مـــدرسـة دلهـــي الخـاصـة ذ.م.م.
DELHI PRIVATE SCHOOL L.L.C.
Affiliated to C.B.S.E., DELHI
(Approved & Recognized By Ministry of Education - United Arab Emirates)
DPS SHARJAH

FT/BIQP/1221/B **28-SEP-2021**

FIRST TERM EXAMINATION (2021-22)

Subject: Biology **Max. Marks:35**

Grade: 12 **Time:90 min**

Name: **Section:** **Roll No:**

General Instructions:

- *This question paper consists of 8 printed pages.*
- *Answers to be bubbled in the OMR sheet provided.*
- *The Question Paper contains three sections.*
- *Section A has 24 questions. Attempt any 20 questions.*
- *Section B has 24 questions. Attempt any 20 questions.*
- *Section C has 12 questions. Attempt any 10 questions.*
- *All questions carry equal marks.*
- *There is no negative marking.*

SECTION-A

1. Which one of the following statements is correct?

a. Endothecium produces the microspores.
b. Tapetum nourishes the developing pollen.
c. Hard outer layer of pollen is called intine.
d. Sporogenous tissue is haploid

2. What type of pollination takes place in Vallisneria?

a. Pollination occurs in submerged condition by water
b. Flowers emerge above surface of water, and pollination occurs by insects.
c. Flowers emerge above water surface, and pollen is carried by wind.
d. Male flowers are carried by water currents to female flowers at surface of water

3. A dicotyledonous plant bears flowers, but never produces fruits and seeds. The most probable cause for the above situation is

a. Plant is dioecious and bears only pistillate flowers
b. Plant is dioecious and bears both pistillate and staminate flowers
c. plant is monoecious
d. plant is dioecious and bears only staminate flowers

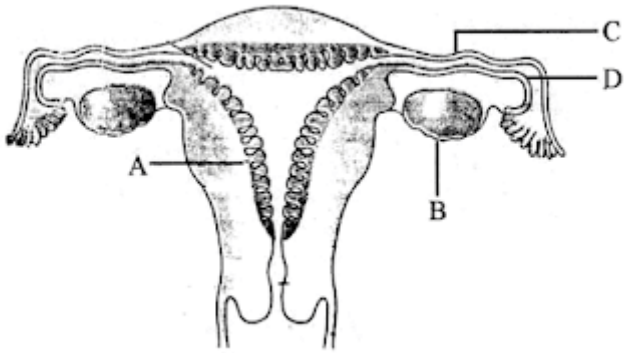
4. In a fertilized embryo sac, the haploid, diploid and triploid structures are-

a. Synergid, zygote and primary endosperm nucleus
b. Synergid, antipodal and polar nuclei
c. Antipodal, synergid and primary endosperm nucleus
d. Synergid, polar nuclei and zygote

5. 256 microspores will form by the meiosis of-

a. 512 microspore mother cells
b. 128 microspore mother cells
c. 64 microspore mother cells
d. 48 microspore mother cells

6. Observe the given diagram and choose the correct label



a. A-Perimetrium
b. B-Ovule
c. C-Isthmus of fallopian tube
d. Both A and C

7. Urethral meatus refers to the-
a. urinogenital duct
b. opening of vas deferens into urethra
c. external opening of the urinogenital duct
d. muscles surrounding the urinogenital duct.

8. The outermost membranous cover of the ovum at ovulation is.
a. corona radiata
b. zona radiata
c. zona pellucida
d. chorion

9. In spermatogenesis, reduction division of chromosome occurs during conversion of
a. Spermatogonia to primary spermatocytes
b. Primary spermatocytes to secondary spermatocytes
c. Secondary spermatocytes to spermatids
d. Spermatids to sperms.

10. A particular species of plant produces light, non-sticky pollen in large numbers and its stigmas are long and feathery. These modifications facilitate pollination by
a. insects
b. Water
c. Wind
d. animals.

