

PM SHRI KV BKT

CLASS 12 A

BIOLOGY

SUMMER HOLIDAY H.W.

A. Complete investigatory project on any of the following topics:

- a. Monograph on any endangered plant or animal
- b. Drug analysis: Study of source, chemical analysis and physiological impact
- c. Disease Study: Cause, incidences, epidemiology, cure and prevention of any disease.
- d. Any other current topic/research related to Biology

B. Solve the following questions:

SEXUAL REPRODUCTION IN FLOWERING PLANTS

1. Which of the following cells secrete enzymes to dissolve the nucellus and create an entry for the male germ cell?
(a) Synergid cell (b) Egg cell (c) Both a and b (d) Central cell
2. The flower in which the stamens mature first, shedding their pollens before the stigma are receptive are known as
(a) Protogynous flower (b) Heterostyly flower
(c) Protandrous flower (d) Herkogamy flower
3. True cross pollination is found only in
(a) Bisexual flowers (b) Unisexual flowers
(c) Acyclic flowers (d) Actinomorphic flowers
4. Before fertilization, nuclei of a particular cell fuse and form a diploid nucleus. The cell is
(a) Antipodal cell (b) Central cell (c) Egg cell (d) Synergid cell
5. Which one of the following produces both enzymes and hormones?
(a) Endothecium (b) Middle layer (c) Epidermis (d) Tapetum
6. Ruminant endosperm is found in the seeds of
(a) Compositae (b) Cruciferae (c) Euphorbiaceae (d) Annonaceae
7. Nutritive role of the embryo sac is attributed to
(a) Synergids (b) Antipodals (c) Egg cell (d) Polar nuclei
8. When the pollen tube enters through the funiculus or the integument it is called
(a) Porogamy (b) Chalazogamy (c) Mesogamy (d) Isogamy
9. Polygonum type of embryo sac is
(a) 8-nucleate (b) 16-nucleate (c) 24-nucleate (d) 32-nucleate
10. Sexual reproduction was discovered in plants by
(a) Camerarius (b) Amici (c) Strasburger (d) Nawaschin
11. Exine of pollen is made up of
(a) Pectocellulose (b) Lignocellulose

- (c) Sporopollenin (d) Pollen kit
12. Pollinia is found in flowers of
(a) *Calotropis* (b) *Vinca* (c) *Hibiscus* (d) *Salvia*
13. Allogamy is favored by
(a) Homogamy (b) Cleistogamy (c) Monocliny (d) Dicliny
14. When the body of the ovule lies at right angles to the funicle and the micropyle lies close to the latter, it is termed as
(a) Anatropous (b) Hemianatropous (c) Campylotropous (d) Amphitropous
15. Meiotic division in an ovule takes place in
(a) Nucellus (b) Megaspore mother cell (c) Megaspore (d) Archegonium
16. Endosperm is generally
(a) Diploid (b) Triploid (c) Haploid (d) Polyploidy
17. What is the cotyledon of the maize embryo?
(a) Aleurone layer (b) Scutellum (c) Plumule (d) Radicle
18. An endosperm having irregular boundaries is termed as
(a) Nuclear (b) Cellular (c) Helobial (d) Ruminant
19. The largest cell of the embryo sac is
(a) Egg (b) Central cell (c) Antipodal (d) Synergid
20. Endothecium is responsible for
(a) The nourishment of anther (b) The dehiscence of anther
(c) The formation of pollen grains (d) None of the above
21. Which of the following is a post fertilisation event in flowering plants?
(a) transfer of pollen grain (b) endosperm development
(c) formation of flower (d) formation of pollen grains
22. Select the mismatched pair
(a) microsporangium-pollen sac (b) megasporophyll-stamen
(c) megasporangium-ovule (d) embryo sac-female gametophyte
23. The true embryo develops as a result of fusion of
(a) two polar nuclei of embryo sac (b) egg cell and male gamete
(c) synergid and male gamete (d) male gamete and antipodals
24. How many meiotic divisions are required for the formation of 100 pollen grains?
(a) 100 (b) 50 (c) 25 (d) 26
25. Wind pollinated plants generally do not show the following character
(a) Feathery stigma (b) Single ovule in the ovary
(c) Well exposed stamens (d) Flowers are large and colourful
26. Identify the pair of wrong statements in the following
I) Intine of pollen grain is made up of sporopollenin
II) Pollen grains are well preserved as fossils because of the presence of sporopollenin
III) Enzymes can degrade the organic material of the exine of pollen grain
IV) Sporopollenin can withstand high temperatures, strong acids and alkali
(a) III, IV (b) I, III (c) I, II (d) II, III
27. Which one is the correct sequence of gametogenesis?

