, with two different multicellular structures (phases), a gametophyte and a sporophyte. The evolutionary origin and adaptive significance of sexual reproduction are discussed in the pages Evolution of sexual reproduction and Origin and function of meiosis.

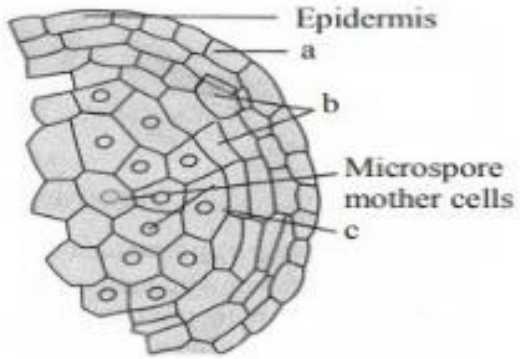
i) During microsporogenesis, meiosis occurs in
(a) endothecium
(b) microspore mother cells
(c) microspore tetrads
(d) pollen grains

ii) of the pollen grain divides to form two male gametes.
(a) Vegetative cell
(b) Generative cell
(c) Microspore mother cell
(d) None of these

iii) If an endosperm cell of an angiosperm contains 24 chromosomes, the number of chromosomes in

each cell of the root will be
(a) 8
(b) 4
(c) 16
(d) 24
iv) In a breeding experiment, the selected male parent is diploid and the female parent is tetraploid. What will be the ploidy level of the endosperm that will develop after double fertilisation?
(a) Diploid (b) Triploid (c) Tetraploid (d) Pentaploid

6.Observe the figure given below and answer the questions:



(a) Label parts a, b and c.
(b) What will happen if c will not work properly?

ASSERTION AND REASON QUESTIONS

7. In each of the following questions a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements, mark the correct answer as:
(1) If both Assertion and Resaon are true and reason is the correct explanation of the assertion
(2) If both Assertion and Reason are true but reason is not the correct explanation of the assertion
(3) If assertion is true but Reason is false
(4) If both Assertion and Reason are false. a)Assertion:*Commelina* shows cieistogamy. Reason: This reduces chances of inbreeding.
(1) (2) (3) (4)
b) Assertion : Autogamy is a transfer of pollen grains from an anther to the stigma of the same flower on the same plant.
Reason : Xenogamy is pollination between two flowers on different plants.
(1) (2) (3) (4)

CHAPTER 2: HUMAN REPRODUCTION

Mcqs

1. Acrosomal reaction of the sperm occurs due to

(a) its contact with zonapellucida of the ova
(b) reactions within the uterine environment of the female
(c) reactions within the epididymal environment of the male
(d) androgens produced in the uterus.

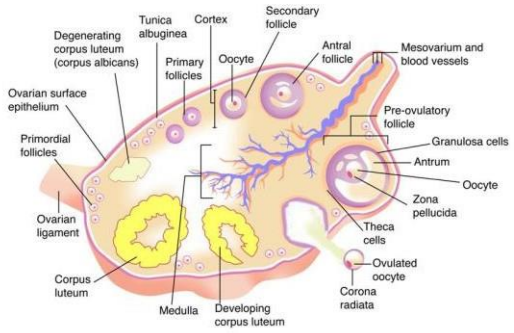
2. Morula is a developmental stage
(a) between the zygote and blastocyst
(b) between the blastocyst and gastrula
(c) after the implantation
(d) between implantation and parturition

3. Seminal plasma in humans is rich in
(a) fructose and calcium but has no enzymes
(b) glucose and certain enzymes but has no calcium
(c) fructose and certain enzymes but poor in calcium
(d) fructose, calcium and certain enzymes.

4. After birth, colostrum is released from mammary glands which is rich in
(a) fat and low in proteins
(b) proteins and low in fat
(c) proteins, antibodies and low in fat
(d) proteins, fat and low in antibodies.

