SET -A

CLASS: XII **Model Examination – III - BIOLOGY** **MARKS: 70**

DATE: **CODE: 044** **Time: 3Hrs**

General instructions:

1. There are a total of 27 questions and five sections in the question paper. All questions are compulsory. Section A contains question numbers 1 to 5; multiple choice questions of one mark each. Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
2. Section C contains question numbers 13 to 21, short answer type II questions of three marks each. Section D contains question numbers 22 to 24; case- based short answer type questions of three marks each.
3. Section E contains question numbers 25 to 27, long answer type questions of five marks each.
4. There is no overall choice in the question paper. However, internal choices are provided in two questions of one mark, one question of two marks, two questions of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given question paper with the same question number.

SECTION –A

1. Androgens are synthesized by:

a. Sertoli Cells b. Leydig cells

c. Seminal vesicles d. Bulbourethral gland

OR

A procedure that finds use in testing for genetic disorders, but is also misused for female foeticide is:

a. Lactational amenorrhea b. Amniocentesis

c. Artificial insemination d. Parturition

2. Rheumatoid arthritis is caused when . . .

i.) Lymphocytes become more active

ii.) Body attacks self cells

iii.) More antibodies are produced in the body

iv.) The ability to differentiate pathogens or foreign molecules from self-cells is lost

Choose the correct answer from the options given below:

a. i and ii

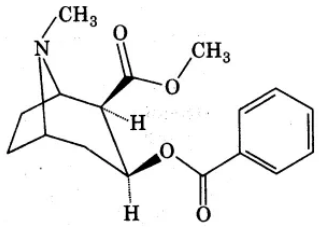
b. iii and iv

c. i and iii

d. ii and iv

OR

Identify the given chemical structure of the drug and find the uses of this drug in medical industries.



a. Cannabinoids - cardiovascular system

b. Coca alkanoids – controls brain activity

c. Morphine – sedative drug

d. Lysergenic Acid Diethylamide -Insomnia

3. Match the items in column I and column II and choose the correct option:

Column I		Column II	
A	UV	i	Biomagnification
B	Biodegradable oganic matter	ii	Eutropication
C	DDT	iii	Snow blindness
D	Phosphates	iv	BOD

a. A-ii, B-i, C-iv, D-iii

b. A-iii, B-ii, C-iv, D-i

c. A-iii, B-iv, C-i, D-ii

d. A-iii, B-i, C-iv, D-ii

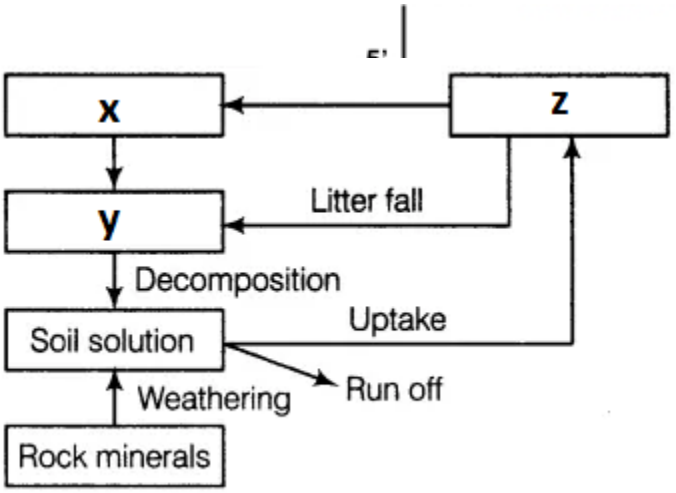
4. Identify the X given diagram and its important during protein synthesis.

a. X- acceptor arm, carry amino acid

b. X- anticodon arm, accept amino acid sequences

c. X- acceptor arm, accept amino acid sequences

d. X – variable arm, carry codons



5. Find the X, Y and Z from the given sedimentary cycle.

a. X- Consumer, Y- Detritus, Z-Producers

b. X- Detritus, Y- Consumer, Z-Producers

c. X- Consumer, Y- Producers, Z- Detritus

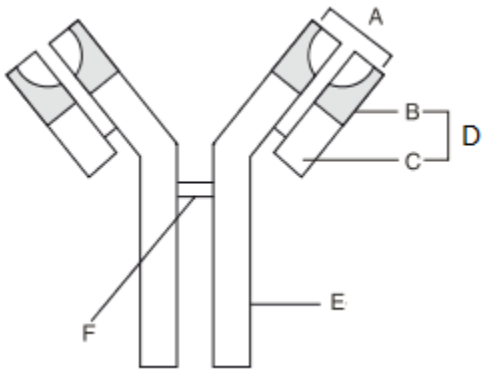
d. X- Producers, Y- Detritus, Z- Consumer