11. Which one of these tissues is not produced from the embryonic mass of a dicotyledonous seeds?
a. Root tip
b. Plumule
c. Hypocotyl
d. Cotyledons

12. Male honey bees produced by parthenogenesis ,which type of cell division found during Gametogenesis of such male bees?
a. Mitosis
b. Meiosis
c. Amitosis
d. All of the above

13. In a monohybrid cross in F2 generation 64 dwarf plants have been produced. How many hybrid tall plants will be produced in the same cross?
a. 64
b. 128
c. 192
d. 256

14. A human zygote has XXY sex chromosome along with 22 pairs of Autosome, what will be the sex of the individual the developing from the zygote?
a. Male
b. Female
c. Both a & b
d. Not certain

15. How many types of genotypes are found to make the human blood group?
a. 4
b. 5
c. 6
d. 7

16. Which of the following disease belong to autosomal recessive mendelian disorder?

a. Colour blindness **b.** Haemophilia

c. Sickle cell anaemia **d.** All of the above

17. During sickle cell anaemia , in what form does the replacement can be seen in codon ?

a. GAG to GTG **b.** GAG to GUG

c. GAG to GCG **d.** GAG to CAG

18. If the sequence of initrogen bases of the coding strand of DNA in a transcription unit is: 5' – ATGAATG – 3', the sequence of bases in its RNA transcript would be

a. 5' – AUG A AUG – 3' **b.** 5' – UACUU AC – 3'

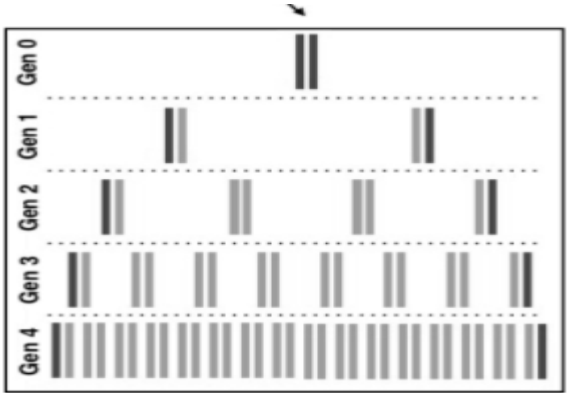
c. 5' – CAUUCAU – 3' **d.** 5' – GUAAGUA – 3'.

19. While analysing the DNA of an organism a total number of 5386 nucleotides were found out of which the proportion of different bases were: Adenine = 29%, Guanine = 17%, Cytosine = 37%, Thymine = 17%. Considering the Chargaff's rule it can be concluded that:

a. It is a double stranded circular DNA **b.** It is a double stranded linear DNA

c. No conclusion can be drawn **d.** It is single stranded DNA

20. If Meselson and Stahl's experiment is continued for four generations in bacteria as given below the ratio of N15/N15: N15/N14: N14/N14 containing DNA in the fourth generation would be:
(Dark coloured line-N15 containing strand, Light coloured line -N14 containing strand.



a. 1:1:0 **b.** 0:1:3

c. 0:1:7 **d.** 1:4:0

21. In E coli the operon gets switched on when:

a. Lactose is present and it binds to the repressor **b.** Lactose is present and it binds to RNA polymerase

c. Repressor binds to operator **d.** RNA polymerase binds to the operator

22. The fact that a purine base always paired through hydrogen bonds with a pyrimidine base leads to_____ in the DNA double helix.

a. The antiparallel nature **b.** The semi conservative nature

c. Uniform width through out DNA **d.** Uniform length in all DNA

23. The net electric charge on DNA and histones is

a. Both positive **b.** Both negative

c. Negative and positive,respectively **d.** Zero

24. Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acid?

a. GUU,GCU-Alanine **b.** UAG,UGA-Stop

c. AUG,ACG-Start/methionine **d.** UUA,UCA-Leucine

SECTION - B

Section - B consists of 24 questions (Q No.25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

Question No. 25 to 28 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

25. **Assertion**: The endometrium undergoes cyclical changes during menstrual cycle.
Reason: The myometrium exhibits strong contractions during delivery of the baby

a. Both A and R are true and R is the correct explanation of A.
b. Both A and R are true and R is not the correct explanation of A
c. A is true but R is false
d. A is False but R is true