- (a) Microspore mother cell, Sporogenous tissue, Pollen grain, microspore
 (b) Pollen grain, microspore, microspore mother cell, Sporogenous tissue
 (c) Sporogenous tissue, microspore, pollen grain, microspore mother cell
 (d) Sporogenous tissue, microspore mother cell, microspore, pollen grain
28. The fleshy edible part of apple is
 (a) Thalamus (b) Endosperm (c) Ovary (d) Nucellus
29. Assertion: 7-celled, 8 nucleate and monosporic embryo sac is called Polygonum type of embryo sac.
 Reason: It was discovered by Hofmeister for the first time in Polygonum.
 (a) Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
 (b) Both Assertion and Reason are true but the Reason is not the correct explanations of Assertion.
 (c) Assertion is true, but Reason is false.
 (d) Both Assertion and Reason are false.
30. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called
 (a) Geitonogamy (b) Xenogamy (c) Autogamy (d) cleistogamy
31. Match the following ovular structure with post fertilization structure and select the correct alternative.
- | | |
|-----------------|--------------|
| A. Ovule | 1. Endosperm |
| B. Funiculus | 2. Aril |
| C. Nucellus | 3. Seed |
| D. Polar nuclei | 4. Perisperm |
- (a) A = 2, B = 3, C = 4, D = 1 (b) A = 2, B = 3, C = 1, D = 4
 (c) A = 3, B = 2, C = 4, D = 1 (d) A = 3, B = 2, C = 1, D = 4
32. After fertilization, the fertilized _____ becomes the seed and the _____ becomes the fruit of the plant.
 (a) ovule, ovary (b) ovary, ovule (c) stamen, pistil (d) pistil, stamen
33. Which of the following is the correct sequence for the pollen tube to eventually reach the egg in a flowering plant?
 (a) stigma, style, ovary, ovule (b) stigma, ovary, ovule, style
 (c) style, stigma, ovary, ovule (d) ovary, ovule, stigma, style
34. Match the following.
- | | |
|-----------------------------|-------------|
| A. parthenocarpy | 1. Iodoicea |
| B. polyembryony | 2. banana |
| C. largest seed | 3. mango |
| D. seeds from arctic tundra | 4. Lupines |
- (a) A = 2, B = 3, C = 4, D = 1 (b) A = 2, B = 3, C = 1, D = 4
 (c) A = 3, B = 2, C = 4, D = 1 (d) A = 3, B = 2, C = 1, D = 4
35. Apomixis means
 (a) Sexual reproduction (b) Formation of seeds without fusion of gametes

- (c) Vegetative propagation (d) Formation of seedless fruit
36. Which one undergoes meiosis?
 (a) PMC (b) Root tips (c) Pollen grain
 (d) antipodals
37. Which of the following pairs are haploid structures?
 (a) nucellus and antipodal cells (b) antipodal cells and egg cell
 (c) antipodal cells and megaspore mother cell (d) nucellus and primary endosperm nucleus
38. What is the collar like outgrowth developing from the base of the ovule and forming a sort of third integument?
 (a) Caruncle (b) Aril (c) perisperm (d) Operculum
39. Which of the following plant is not pollinated by water?
 (a) *Vallisneria* (b) water hyacinth (c) *Hydrilla*
 (d) *Zostera*
40. If an angiospermic male plant is diploid and female plant is tetraploid, the ploidy of endosperm will be
 (a) tetraploid (b) pentaploid (c) haploid (d) triploid

HUMAN REPRODUCTION

1. Pick the hormone which is not secreted by human placenta
 (a) hCG (b) Estrogen
 (c) Progesterone (d) FSH
2. The duct of seminal vesicle joins the vas deferens and opens into urethra as
 (a) Ureter (b) Ejaculatory duct
 (c) Epididymis (d) Vas efferentia
3. Which one of the following has diploid set of chromosomes?
 (a) Ootid (b) Spermatid
 (c) Secondary spermatocyte (d) Primary oocyte
4. Middle piece of sperm contains
 (a) Centriole (b) Mitochondria
 (c) Nucleus (d) Acrosome
5. Chose the correct sequence of events during sexual reproduction in humans
 (a) gametogenesis-insemination-fertilisation- implantation-gestation-parturition
 (b) gametogenesis-insemination- implantation-gestation-fertilisation-parturition
 (c) gametogenesis-implantation-gestation-fertilisation-insemination-parturition

