

**KENDRIYA VIDYALAYA SANGATHAN JAMMU REGION
PRE BOARD I EXAMINATION 2025-26 (SET 2)**

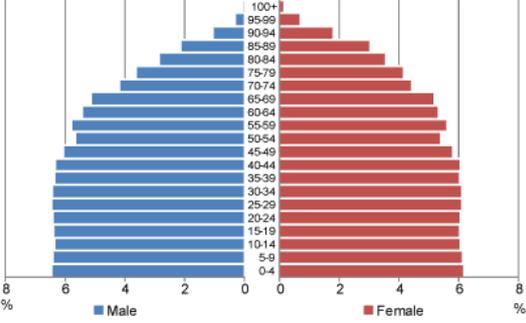
**Class XII
Subject: Biology**

**Max. Marks: 70
Time Allowed: 3 Hrs.**

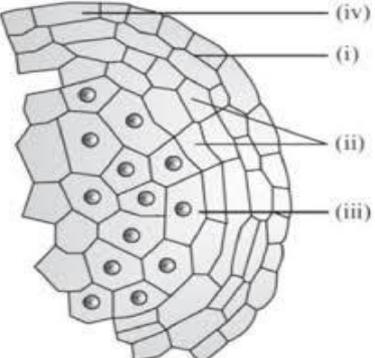
General instruction:

1. The question paper consists of 5 sections and 33 questions
2. Section A consists of question 1-16 carrying 1 mark each and is multiple choice questions. All are compulsory.
3. Section B consists of questions 17 -21 carrying 2 marks each and are very short answer types and one internal choice available.
4. Section C consists of question 22 to 28 carrying 3 marks each and are short answer type and one internal choice available.
5. Section D consists of questions 29 to 30 carrying 4 marks each and are case studies.
6. Section E consists of question 31 to 33 carrying 5 marks each and are long answer types. There are internal choices available.

| S. No. | SECTION:A <i>Questions no. 1 to 16 are Multiple Choice Questions, carrying 1 mark each. Choose the best option.</i> | MARKS | | | | | | | | |
|----------------------|--|------------------|-------------------|---------------|-------------------------------|------------|----------------------------------|----------------------|------------------------------|--|
| 1. | <p>Which of the following characters are associated with the DFC:</p> <p>I) Source of energy is Detritus. II) Helps in the release of energy and nutrients in the ecosystem. III) Helps in the fixation of energy and nutrients in the ecosystem IV) It is a major conduit of energy transfer in Aquatic ecosystem.</p> <p>A. I, II, IV B. II, III C. I, II D. III, IV</p> | 1 | | | | | | | | |
| 2. | <p>Given below are the lists of Bioactive medicinal products and the source microorganisms. Select the option that gives correct matches:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">LIST A (PRODUCT)</th> <th style="text-align: center;">LIST B (MICROBES)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">i) Penicillin</td> <td style="text-align: center;"><i>a. Penicillium notatum</i></td> </tr> <tr> <td style="text-align: center;">ii) Statin</td> <td style="text-align: center;"><i>b. Trichoderma polysporum</i></td> </tr> <tr> <td style="text-align: center;">iii) Cyclosporin – A</td> <td style="text-align: center;"><i>c. Monascus purpureus</i></td> </tr> </tbody> </table> <p>OPTIONS: A) i-c, ii-b, iii-a B) i-b, ii-c, iii-a C) i-a, ii-c, iii-b D) i-a, ii-b, iii-c</p> | LIST A (PRODUCT) | LIST B (MICROBES) | i) Penicillin | <i>a. Penicillium notatum</i> | ii) Statin | <i>b. Trichoderma polysporum</i> | iii) Cyclosporin – A | <i>c. Monascus purpureus</i> | |
| LIST A (PRODUCT) | LIST B (MICROBES) | | | | | | | | | |
| i) Penicillin | <i>a. Penicillium notatum</i> | | | | | | | | | |
| ii) Statin | <i>b. Trichoderma polysporum</i> | | | | | | | | | |
| iii) Cyclosporin – A | <i>c. Monascus purpureus</i> | | | | | | | | | |
| 3. | <p>The change in the allelic frequency of a population by non-selective, chance events is termed as:</p> <p>a) Genetic Drift b) Natural selection c) Genetic recombination</p> | 1 | | | | | | | | |