SECTION-B

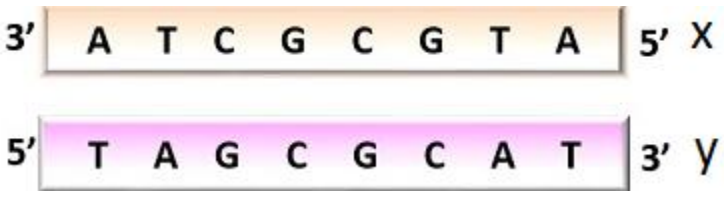
6. Mention the significance of meiocytes in a diploid organism.

OR

7. Identify A, D, E and F in the diagram of an antibody molecule given below:



8. a. A structural gene has two DNA strands X and Y shown below. Identify the template strand.

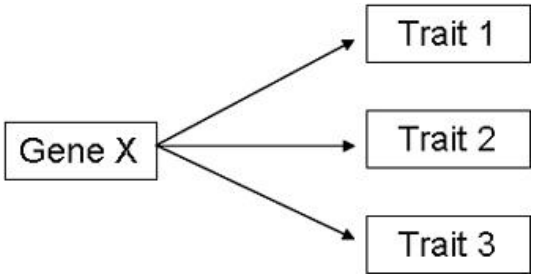


b. Name the positively charged protein around which the negatively charged DNA wrapped.

9. Draw a diagram of a section of a megasporangium of an angiosperm and label funiculus, micropyle, embryosac and nucellus.

10. Differentiate between the genetic codes given below: (a) Unambiguous and Universal (b) Degenerate and Initiator.

11. Identify the gene X and state the significance of X. Mention any one disorder due to gene X.



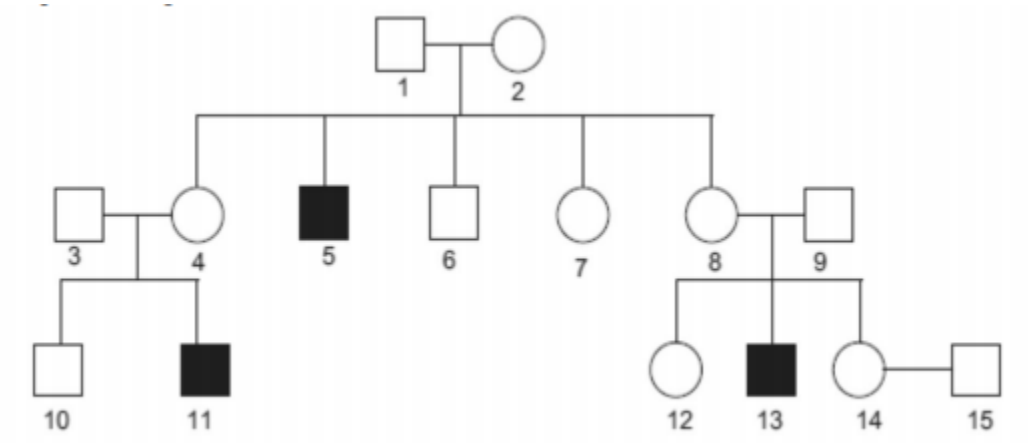
12. a. Write the scientific name of most common species of honey bee reared.

b. Mention the kind of areas that are suitable for bee keeping practices.

c. Mention any two uses of bee wax.

SECTION-C

13. Haemophilia is a sex linked recessive disorder of humans. The pedigree chart given below shows the inheritance of Haemophilia in one family. Study the pattern of inheritance and answer the questions given.



a. Give all the possible genotype of the members 4,5 and 6 in the pedigree chart.

b. A blood test shows that the individual 14 is a carrier of haemophillia. The member numbered 15 has recently married the member numbered 14. What is the probability that their first child will be a haemophillic male?