- (d) gametogenesis-parturition-insemination-gestation-fertilisation-implantation
6. Which one of the statements regarding a pair of testes in human male is correct?
- (a) They are present in the abdominal cavity
 - (b) They are formed after puberty
 - (c) They are both reproductive and endocrine in function
 - (d) They are reproductive but not endocrine in function
7. Structural and functional units of testes are
- (a) Interstitial cells
 - (b) testicular lobules
 - (c) Seminiferous tubules
 - (d) rete testis
8. Which one of these is not an accessory gland in male reproductive system?
- (a) Prostate gland
 - (b) Seminal vesicle
 - (c) Cowper's gland
 - (d) Bartholins gland
9. The hormones LH and FSH are at peak level during
- (a) Menstrual phase
 - (b) Pre-ovulatory phase
 - (c) Ovulatory phase
 - (d) Post-ovulatory phase
10. MTP is considered safe up to ____ weeks of pregnancy
- (a) 6 weeks
 - (b) 8 weeks
 - (c) 10 weeks
 - (d) 12 weeks
11. Which one of the following is most widely accepted method of contraception in India at present
- (a) Condoms
 - (b) IUD
 - (c) Diaphragm
 - (d) Cervical caps
12. The part of fallopian tube closest to ovary
- (a) Ampulla
 - (b) Isthmus
 - (c) Infundibulum
 - (d) Cervix
13. The secretion of one of the following glands is rich in fructose, calcium and some enzymes of
- (a) Salivary glands
 - (b) Mammary glands
 - (c) Male reproductive accessory gland
 - (d) Female reproductive accessory glands
14. Which one of the statements regarding blastocyst in human is correct?
- (a) It has more cytoplasm and more DNA than uncleaved zygote
 - (b) It has equal quantity of cytoplasm as an uncleaved zygote but more DNA

- (c) It has less cytoplasm as well as well as DNA than uncleaved zygote
- (d) It has equal quantity of DNA and cytoplasm as in uncleaved zygote

15. In the absence of acrosome, the sperm

- (a) Cannot grow
- (b) Cannot move
- (c) Cannot get energy
- (d) Cannot penetrate egg

16. Read the statements (A) and (B). Choose the right one.

Statement (A): progesterone is secreted by corpus luteum

Statement (B): oogenesis takes place in Graffian follicle

- (a) Both the statements are wrong.
- (b) Statement (A) is wrong, (B) is correct
- (c) Statement (B) is wrong, (A) is correct
- (d) Both the statements (A) and (B) are

correct

17. Functions of fallowing structures are given below. Identify the incorrect pair

- (1) Endometrium - implantation
- (2) Fimbriae - sucking of egg
- (3) Leydig cell - secretion of estrogen
- (4) Sperm tail- movement

- (a) 1
- (b) 2
- (c) 3
- (d) 4

18. Human placenta performs all the function except

- (a) Transport
- (b) excretion
- (c) storage
- (d) digestion

19. In IVF technique which of the following is transferred into oviduct

- (a) Zygote
- (b) 8 celled embryo
- (c) 32 celled embryo
- (d) donor sperm and ovum

20. Ovulation is caused by the hormone

- (a) FSH
- (b) Progesterone
- (c) Oxytocin
- (d) LH

21. The endocrine structure and the corresponding hormones are listed in the table below. Match the

columns and select the correct option.

Column – I

Column – II

- (a) Hypothalamus

- (p) Relaxin

- (b) Anterior Pituitary
- (c) Testis
- (d) Ovary

- (q) Estrogen
- (r) FSH and LH
- (s) Androgens
- (t) Gonadotropin releasing hormone

(a) (a) - (t), (b) - (r), (c) - (s), (d) - (q)

(b) (a) - (t), (b) - (r), (c) - (q), (d) - (s)

(c) (a) - (p), (b) - (q), (c) - (s), (d) - (r)

(d)(a)- (r), (b) - (t), (c) - (s), (d) - (q)

22. The follicular phase is to the _____ as the luteal phase is to the secretory phase.

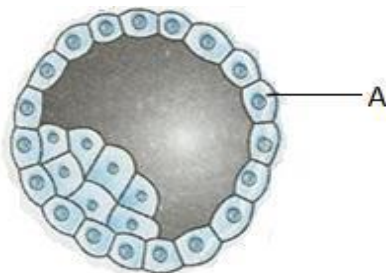
- (a) Post ovulatory
- (c) Proliferative

- (b) Menstrual
- (d) Ovulatory

23. Which one of the following statements is correct?

- (a) FSH and LH occur in both males and females
- (b) Relaxin is secreted from ovary and placenta
- (c) LH stimulates Sertoli cells to secrete androgens
- (d) All of these are correct

24. Identify the part of Blastocyst labelled as “A”



- (a) Inner cell mass
- (b) Morula
- (c) Epidermis
- (d)

Trophoblast

25. Progesterone is called pregnancy hormone as it helps in

- (a) Release of ovum from ovary
- (b) Maintaining pregnancy and bring about labour pain