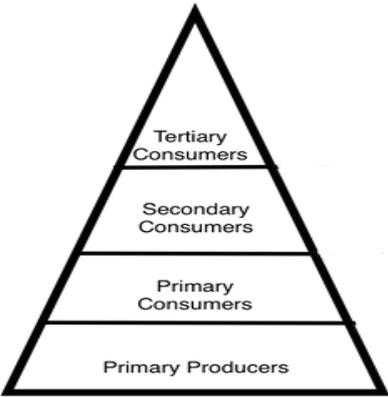
| | d) Speciation | | | | | | | | | | | | | | | | | |
|------|---|-----------|---------------------|-----------|---------------------|---|---|---|-----------|---|---|---|-------------|---|---|---|-------------|--|
| 4. | Which of the following STIs is not caused by VIRUSES: a) AIDS b) Hepatitis B c) Syphilis d) Genital Warts | 1 | | | | | | | | | | | | | | | | |
| 5. |  <p>Figure 1: Age Pyramid</p> <p>Select the option that explains the kind and shape of this age pyramid: A) Stable population and bell shaped B) Declining population and Triangular shaped C) Increasing population and Bell shaped D) Declining population and urn-shaped</p> | | | | | | | | | | | | | | | | | |
| 6. | Which of the following are correctly matched: | 1 | | | | | | | | | | | | | | | | |
| | <table border="0"> <thead> <tr> <th>SNO.</th> <th>SPECIES A</th> <th>SPECIES B</th> <th>NAME OF INTERACTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+</td> <td>+</td> <td>Mutualism</td> </tr> <tr> <td>2</td> <td>-</td> <td>-</td> <td>Ammensalism</td> </tr> <tr> <td>3</td> <td>-</td> <td>0</td> <td>Competition</td> </tr> </tbody> </table> <p>A. only 1 B. 1 and 2 C. 1,2,3 D. None</p> | SNO. | SPECIES A | SPECIES B | NAME OF INTERACTION | 1 | + | + | Mutualism | 2 | - | - | Ammensalism | 3 | - | 0 | Competition | |
| SNO. | SPECIES A | SPECIES B | NAME OF INTERACTION | | | | | | | | | | | | | | | |
| 1 | + | + | Mutualism | | | | | | | | | | | | | | | |
| 2 | - | - | Ammensalism | | | | | | | | | | | | | | | |
| 3 | - | 0 | Competition | | | | | | | | | | | | | | | |
| 7. | Read the following statements for pollination mechanism in flowering plants. A) Corn cobs have their stigma and style exposed to wind to trap pollen rains. B) Water hyacinth is an aquatic plant that is pollinated by Insects. C) Hydrilla is an aquatic plant that is pollinated by Insects. D) Yucca is a bird pollinating flower. How many these statements are true? a) 1 b) 2 c) 3 d) 4 | 1 | | | | | | | | | | | | | | | | |
| 8. | Which antibody is released in the body at a time when there is a substantial increase in the activity of Mast cells: A) Ig A B) Ig M C) Ig G | | | | | | | | | | | | | | | | | |