CASE STUDY QUESTION

5. Ovulation is the process of releasing the matured egg or ovum from the mature follicle in the ovary on stimulation with the hormone LH (luteinizing hormone). This process occurs every month. There is a release of only one egg after the rupture of the mature Graafian follicle. This egg is ready for fertilization and travels to the ampulla region in the fallopian tube.



i) Immediately after ovulation, the mammalian egg is covered by a membrane known as

(a) chorion (b) zonapellucida (c) corona radiate (d) vitelline membrane.

ii) How many functional sperms and how many ova will be formed by a primary spermatocyte and a primary oocyte, respectively?
(a) One, One (b) One, Four (c) Four, One (d) Four, Four

iii) Ovulation occurs under the influence of
(a) follicle-stimulating hormone
(b) luteinising hormone
(c) progesterone
(d) estrogen

iv) Urethral meatus refers to the
(a) urinogenitalduct
(b) opening of vas deferens into urethra
(c) external opening of the urinogenital duct
(d) muscles surrounding the urinogenial duct

ASSERTION AND REASON QUESTIONS

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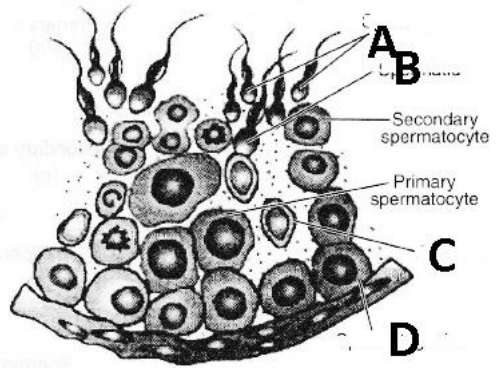
(2) If both Assertion and Reason are true but reason is not the correct explanation of the assertion
(3) If assertion is true but Reason is false
(4) If both Assertion and Reason are false.

Assertion: Parturition is induced by neural signal in maternal pituitary.
Reason: At the end of gestation period, the maternal pituitary release prolactin which causes uterinecontractions.
(1) (2) (3) (4)

7.Observe the figure given below and answer the questions (



(a) Label A and B.

b) What will be the ploidy level of D cells?

Answer:(a)_A_____B_____

(b)_____

CHAPTER 3: REPRODUCTIVE HEALTH

Mcqs

1. Intensely lactating mothers do not generally conceive due to the
(a) suppression of gonadotropins (b) hypersecretion of gonadotropins .
(c) suppression of gametic transport (d) suppression of fertilisation.

2. Which of the following cannot be detected in a developing foetus by amniocentesis ?
(a) Jaundice
(b) Down's syndrome
(c) Cystic fibrosis
(d) Colourblindness

3. Sterilisation techniques are generally fool proof methods of contraception with least side effects. Yet, this is the last option for the couples because:
i. It is almost irreversible
ii. Of the misconception that it will reduce sexual urge/drive
iii. It is a surgical procedure
iv. Of lack of sufficient facilities in many parts of the country Choose the correct option:
(1) i and iii (2) ii and iii (3) ii and iv (4) i, ii, iii and iv

4. Confirmatory test for STDs is
(a) ELISA (b) PCR (c) DNA hybridization (d) all of these.

5. Emergency contraceptives are effective if used within:
(1) 72 hrs of coitus (2) 72 hrs of ovulation
(3) 72 hrs of menstruation (4) 72 hrs of implantation

CASE STUDY QUESTION

6. Assisted reproductive technology (ART) is used to treat infertility. It includes fertility treatments that handle both a woman's egg and a man's sperm. It works by removing eggs from a woman's body. The eggs are then mixed with sperm to make embryos. The embryos are then put back in the woman's body. In vitro fertilization (IVF) is the most common and effective type of ART.
The most common complication of ART is a multiple pregnancy. It can be prevented or minimized by limiting the number of embryos that are put into the woman's body.

i) Which method can be used for women that cannot produce ovum but can provide suitable environment ?

(a) IUD (b) GIFT (c) IUI (d) ICSI

ii) The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females

(a) who cannot produce an ovum

(b) who cannot retain the foetus inside uterus

(c) who cannot provide suitable environment for fertilisation

(d) all of these

iii) Which of these can be used to cure infertility in couples where male partner has very low sperm count ?

