Sample Question Paper 2 (TERM - I)

Class XII (Session - 2021-22)

Subject- Biology

Time Allowed: 90 minutes **Maximum Marks: 40**

General Instructions:

1. The question paper contains three parts A, B and C.
2. Section A consists of 24 questions of 1 mark each. Any 20 questions are to be attempted.
3. Section B consists of 24 questions of 1 mark each. Any 20 questions are to be attempted.
4. Section C consists of 12 questions based on two Case Studies. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

Section – A

1. A micropyle is a

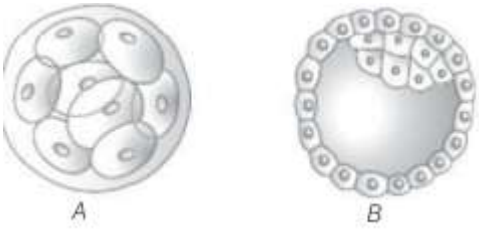
(a) Small pore through which water enters

(b) Small aperture where no integuments are present

(c) Small pore needed for seed existence

(d) All of the above

2. Identify A and B in the figure.



(a) A-Blastocyst, B-Blastomere

(b) A-Blastula, B-Gastrula

(c) A-Morula, B-Blastocyst

(d) A-Zona pellucida, B-Inner cell mass

3. Find out right statements

I. Most common endosperm is of nuclear type.

II. Coconut water is male gametophyte.

III. Coconut has both free nuclear and cellular types of endosperms.

(a) I and II

(b) I and III

(c) II and III

(d) I, II and III

4. If the central cell is missing, the embryo sac will not be able to produce?

(a)zygote.

(b) endosperm.

(c)both zygote and endosperm.

(d) free nuclear embryo.

5. Correct order of stages of development of a dicotyledonous embryo is :

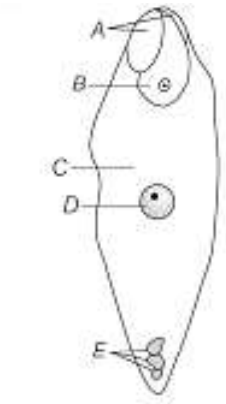
(a)Zygote ….. Embryo…..Globular embryo….Heart shaped embryo.

(b) Zygote ……Globular embryo….Pro- embryo.

(c)Embryo…. Pro-embryo…..Mature embryo…….Globular embryo.

(d) Zygote ….. Pro-embryo…..Globular embryo…….Mature embryo.

6. Which one of the following correctly labels the following diagram?



(a) A-Degenerating antipodal cell, B-Primary endosperm nucleus, C-Primary endosperm cell, D-Synergid cell, E-Zygote

(b) A-Synergid cell, B-Antipodal cell, C-Zygote, D-Endosperm cell, E-Chalazal cell

(c) A-Degenerating synergids, B-Zygote, C-Primary endosperm cell, D-Primary endosperm nucleus, E-Degenerating antipodal cell

(d) A-Zygote, B-Synergid, C-Primary endosperm cell, D-Primary endosperm nucleus, E-Degenerating antipodal cell

7. The types of gametes formed by the genotype RrYy are

(a) RY, Ry, rY, ry

(b) RY, Ry, ry, ry

(c) Ry, Ry, ry, ry

(d) Rr, RR, Yy, YY

8, Match the contraceptive methods given under Column I with their examples given under Column II. 3elect the correct option from those given below.

	Column I		Column II
A.	Chemical	1.	Tubectomy and vasectomy
B.	IUDs	2.	Copper-T and loop
C.	Barriers	3,	Condom and cervical cap
D.	Sterilisation	4.	Spermicidal jelly and foam

Codes

	A	B	C	D
a)	4	2	3	1
b)	4	1	2	3
c)	1	3	2	4
d)	4	3	2	1

9, Which of the following blood group is considered as an universal donor?