26. **Assertion**: In zygote intra fallopian transfer the zygote is transferred to the fallopian tubes of the female.
Reason: ZIFT is a in vivo fertilisation method.

a. Both A and R are true and R is the correct explanation of A.
b. Both A and R are true and R is not the correct explanation of A
c. A is true but R is false
d. A is False but R is true

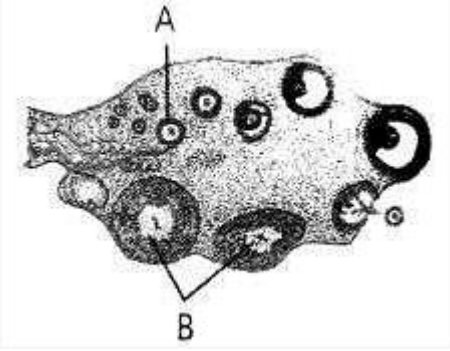
27. **Assertion:** Not all copulation leads to pregnancy.
Reason: Fertilisation can only occur if the ovum and sperms are transported simultaneously to the ampullary isthmic junction.

a. Both A and R are true and R is the correct explanation of A.
b. Both A and R are true and R is not the correct explanation of A
c. A is true but R is false
d. A is False but R is true

28. **Assertion** : In birds, the chromosome composition of the egg determines the sex.
Reason : Female birds are heterogametic.

a. Both A and R are true and R is the correct explanation of A.
b. Both A and R are true and R is not the correct explanation of A
c. A is true but R is false
d. A is False but R is true

29. The figure shows a section of human ovary. Select the option which gives the correct identification of either A or B with function/ characteristic.



a. B- Corpus luteum - Secretes progesterone
b. A- Tertiary follicle - Forms Graafian follicle
c. B- Corpus luteum - Secretes estrogen
c. A- Primary oocyte - It is in the prophase I of the meiotic division

30. Which of the following statements is not correct?

a. Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil.

b. Some reptiles have also been reported as pollinators in some plant species.

c. Pollen grains of many species can germinate on the stigma of a flower, but only one pollen tube of the same species grows into the style.

d. Insects that consume pollen or nectar without bringing about pollination are called pollen/ nectar robbers

31. Attractants and rewards are required for

a. Entomophily

b. Hydrophily

c. Cleistogamy

d. Anemophily

32. Which of the following hormones are not secreted by placenta?

a. HCG

b. Estrogens

c. Progesterone

d. LH

33. What is the full form of RCH?

a. Reproductive and Child Health Care

b. Reproductive and Child Health programme

c. Reproductive and Child Health Care programme

d. Reproductive and Child Health

34. India initiated Reproductive health programmes in

a. 1950s

b. 1980s

c. 1960s

d. 1990s

35. Embryo sac of an angiosperm is homologous to

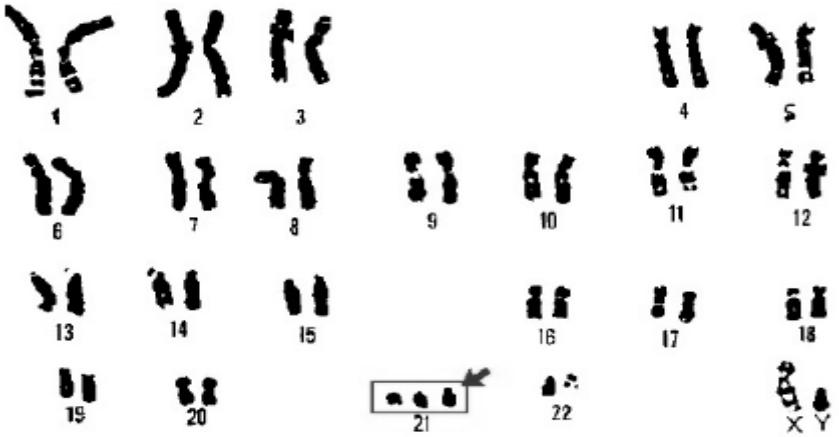
a. Megaspore

b. Female gametophyte

c. Sporangium

d. None of above.