14. Water is essential for life. Write any three features both for plants and animals which enable them to survive in water scarce environment.

OR

Construct a pyramid of biomass starting with phytoplankton, label three tropic levels. Is this upright or inverted? Why?

15. Maximum height of the plant is 30ft and minimum height is 10ft. If plant height is controlled by 3 pairs of genes.

a. Identify the type of gene inheritance or expression.

b. Draw the Punnett square for the above one.

c. Mention the phenotypic ratio.

16. a. How are ZIFT and GIFT different from uterine transfer?

b. State any two reasons for infertility among young couple.

17. a. List the two main propositions of Oparin and Haldane.

b. Divergent evolution leads to homologous structure. Explain with the help of an example.

18. Describe the technology that has successfully increased the herd size of cattle in a short time to meet the increasing demands of growing population.

19. Identify A, B, C, D, E and F in table given below:

Microorganisms	Product	Biological activity	Medical oilment /Procedure
A	Streptokinase	Clot buster	D
Trichoderma polysporum	B	C	Transplant surgery
Monascus purpureus	E	Anticoagulant	F

20. Draw a schematic diagram of the colicloning vector pBR 322 and mark the following.

a. Ori

b. Rop

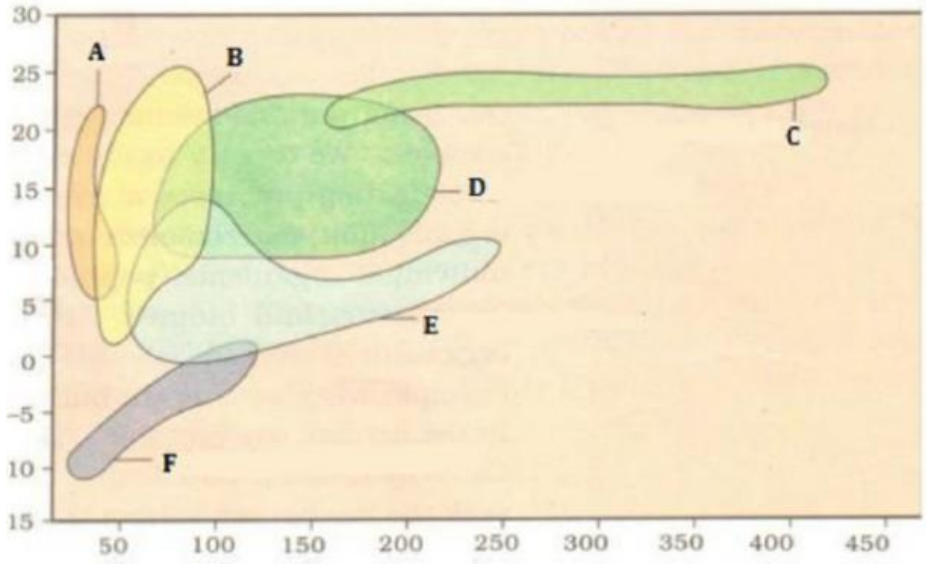
c. Ampicillin resistant gene

d.tretracycline resistant gene

e. Restriction site Bam HI

f. Restriction site Eco RI

21. The graph given below shows the distribution of biomes:



a. What do the ‘X’ and ‘Y’ axis represent?

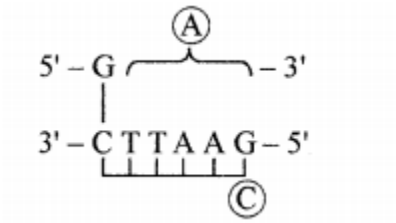
b. Identify the ‘grassland’ and ‘coniferous forest’ biomes, from the above figure.

c. Why is ‘F’ located at the given position in the graph?