- (c) Help in causing contraction of uterus for delivery
- (d) All of the above

26. Signals for parturition originate from

- (a) Placenta only
- (b) Fully developed foetus only
- (c) Both placenta as well as fully developed foetus
- (d) Oxytocin released from maternal pituitary

27. Choose the correct order for the path of sperm from the testes to outside the body.

- (a) Ductus deferens - epididymis - ejaculatory duct - penis
- (b) Epididymis - ductus deferens - ejaculatory duct - penis
- (c) Ejaculatory duct - ductus deferens - epididymis - penis
- (d) Penis - ejaculatory duct - epididymis - ductus deferens

28. Which of the following hormones are secreted by the corpus luteum?

- (a) Prolactin
- (b) Progesterone
- (c) Human chorionic gonadotrophin
- (d) FSH

29. The process of sperm production takes place in the

- (a) Epididymis
- (b) Vas deferens
- (c) Prostate gland
- (d) Seminiferous tubules

30. Arrange these steps of oogenesis in order

- (A) Secondary oocyte divides to form a polar body and an egg cell.
- (B) Oocyte divides to form a secondary oocyte and a first polar body.
- (C) Follicle is converted to a corpus luteum.
- (D) Corpus albicans is formed

- (a) A B C D
- (b) D C B A
- (c) B A C D
- (d) B A

D C

32. Match the following

List – I

- A) Leydig cells
- B) Sertoli cells
- C) Rete testis
- D) Corpus luteum

List – II

- I) Carry sperms from seminiferous tubules to vasa efferentia
- II) Nourish sperms
- III) Secretion of testosterone
- IV) Secretion of progesterone

- (a) A- II, B- III, C-I, D- IV

- (b) A-III, B- II, C-IV, D-I

- (c) A-III, B- II, C- I, D- IV

- (d) A-II, B- III, C-IV, D -I

33. When does a human egg cell complete its meiotic division?

- (a) Before the female is born
- (b) just before ovulation
- (c) After sperm penetration
- (d) after cleavage has begun

34. During the _____ phase of menstruation, the lining of the uterus starts to rebuild

(a) Menstrual (b) Proliferative (c) Secretory (d) The lining of the uterus rebuilds continually

35. The _____ are the first haploid cells during the process of oogenesis.

- (a) Oogonia (b) Primary oocyte (c) Secondary oocyte (d) Ootid

36. Spermiogenesis refers to

- (a) release of sperms from seminiferous tubules (b) Phase of multiplication
(c) Formation of primary oocyte (d) Metamorphosis of spermatids

into sperms

37. In early stages of vertebrate cleavage, successive blastomeres

- (a) are equal in size to that of the original zygote (b) become smaller and smaller
(c) grow larger and larger (d) migrate to positions of future

development

38. Column I contains terms and column II contains definitions. Match them correctly and choose the

right answer.

Column – I

- A) Parturition
B) Gestation
C) Ovulation
D) Implantation
E) Conception

Column – II

- p) Attachment of zygote to endometrium
q) Release of egg from Graafian follicle
r) Delivery of baby from uterus
s) Duration between pregnancy and birth
t) Formation of zygote by fusion of the egg

and sperm

- (a) A = q, B = s, C = p, D = t, E = r (b) A = s, B = r, C = p, D = t, E = q
(c) A = t, B = p, C = q, D = r, E = s (d) A = r, B = s, C = q, D = p, E = t

39. Which of the following groups of cells in the male gonad represents haploid cells?

- (a) Spermatogonial cells (b) Germinal epithelial cells
(c) Secondary spermatocyte (d) Primary spermatocyte

40. Which of the following group of hormones are produced from placenta?

- (a) Estrogens, hPL and FSH
- (c) Progesterone, hPL and LH

- (b) hCG, hPL and Progesterone
- (d) hCG, hPL and ICSH

REPRODUCTIVE HEALTH

1. Which tissue secretes hCG? What is the conclusion drawn from a positive hCG test?
2. The human male ejaculates about 200 to 300 million sperms at once. However, the ovum is fertilized by only one sperm. How does the ovum block the entry of additional sperm?
3. How are multiple embryos formed in citrus fruits?
4. Name the stage and organ in human female where:
 - a. First meiotic division begins and completes
 - b. Second meiotic division begins and completes.
5. What is the significance of Leydig cells? What will happen if Sertoli cells are absent or non-functional in a person?
6. Give reasons for the following:
 - a. Apple and cashews are not considered true fruits.
 - b. Hybrid seeds have to be produced year after year.
7. Why is Saheli considered an effective contraceptive for women to space children?
8. Why is ZIFT a boon to childless couples? Explain the procedure.
9. Name two techniques for determining the condition of the foetus.
10. Briefly give an account of various intra uterine contraceptive measures. What are advantages? How do they function?

Abhilasha

PGT Biology