36. Choose the correct option for the given human karyotype picture having a chromosomal disorder.



a. Human female with down syndrome

b. Human female with Klinifelter syndrome

c. Human male with down syndrome

d. Human male with Klinifelter syndrome

37. If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is

a. Autosomal dominant

b. Autosomal recessive

c. Sex linked dominant

d. Sex linked recessive

38. In XO type of sex determination

a. Males produce two different types of gametes
b. Females produce two different types of gametes
c. Males produce gametes with Y chromosome
d. Females produce gametes with Y chromosome

39. In Antirrhinum two plants with pink flowers were hybridized. The F1 plants produced red, pink and white flowers in the proportion of 1 red, 2 pink and 1 white. What could be the genotype of the two plants used for hybridization? Red flower colour is determined by RR and white by rr genes?
a. rrrr
b. RR
c. Rr
d. rr

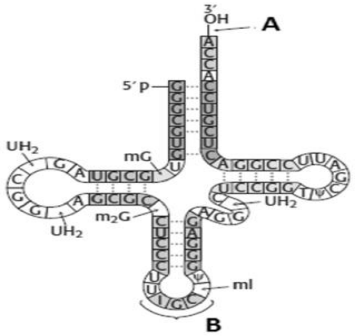
40. A man and a woman, who do not show any apparent signs of a certain inherited disease, have seven children (2 daughters and 5 sons). Three of the sons surfer from the given disease but none of the daughters affected. Which of the following mode of inheritance do you suggest for this disease?
a. Sex-linked dominant
b. Sex-limited recessive
c. Sex-linked recessive
d. Autosomal dominant

41. Due to the cross between TTRr X ttrr the resultant progenies show what percent of tall, red flowered plants
a. 50%
b. 75%
c. 25%
d. 100%

42. The following ratio is generally constant for a given species:
a. A + G/C + T
b. T + C/G + A
c. G + C/A + T
d. A + C/T + G

43. Select the two correct statements out of the four (i - iv) statements given below about lac operon.
(i) Glucose or galactose may bind with the repressor and inactivate it.
(ii) In the absence of lactose the repressor binds with the operator region,
(iii) The z-gene codes for permease.
(iv) This was elucidated by Francois Jacob and Jacques Monod. The correct statements are
a. (ii) and (iii)
b. (i) and (iii)
c. (ii) and (iv)
d. (i) and (ii)

44. Anticodon is an unpaired triplet of bases in an exposed position of ____in a _____ molecule as per the given diagram. Find the correct options for the blanks.



a. A,rRNA
b. A,tRNA
c. B,tRNA
d. B,rRNA

45. The final proof for DNA as the genetic material came from the experiments of
a. Hershey and Chase
b. Avery, MacLeod and McCarty
c. Hargobind Khorana
d. Griffith

46. In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are

a. G 17%, A 33%, T 33%
b. G 8.5%, A 50%, T 24.5%
c. 34%, A 24.5%, T 24.5%
d. 17%, A 16.5%, T 32.5%.

47. Match the following RNA polymerase with their transcribed products :

(1) RNA polymerase I (i) tRNA
(2) RNA polymerase II (ii) rRNA
(3) RNA polymerase III (iii) hnRNA

Select the correct option from the following :