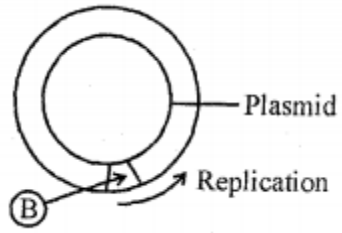
SECTION-D

22. a. Identify A and B illustrations in the following:

i)



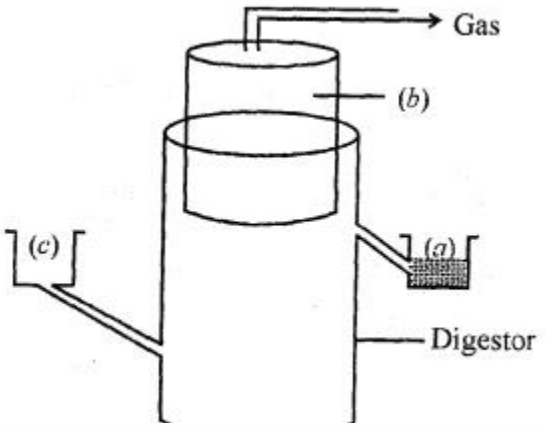
ii)



b. Write the term given to A and C and why?

c. Expand PCR. Mention its importance in biotechnology.

23. The diagram given aside is that of a typical biogas plant. Explain the sequence of events occurring in a biogas plant. Identify a, b and c.

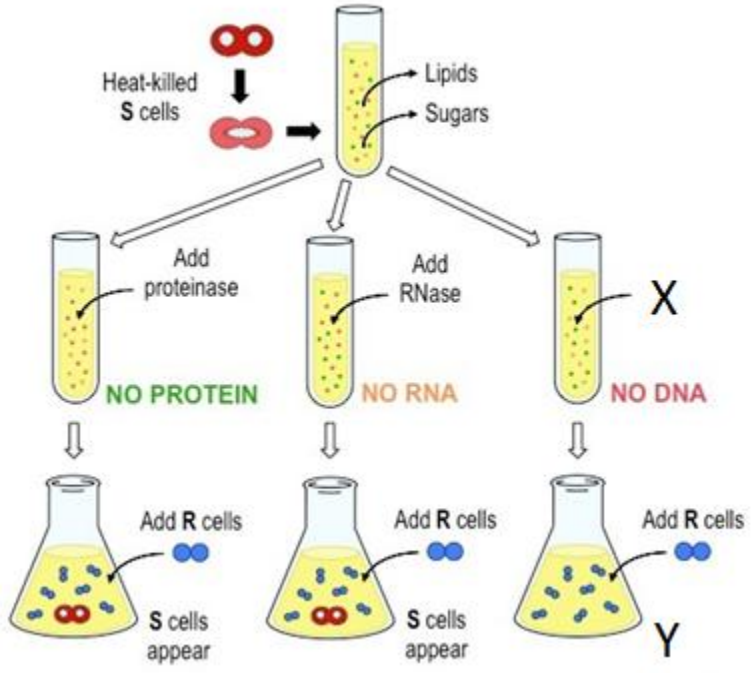


24. Study the flow chart given below and answer the questions that follow:

a. Identify X and Y in this reaction. Why did they add X in this hypothesis?

b. Name the scientist who did the experimental hypothesis.

c. Mention the interpretation of the given biochemical reaction.



SECTION-E

25. a. Draw a diagrammatic sectional view of the female reproductive system of human and label the parts.

i. where the secondary oocytes develop

ii. Which helps in collection of ovum after ovulation?

iii. Where the fertilization occurs.

iv. Where implantation of embryo occurs.

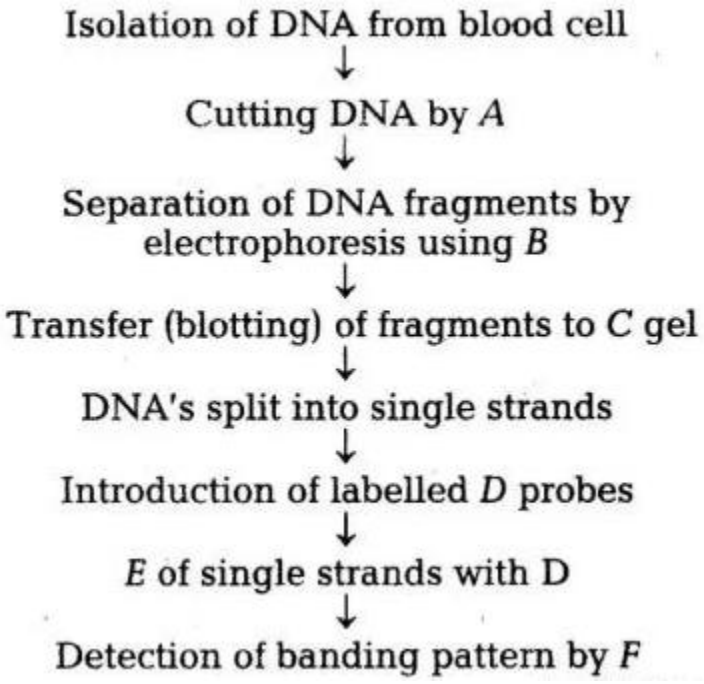
b. Explain the role of pituitary and the ovulation hormones in menstrual cycle in human females.