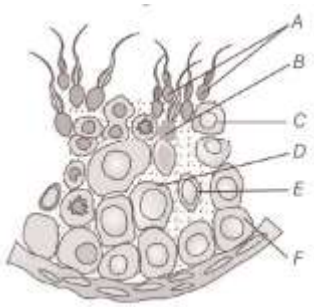
(a)A

(b)B

(c)AB

(d)O

10. Which pair correctly identifies Spermatid and Primary Spermatocyte?



(a)D and F

(b) F and E

(c)A and C

(d)B and E

11 In fowl, which parent is responsible to determine the sex of off-springs:?

A. Male parent

B. Female parent

C. Both parents

D. By environment conditions

12 Of the _____, different possible codon, _____ specify amino acids & _____ signals stop

(a)20,17,3

(b)180,20,60

(c)64,61,3

(d)61,60,1

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

A. who cannot produce an ovum

B. who cannot retain the fetus inside uterus

C. who cannot provide suitable environment for fertilization

D. all of these

14 Klinefelter's syndrome results from

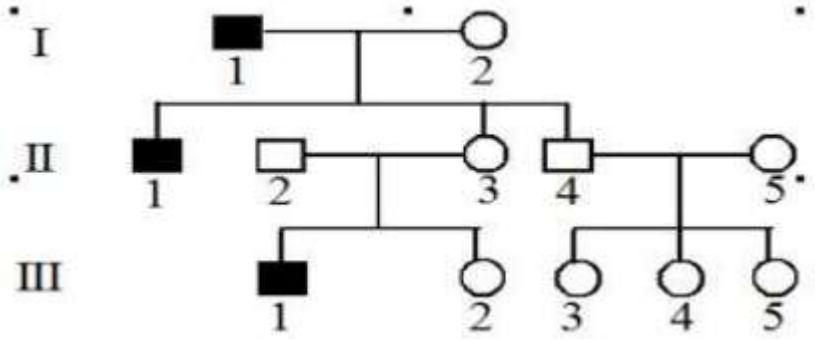
(a)XXegg and Y from sperm

(b) XX egg and XY sperm

(c) X egg and XY sperm

(d)Both (a) and (c)

15



What is the pattern of inheritance in the above pedigree chart?

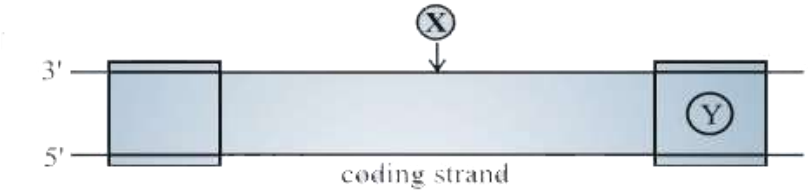
(a) Autosomal dominant

(b) Autosomal recessive

(c)Sex -linked dominant

(d) Sex -linked recessive

16 Name the parts 'X' and 'Y' of the transcription unit given below



(a)X = Template Strand, Y= Initiator

(b)X= Coding Strand, Y = Terminator

(c)X= Template Strand, Y= Terminator

(d)X= Coding Strand, Y= Initiator

17. Cytidine is a :

(a)Nucleotide

(b) Nitrogen base

(c)Nucleoside

(d) Common dinucleotide in DNA and RNA

18 In DNA strand, the nucleotides are linked together by

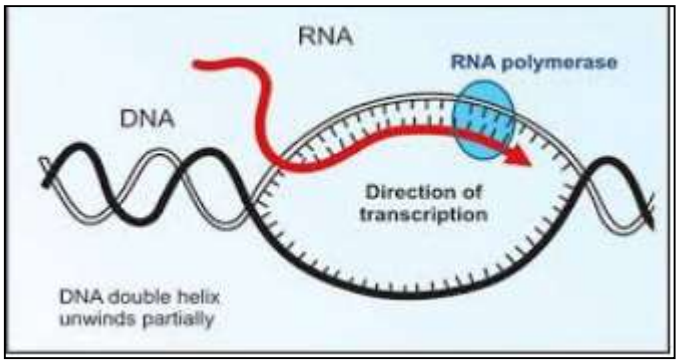
(a) glycosidic bonds

(b) phosphodiester bonds

(c) peptide bonds

(d) hydrogen bonds.

19 Observe the following and choose the correct



(a)RNA polymerase capable of initiating transcription independently.

(b) Rho factor helps in initiation.

(c)Sigma factor helps in termination.

(d) In Eukaryotes RNA polymerase I transcribe 28S,18S,5.8S rRNA

20 Choose the steps involved in DNA fingerprinting in the correct sequence.

(i) Separation of DNA fragments by electrophoresis

(ii) Transferring (blotting) of separated DNA fragments to synthetic membranes, such as nitrocellulose or nylon

(iii) Digestion of DNA by restriction endonucleases

(iv) Detection of hybridized DNA fragments by autoradiography

(a)ii, i,iv and iii

(b)i, iii, ii and iv

(c)iii, i, ii and iv

(d) iv,i,iii and ii

21 A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the Fl plants were selfed the resulting genotypes were in the ratio of:

(a)1:2:1 Tall homozygous: Tall heterozygous: Dwarf

(b) 1:2:1:: Tall heterozygous: Tall homozygous: Dwarf

(c)3:1:: Tall: Dwarf

(d) 3:1:: Dwarf: Tall

22 RCH stands for

(a) routine check-up of health

(b) reproduction cum hygiene

(c) reversible contraceptive hazards

(d) Reproductive and child health care.