a. 1-i, 2-iii, 3-ii
b. 1-i, 2-ii, 3-iii
c. 1-ii, 2-iii, 3-i
d. 1-iii, 2-ii, 3-i

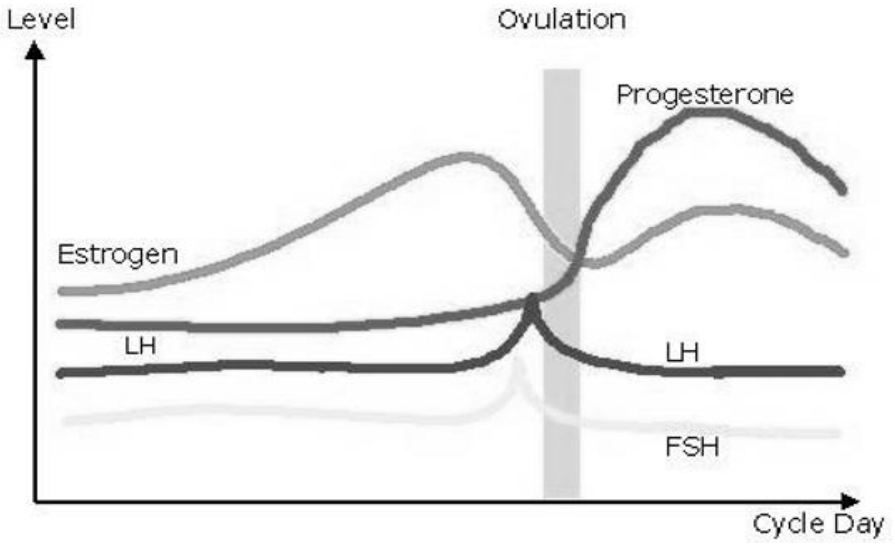
48. Gene and cistron words are sometimes used synonymously because

a. one cistron contains many genes
b. one gene contains many cistrons
c. one gene contains one cistron
d. one gene contains no cistron

SECTION - C

Section-C consists of one case followed by 6 questions linked to this case (Q.No.49 to 54). Besides this, 6 more questions are given. Attempt any 10 questions in this section.
The first attempted 10 questions would be evaluated.

Case Study the graph given and answer the questions



49. Name the ovarian and pituitary hormone that are responsible for development of follicles.

a. Estrogen and LH
b. Estrogen and progesterone
c. FSH and LH
d. Progesterone and FSH

50. In which phase of menstrual cycle corpus luteum is formed and name the hormone it secretes.

a. Ovulatory phase and progesterone
b. Luteal phase and progesterone
c. Follicular phase and progesterone
d. Menstrual phase and progesterone

51. What are the three phases of oogenesis?

a. Multiplication phase, growth phase and reproductive phase
b. Multiplication phase , growth phase and maturation phase
c. Growth phase, maturation phase and secretory phase
d. Secretory phase, growth phase and maturation phase

52. The phase in woman's life when ovulation and menstruation stops is called:

a. Menarch
b. Puberty
c. Menopause
d. Reproduction

53. Withdrawal of which hormone causes menstruation?

a. Estrogen
b. Progesterone
c. FSH
d. LH

54. In the fertile human female, approximately on which day of the menstrual cycle does ovulation take place?

a. Day 14
b. Day 18
c. Day 1
d. Day 8

55. If both parents are carriers for thalassaemia, which is an autosomal recessive disorder, what are the chances of progeny resulting in an affected child?

a. 25%
b. 100%
c. No chance
d. 50%

56. There are three genes a, b, c. Percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome?

a. b, a, c
b. a, b, c
c. a, c, b
d. None of these

57. In a plant, red fruit (R) is dominant over yellow fruit (r) and tallness (T) is dominant over shortness (t). If a plant with RRTt genotype is crossed with a plant that is rrtt,

a. 25% will be tall with red fruit
b. 50% will be tall with red fruit
c. 75% will be tall with red fruit
d. all the offspring will be tall with red fruit

58. Under which of the following conditions there will be no change in the reading frame of following mRNA?

5' AACAGCGGUGCUAUU 3'

a. Deletion of GGU from 7th, 8th and 9th positions
b. Insertion of G at 5th position
c. Deletion of G from 5th position
d. Insertion of A and G at 4th and 5th position respectively

59. If the DNA codons are ATG ATG ATG and a cytosine base is inserted at the beginning, then which of the following will result?

a. CAT GAT GAT G
b. A non-sense mutation
c. ATG ATG ATG
d. CA TGA TGA TG

60. DNA fingerprinting refer to

a. molecular analysis of profiles of DNA samples
b. analysis of DNA samples using imprinting devices
c. techniques used for molecular analysis of different specimens of DNA
d. techniques used for identification of fingerprints of individuals.

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