OR

a. Draw a labeled diagram of a mature embryo sac.

b. Why does pollen grain possess two male gametes? Explain.

26. a. The following is the flow chart highlighting the steps in DNA fingerprinting technique. Identify A, B, C, D, E and F.



b. How is repetitive/ satellite DNA separated from bulk genomic DNA for various genetic experiments.

c. Mention the contribution of genetic maps in human genome project.

OR

a. State the “central dogma” as proposed by Francis Crick. Are there any exceptions to it? Support your answer with a reason and an example.

b. Why is human ABO blood group gene considered a good example of multiple alleles?

c. work out a cross up to F_1 generation only, between a mother with blood group A (homozygous) and the father with blood group B (heterozygous). Explain the pattern of inheritance exhibited.

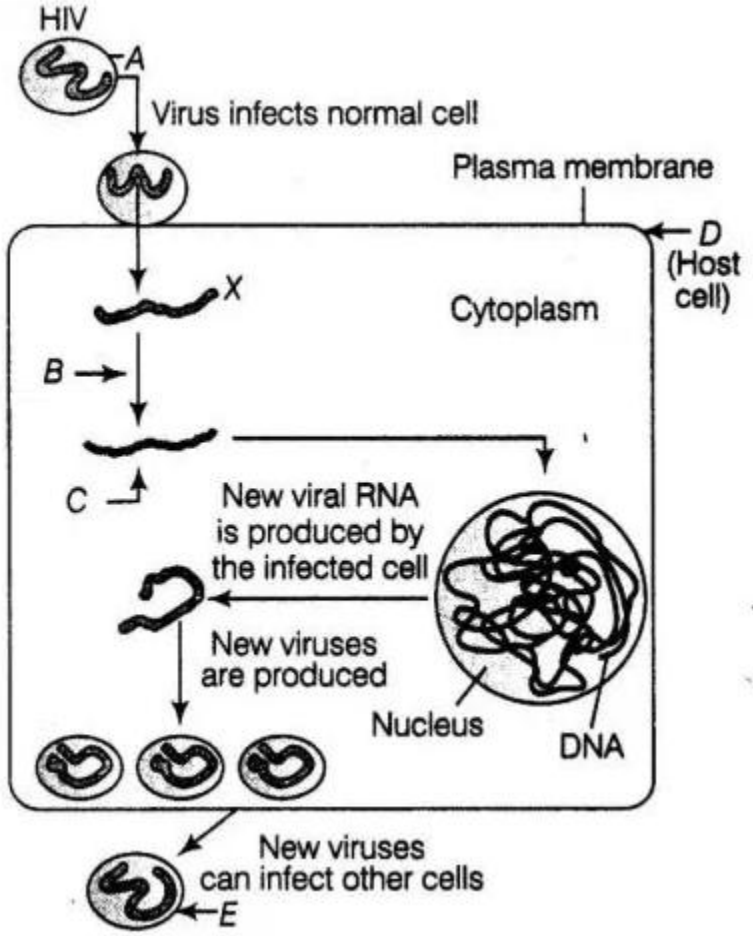
27. a. Why is the fruit juices bought from market clearer as compared to those made at home?

b. Name a genus of baculovirus. Why are they considered good biocontrol agents?

c. How do Mycorrhizae help the plants to grow better?

OR

a. Study the diagram showing replication of HIV in human and answer the following questions accordingly.



i. Write the nature of the viral coat.

ii. Name the enzyme B acting on X to produce molecule C. Name C also.

iii. Mention the name of the host cell D the HIV attacks first when it enters into the human body.

iv. Name the two different cells the new viruses E subsequently attack.

b. Contrast between innate and acquired immunity.