23. A normal visioned man whose father was colourblind, marries a women, whose father was also colourblind. They have there first child as a daughter. What are the chances that this child would be colourblind?

(a)100%

(b)0%

(c)25%

(d)50%

24 Select the incorrect statement out of the four given below about lac operon when Lactose is present in the medium.

(a) Gene – A gets transcribed into mRNA which produces β-galactoside permease

(b) Inducer-Repressor complex is formed

(c) Lactose inactivates repressor protein

(d) RNA polymerase transcribe Z-gene, Y-gene and A-gene

Section – B

Directions: In the following questions, a statement of assertion is followed by a statement of reason.

Mark the correct choice as:

25 **Assertion:** Mendel was successful in his hybridization.

Reason: Garden pea proved ideal experimental material because of presence of contrasting characters.

(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.

26 **Assertion:** A pair of contrasting characters is termed as allele.

Reason: Only one gene of an allele is expressed in an individual.

(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.

27 **Assertion:** Cross of F1 individual with recessive homozygous parent is test cross.

Reason: No recessive individual are obtained in the monohybrid test cross progeny.

(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.

28 **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.

(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.

29 **Assertion:** Cleistogamous flowers produce assured seed set in the absence of pollinators.

Reason: These flowers do not open at all.

(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.

30 **Assertion**: Saheli - the new oral contraceptive for the female contains a non-steroidal preparation.

Reason: It is 'once a week' pill with very few side effects and high contraceptive value.

(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.

31 **Assertion:** In a DNA molecule, A–T rich parts melt before G–C rich parts.

Reason: In between A and T there are three H–bond, whereas in between G and C there are two H-bonds.

(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.

32. **Assertion:** The sugar phosphate backbone of two chains in DNA double helix show anti-parallel polarity.

Reason: The phosphodiester bonds in one strand go from a 3′ carbon of one nucleotide to a 5′ carbon of adjacent nucleotide, whereas those in complementary strand go vice versa.

(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.

33 What is the function of filiform apparatus in an angiospermic embryo sac?

(a) Brings about opening of the pollen tube

(b) Guides the pollen tube into a synergid

(c) Prevents entry of more than one pollen tube into a synergid

(d) None of these

34 The female gametophyte of a typical dicot at the time of fertilisation is

(a) 8 – celled

(b) 7 – celled

(c) 6 – celled

(d) 5 – celled

35 Nonessential floral organs in a flower are

(a) sepals and petals

(b) anther and ovary

(c) stigma and filament

(d) petals only.

36 Father of Indian embryology is

(a) P. Maheshwari

(b) Swaminathan

(c) R. Misra

(d) Butler

37 Megasporangium along with its protective integuments is called

(a) ovary

(b) ovule

(c) funicle

(d) chalaza

38 Exine of pollen grain is formed of

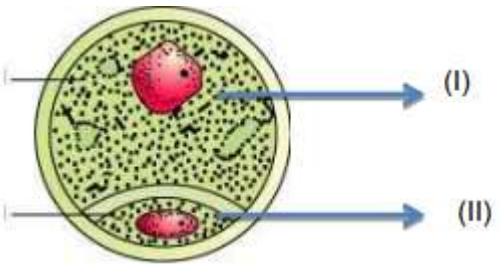
(a) callose

(b) pecto-cellulose

(c) ligno-cellulose

(d) sporopollenin

39 Study the given diagram and choose the correct statements:



Statements:

(a). (I) is Generative cell, (II) is Vegetative cell

(b).(I) is Vegetative cell, (II) is Generative cell

(c).Generative cell produce 2 Male Gamete

(d).Vegetative cell produce 2 Male Gamete

Choose the correct:

A. a) & (c)

B. (b) & (c)

C. (a) & (d)

D. (b) & (d)

40 Match the items in column I with the items in column II.

Column I	Column II
I) Remains of nucellus in a seed	a) Scutellum
II) Formation of seed without fertilization	b) Perisperm
III) Cotyledon in the seeds of grasses	c) Polyembryony
IV) Occurrence of more than one embryo in a seed	d) Apomixis