(a) IUD (b) GIFT (c) IUI (d) None of these

iv) How do 'implants' act as an effective method of contraception in human females?

v) Mention its one advantage over contraceptive pills.

7.Study the diagram of human reproductive system given below. Answer the questions based on the diagram.

(i)What does the diagram depict?

(ii) At what stage zygote can be introduced in the fallopian tube in Zygote Intra Fallopian Transfer (ZIFT)?

Answer: (i)_____

_____

CHAPTER 4: PRINCIPLLES OF INHERITANCE AND VARIATION

Mcqs

1. ZZ/ZW type of sex determination is seen in
(a) platypus (b) snails (c) cockroach (d) peacock

2. In the F2 generation of a Mendeliandihybrid cross the number of phenotypes and genotypes are
(a) phenotypes – 4; genotypes – 16
(b) phenotypes – 9; genotypes – 4
(c) phenotypes – 4; genotypes – 8
(d) phenotypes – 4; genotypes – 9.

3. Haplodiploidy is found in
(a) grasshoppers and cockroaches
(b) birds and reptiles
(c) butterflies and moths
(d) honeybees, ants and waspe.

4. In a dihybrid cross, if you get 9:3:3:1 ratio it denotes that:
(a) The alleles of two genes are interacting with each other.
(b) It is a multigenic inheritance.
(c) It is a case of multiple allelism.
(d) The alleles of two genes are segregating independently.

ASSERTION AND REASON QUESTIONS

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(3) If assertion is true but Reason is false
(4) If both Assertion and Reason are false.
Assertion: Phenylketonuria is a recessive hereditary disease caused by body's failure to oxidise an amino acid phenylanine to tyrosine, because of a defective enzyme.
Reason: It results the presence of phenylalanine acid in urine.
(1) (2) (3) (4)

6. Match the items in Column I with those in Column II.

olumn I	olumn II
.. ABO blood group in humans.	. Polygenic inheritance.

. Flower colour in snapdragon.
. Human skin colour.
. Phenylketonuria.
. Mendelian genetic disorder.
. Sex-linked Mendelian disorder
. Incomplete dominance
. Multiple allelism.

7.A cross between a normal couple resulted in a son who was haemophilic and a normal daughter. In course of time, when the daughter was married to a normal man, to their surprise, the grandson was also haemophilic.
(i) Represent this cross in the form of a pedigree chart. Give the genotypes of the daughter and her husband.
(ii) Write the conclusion you draw from the inheritance pattern of this disease

CHAPTER 5: MOLECULAR BASIS OF INHERTANCE

Mcqs

1. Which of the following statements is the most appropriate for sickle cell anaemia ?
(a) It cannot be treated with iron supplements.
(b) It is a molecular disease.
(c) It conferes resistance to acquiring malaria.
(d) All of the above.

2. Eukaryotic RNA polymerase III catalyses the synthesis of
(a) mRNA (b) rRNA (c) hnRNA (d) tRNA

3. Which was the last human chromosome to be completely sequenced ?
(a) Chromosome 1 (b) Chromosome 11 (c) Chromosome 21 (d) Chromosome X

4. In E. colt, the lac operon gets switched on when
(a) lactose is present and it binds to the repressor
(b) repressor binds to operator
(c) RNA polymerase binds to the operator
(d) lactose is present and it binds to RNA polymerase.

5. Chemically, RNA is (i) reactive and (ii) stable as compared to DNA.
(a) (i) equally, (ii) equally (b) (i) less, (ii) more
(c) (i) more, (ii) less (d) (i) more, (ii) equally

ASSERTION AND REASON QUESTIONS

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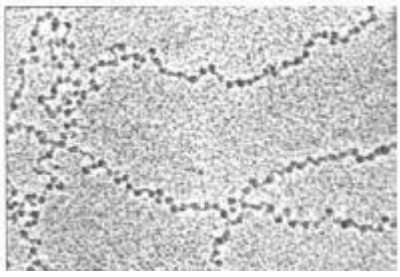
(3) If assertion is true but Reason is false
(4) If both Assertion and Reason are false.

