

MID-TERM EXAMINATION 2023-24

BIOLOGY (044)

Class : XII
Date : 18.10.23

MARKING SCHEME

Duration : 3 Hrs
Max. Marks : 80

Section–A

MCQ Ans:

- | | |
|--|----|
| 1. (c) Banana | 1M |
| 2. (c) ICSI | 1M |
| 3. (b) One or both testes fail to descend into the scrotum | 1M |
| 4. (c) corpus luteum | 1M |
| 5. (b) AIDS | 1M |
| 6. (c) X chromosome | 1M |
| 7. (c) Transduction | 1M |
| 8. (a) Small ribonucleotide polymer | 1M |
| 9. (c) life can arise from non-living things only | 1M |
| 10. (c) fossils | 1M |
| 11. (c) interferon | 1M |
| 12. (b) B-cells | 1M |

ASSERTION AND REASON

- | | |
|--|----|
| 13. Ans: (b) Both assertion and reason are true, but reason is not the correct explanation of assertion. | 1M |
| 14. Ans: (c) Assertion is true, but reason is false. | 1M |
| 15. Ans: (a) Both assertion and reason are true, and reason is the correct explanation of assertion | 1M |
| 16. Ans: (c) Assertion is true, but reason is false. | 1M |

Section–B (2 marks)

17. a head, neck, middle piece, and tail.

Describing Parts 1M + Diagram 1M

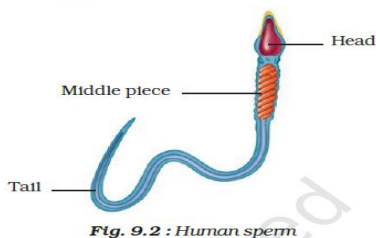


Fig. 9.2 : Human sperm

18. three kinds of phenotype in the F_2 -generation showing Codominance. Define Codominance

1/2 mark x 4 = 2 Marks

19. 2 points on lactational amenorrhea

each point 1M=2 M

20. Divergent -same origin, different function, Homologous organs

1/2 M x4 =2 M

convergent- different origin, same function, analogous organs

21. 2 points Active immunity and 2 points Passive immunity

1/2 M x4 =2 M

Active Immunity	Passive Immunity
i) When antibodies are developed by our cells in response to antigen.	i) When antibodies developed in other vertebrates in response to the deliberate infection of antigen.
ii) It takes time to develop immunity.	ii) It is used when the immune response has to be faster.
iii) It stays for a longer period.	iii) It stays for a short period.

OR

2 points of breast feeding and 2 points of bottle feeding

1/2 M x4 =2 M

Section– C (3 marks)

22. Ans

1/2 M x6 =3 M

MENARCHE	MENOPAUSE
It marks the beginning of menstruation (sexual cycle) in human female.	It marks the end of menstruation in human female.
It occurs at the age of about 10-12 years.	It occurs at the age of about 45-50 years.
It is the stage of life when the reproductive system of a female becomes functional.	It is the stage of life when the reproductive system of a female stops functioning.

23. Ans

Polygenic inheritance	Pleiotropy
Single phenotypic effect is under the control of many genes.	Single gene product confers many phenotypic effects.
The genes involved are called polygenes, e.g. human skin colour.	The genes involved are called pleiotropic genes. eg-phenylketonuria.

24. Ans. Human Genome project

1/2 M x6 =3 M

25. Ans : pollution

1/2 M x6 =3 M

26. Ans:

1/2 M x6 =3 M

Vasectomy	Tubectomy
1. It is surgical sterilisation technique for the males.	1. It is surgical sterilisation technique for the females.
2. The two vasa deferentia are interrupted by giving cuts.	2. The two oviducts are interrupted by either ligation or cuts.
3. Passage of sperms is prevented.	3. Passage of ova is prevented.

27. Origin and evolution of Man.

1/2 M x6 =3 M

OR

Oparon Haldane postulates

1/2 M x6 =3 M

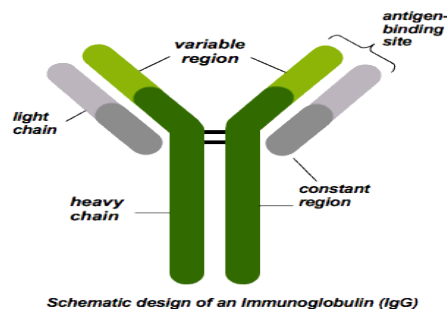
Oparin-Haldane theory of Chemical evolution

The entire process of chemical evolution can be divided into following steps

1. The origin of earth and its primitive atmosphere
2. Formation of ammonia, water, methane
3. Synthesis of simple organic compounds
4. Formation of complex organic compounds
5. Formation nucleic acids
6. Formation of protobiont or precells
7. Formation of first cell
8. Bio logical evolution

28. Structure of Antibody

diagram + 2 label=1 ½ M, 3 points 1 ½M =3M



Section– D (Case based study 4 marks)

29. 1. Triploid -3n

1M

2. The endosperm makes the main source of food for the embryo .

1M

3. There are three general types of endosperm formation: (a) nuclear type, (b) cellular type and (c) helobial type.

2M

OR

Endosperm cell is formed by fusion of male gamete with 2 polar bodies.