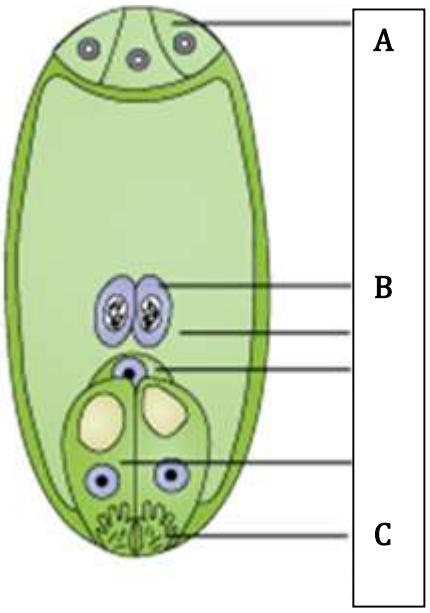
(a) I-a, II-b, III-c, IV-d

(b) I-b, II-a, III-d, IV-c.

(c)I-b, II-d, III-a, IV-c

(d) I-d, II-c, III-a, IV-b

41



Which of the following statement is correct:

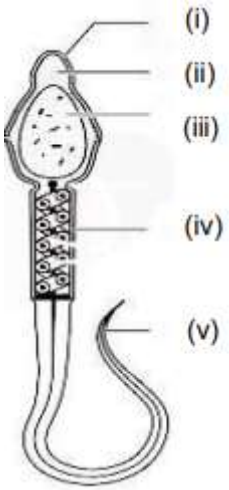
(a)(i) –Antipodal cell, (ii)-Egg Apparatus , (iii) Polar Nuclei

(b)(i) –Antipodal cell, (ii)- Polar Nuclei, (iii) Egg Apparatus

(c)(i) –Antipodal cell, (ii)- Central Cell, (iii) Egg Apparatus

(d)(i) – Egg Apparatus, (ii)- Central Cell, (iii) Antipodal cell

42



Choose the correct among the following options:

(a) (i)-Acrosome, (ii)- Plasma membrane, (iii)- Head, (iv)-Neck, (v)-Tail

(b) (i)- Head, (ii)- Plasma membrane, (iii)- Acrosome, (iv)-Neck, (v)-Tail

(c)(i)- Plasma membrane, (ii)- Acrosome, (iii)- Nucleus, (iv)-Mitochondria, (v)-Tail

(d)(i)- Plasma membrane, (ii)- Nucleus, (iii)- Acrosome,(iv)-Mitochondria, (v)-Tail

43 Identify the type of the pollination in the given plant:

(a)Entomophily

(b)Anemophily

(c)Hydrophily

(d) Ornithophily

44 Physical and chemical changes in the egg cortex which occur after the sperm entry into the egg is called_____.

(a)Cortical reaction

(b)Cleavage

(c)Metamorphosis

(d)Embryological changes

45 A human female reaches menopause around the age of

(a) 50 years

(b) 15 years

(c) 70 years

(d) 25 years

46 Match list I and list II and choose the correct answer

List I	List II
a. Hypothalamus	1. Sperm lysins
b. acrosome	2. Estrogen
c. Graafian follicle	3. Relaxin
d. Leydig cells	4. GnRH.
e. Parturition	5. Testosterone