Assertion: Repression occurs at transcription level.
Reason: When repressor binds to the operator, transcription occurs.
(1) (2) (3) (4)

CASE STUDY QUESTION

7. Efficient maintenance of chromatin structure during passage of RNA polymerase II (Pol II) is critical for cell survival and functioning. Moderate-level transcription of eukaryotic genes by Pol II is accompanied by nucleosome survival, extensive exchange of histones H2A/H2B and minimal exchange of histones H3/H4. Complementary in vitro studies have shown that transcription through chromatin by single Pol II complexes is uniquely coupled with nucleosome survival via formation of a small intranucleosomal DNA loop (Ø-loop) containing the transcribing enzyme. In contrast, transient displacement and exchange of all core histones are observed during intense transcription. Indeed, multiple transcribing Pol II complexes can efficiently overcome the high nucleosomal barrier and displace the entire histone octamer in vitro. Thus, various Pol II complexes can remodel chromatin to different extents. The mechanisms of nucleosome survival and displacement during transcription and the role of DNA-histone interactions and various factors during this process are discussed.

Shown above is the electron micrograph (EM) picture of 'beads-on-string'. (i)Histone proteins are
(a) basic, negatively charged (b) basic, positively charged



(c) acidic, positively charged (d) acidic, negatively charged

(ii) The promoter site and the terminator site for transcription are located at
(a) 3′ (downstream) end and 5′ (upstream) end, respectively of the transcription unit.
(b) 5′ (upstream) end and 3′ (downstream) end, respectively of the transcription unit.
(c) the 5′ (upstream) end.
(d) the 3′ (downstream) end.

(iii) Which histones make up the core particle of a nucleosome?
a. Two H2A/H2B dimers and an H3/H4 tetramer
b. An H2A/H2B tetramer and an H3/H4 dimer
c. An H2A/H2B dimer and an H3/H5 tetramer
d. An H1/H2 dimer and an H3/H4 tetramer

(iv) Euchromatin

(a) stains lightly (b) is partially condensed

(c) genetically active chromatin with genes (d) all of the above

CHAPTER 6: "EVOLUTION"

Mcqs

1. The primate which existed 15 mya was

(a) Homo habilis
(b) Australopithecus
(c) Ramapithecus
(d) Homo erectus

2.The earliest geological time period among the following is ___

a) Cambrian
b) Permian
c) Jurassic
d) Quaternary

3.The experiment that simulated conditions thought to be present on the early earth

a) Hershey–Chase experiment
b) Geiger–Marsden experiment
c) Miller–Urey experiment
d) Schiehallion experiment

ASSERTION AND REASON QUESTIONS

3.Directions: In the following questions, a statement of assertion is followed by a statement of reason.---------- ---------- 1
Mark the correct choice as:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

Assertion : According to big-bang hypothesis about 20 billion years ago universe was a big ball of only neutrons.
Reason : Movement of these particles is known to generate tremendous heat which caused explosion due to temperature and pressure changes.

CASE STUDY QUESTION

4. According to Hardy-Weinberg principle, the allele frequencies in a population are stable and remain constant through generations. When the frequency differs from the expected values, the difference indicates the extent (direction) of evolutionary change. Disturbance in the genetic equilibrium or Hardy-Weinberg equilibrium in a population can be interpreted as resulting in evolution.

i Write the algebraic equation representing Hardy-Weinberg equilibrium. ---

ii. Why are analogous structures a result of convergent evolution?

5. Identify the following pairs as homologous or analogous organs.

(a) Sweet potato and potato.
(b) Eye of Octopus and eye of mammals.
(c) Thorns of Bougainvillea and tendrils of Cucurbita.
(d) Forelimbs of bat and wh

6.According to Hugo de Vries what is saltation?

7.Name the ancestors of a man based on the features given below

(i) Human-like, meat-eater with 900 cc brain, lived in Java.
(ii) More human-like with brain size 1400 cc, lived in Central Asia, used hides and buried their dead.
(iii) Human-like, vegetarian, with brain capacity between 650-800 cc.