2M

30.a.

1M

$$p^2 + 2pq + q^2 = 1$$

frequency of homozygous dominant genotype frequency of heterozygous recessive genotype
frequency of heterozygous genotype

b. When the frequency differs from the expected values, the difference indicates the extent (direction) of evolutionary change.

1M

c. The Hardy-Weinberg equilibrium is influenced by many factor like Mutations, recombinations during sexual reproduction, genetic drift, gene migration or gene flow, and natural selection .

2M

OR

Migration changes the population size and may also alter the . Immigration increases the population size, which prolongs T_h , whereas emigration decreases the population size and enhances the genetic drift that leads the population away from the HWE. 2M

Section-E (5 marks)

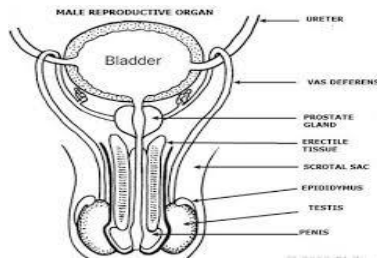
31. 10 points

1/2 M x 10 points = 5M

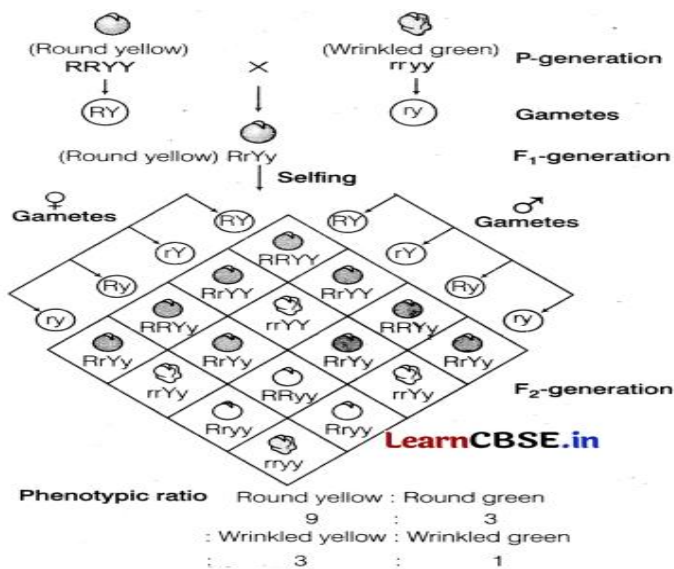
OR

Diagram(1M) + 4 label(2)=3 M, 4points= 2M

3M+2M =5M



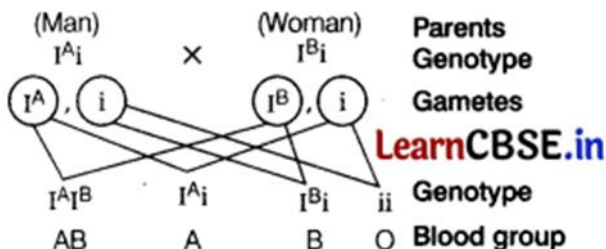
32. 4 steps 2M, punnette square 2M, dihybrid ratio 1M = 5M



OR

Answer:(a) 2 points 1M+ cross 2M=3M

Parents must be heterozygous since blood group 'O' appears in progeny. The progeny can have all the four blood groups. A, B, AB and O. There are three alleles of the gene controlling blood group character, i.e. I^A , I^B and i . I^A and I^B are dominant over i and together they are codominant to each other.

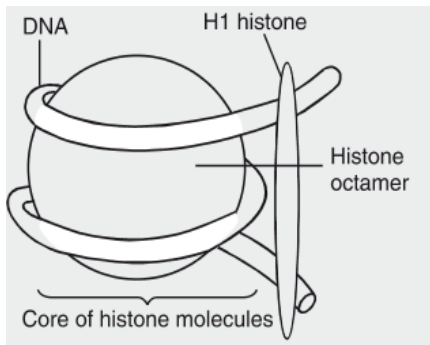


OR

(b) ABO blood grouping in humans shows the phenomenon of codominance 1/2 x 4 points = 2M

33. 1/2 M x6 points =3M Diagram +3 label= 2M

3M+2M=5M



OR

Ans:

1/2 M x10 points =5M

1. In Griffith's experiment, he used 2 strains of *Streptococcus pneumoniae* bacteria .
2. The 2 strains were S(smooth & virulent) and R(rough & avirulent) strains .
3. He injected both S(smooth & virulent) and R(rough & avirulent) strains into mice.
4. The one which was infected with the S strain grew pneumonia and died while those infected with the R strain remains alive.
5. In the second stage, Griffith heat-killed the S strain bacteria and injected it into mice, but the mice remained alive.
6. Then, he mixed the heat-killed S with live R strains.
7. This mixture was injected into mice and they died.
8. Additionally, he found living S strain bacteria in dead mice.
9. Griffith concluded that R strain bacteria had been transformed by S strain bacteria.
10. The R strain inherited a particular 'transforming principle' from the heat-killed S strain bacteria that converted R strain into virulent strain.

BEST OF LUCK