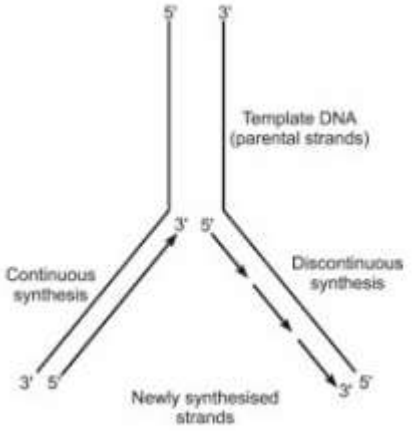
(a) a-4. b-l. c-2. d-5. e-3

(b) a-2. b-l. c-4. d-3. e-5

(c) a-2. b-l. e-5. d-4. e-3

(d) a-4. b-l. c-2. d-3. e-5

47 DNA Replication is:



(a) Continuous and Conservative

(b) Discontinuous and Semi-conservative

(c)Semi-discontinuous and Semi-conservative

(d) Conservative and Semi-discontinuous

48 Which one of the following fruits is parthenocarpic?

(a) Jackfruit

(b) Banana

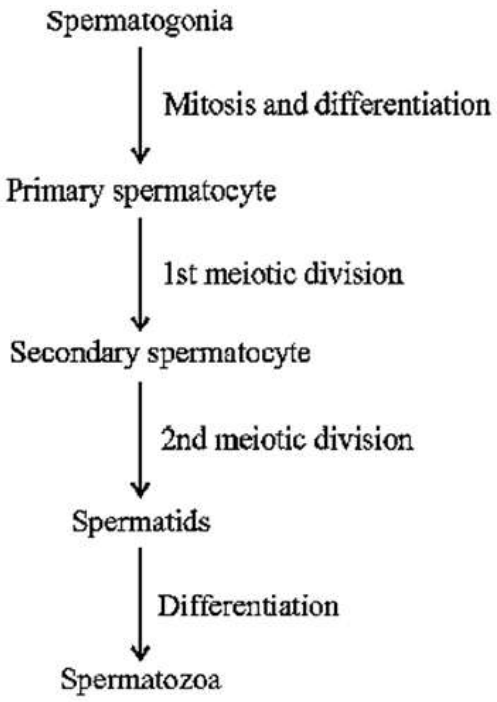
(c) Brinjal

(d) Apple

SECTION C

Section 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 10 questions in this section.

Spermatogenesis is the production of sperms from male germ cells (spermatogonia) inside the testes (seminiferous tubule). This process begin at puberty. Observe the following flow diagram and answer the questions that follows-



49 Which of this happens during spermatogenesis?

(a) Meiosis

(b) Mitosis

(c) Meiosis and mitosis

(d) None of these

50 The process of spermatogenesis is induced by

(a) TSH

(b) FSH

(c) MSH

(d) ACTH

51 The number of spermatozoa, a single primary spermatocyte finally produced in spermatogenesis is

(a) 2

(b) 4

(c) 6

(d) 8

52 The correct sequence of cell stage in spermatogenesis is

(a) spermatocyte → spermatids → spermatogonia → spermatozoa

(b) spermatogonia → spermatids → spermatocyte → spermatozoa

(c) spermatocytes → spermatogonia → spermatid → spermatozoa

(d) spermatogonia → spermatocytes→ spermatids → spermatozoa

53 Spermatozoa is

(a)Motile sperm cell

(b)Diploid cell body

(c)Haploid cell body

(d) both a) and c)

54 In spermatogenesis, the phases of maturation involve

(a) formation of spermatids from primary spermatocyte through meiosis

(b) growth of spermatogonia into primary spermatocytes

(c) formation of spermatogonia from gonocytes through mitosis

(d) formation of oogonia from spermatocyte through meiosis

55 What are the functions of non-sense codons?

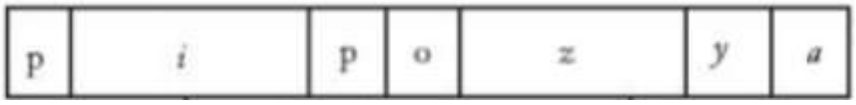
(a) Conversion of sense DNA to non-sense DNA

(b) To free the polypeptide from t-RNA

(c) To stop message of gene controlled protein synthesis

(d) To make amino acid

56 The correct option regarding the diagram given below is:



(a) Lac operon is switched on in the absence of lactose

(b) Lac repressor binds to the lac promoter and switch on the operon

(c) B-galactosidase is the only enzyme produced in large quantities when lac operon is turned on

(d) lac operon messenger RNA is a polycistronic mRNA

57 Main cause of down syndrome is

(a)Trisomy of 21st chromosome

(b)Tetrasomy of 21st chromosome

(c)Trisomy of 22nd chromosome

(d)Tetrasomy of 22nd chromosome

58 Which of the following is true with respect to AUG?

(a)It codes for methionine only

(b)It is an initiation codon

(c)It codes for methionine in both prokaryotes and eukaryotes

(d)All of the above

59 In a plant, gene "T" is responsible for tallness and its recessive allele "t" for dwarfness and "R" is responsible for red colour flower and its recessive allele "r" of white flower colour. A tall and red-flowered plant with genotype TtRr crossed with dwarf and red-flowered ttRr. What is the percentage of dwarf white-flowered offspring of the above cross?

(a) 50%

(b) 6.25%

(c) 12.5 %

(d) 50 %

60 What happens to excessive phenylalanine accumulation in the blood of a phenylketonuria patient?

(a) Get deposited on synovial membrane

(b) excreted in urine

(c) Get deposited in storage organs

(d) All of the above