| | | |
|-----|---|---|
| | D) Ig E | |
| 9. | Genetic code is degenerate because of the following reason: A) One codon code for One Amino Acid. B) Some Amino Acid are encoded by more than one codon. C) Some codons have more than one function. D) Codons are specific and universal. | 1 |
| 10. | Which option represents correct full form of ELISA: A) Enzyme Linkage Immuno Sorbent Assay B) Enzyme Linked Immuno Sorbent Assay C) Enzyme Linked Immuno Soluble Assay D) Enzyme Linked Immuno Soluble Assistance | |
| 11. | One of the challenges in Gene Therapy is: A) Difficulty in production of cDNA. B) Culturing Lymphocytes outside the patients body. C) Immortality of the engineered lymphocytes and periodic infusion. D) Introduction of cDNA in cultured Lymphocytes. | |
| 12. | If the value of "K": carrying capacity for a species increases in nature, then which of the following conditions will follow: A) The number of individuals of that species will increase. B) The number of individuals of that species will decrease. C) The number of individuals of that species will be constant. D) None of the above. | 1 |
| | Directions for question 13 to 16: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as: (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. | |
| 13. | A: Saheli is an oral contraceptive containing non-steroidal preparations. R: It contains Centchroman which targets the Estrogen receptors. | 1 |
| 14. | A: RNA is structurally less stable than DNA. R: It has 2'-OH group presents in its every nucleotide. | 1 |
| 15. | A: Pollen banks is an example of Ex-situ conservation. R: The pollens are stored using cryo-preservation technique at -146°C. | 1 |
| 16. | A: <i>E.coli</i> having PBR322 plasmid with foreign DNA inserted at EcoRI site will not grow in medium containing Tetracycline. R: Recognition site for EcoRI is present in tetracycline resistant gene region of plasmid. | 1 |
| | SECTION-B (2-marks each) | |

| 17. | <p>DNA fingerprinting is a technique developed by Alec Jeffrey uses VNTR Probe to generate a unique DNA profile of a person. What is this VNTR probe?</p> <p>How is this probe used to Identify and differentiate one person from another in DNA fingerprinting Technique?</p> | 1 1 | | | | | | | | | | | | |
|---|--|------------|------------------------|--------|-----------------------------|--|--|--|--|--|---|--|--|---|
| 18. | <p>The species-Area relationship curve will be steeper or flattened for a tropical area in comparison to a temperate region? Give reason for your answer.</p> | 2 | | | | | | | | | | | | |
| 19. | <p>What do you mean by bio-control agents? Why to use Biocontrol agents? Give 2 examples of biocontrol agents, one of which is a fungus, and other is Virus.</p> | 1 1 | | | | | | | | | | | | |
| 20. | <p>“Proinsulin has 3 chains but mature insulin has 2”. Show this conversion with the help of a diagram.</p> <p style="text-align: center;">Or</p> <p>Using diagrammatic representation state the steps of PCR: Polymerase Chain Reaction, along with associated temperatures and enzymes.</p> | 2 | | | | | | | | | | | | |
| 21. | <div style="text-align: center;">  <p>Figure 2: T.S. of Microsporangium.</p> </div> <p>A) Label the Wall layers of microsporangium shown in this diagram.</p> <p>B) State the characters and importance of the innermost layer.</p> | 1 1 | | | | | | | | | | | | |
| SECTION-C (3 marks each) | | | | | | | | | | | | | | |
| 22. | <p>Given below are the situations, analyse and suggest the suitable ART: Method to be used along with the reason:</p> <table border="1"> <thead> <tr> <th>SITUATIONS</th> <th>Name of ART to be used</th> <th>REASON</th> </tr> </thead> <tbody> <tr> <td>1. Low sperm count in male.</td> <td></td> <td></td> </tr> <tr> <td>2. Blockage in fallopian tube of female partner.</td> <td></td> <td></td> </tr> <tr> <td>3. A test tube baby of 32 blastomeres is to be transferred in the female for further development.</td> <td></td> <td></td> </tr> </tbody> </table> | SITUATIONS | Name of ART to be used | REASON | 1. Low sperm count in male. | | | 2. Blockage in fallopian tube of female partner. | | | 3. A test tube baby of 32 blastomeres is to be transferred in the female for further development. | | | 3 |
| SITUATIONS | Name of ART to be used | REASON | | | | | | | | | | | | |
| 1. Low sperm count in male. | | | | | | | | | | | | | | |
| 2. Blockage in fallopian tube of female partner. | | | | | | | | | | | | | | |
| 3. A test tube baby of 32 blastomeres is to be transferred in the female for further development. | | | | | | | | | | | | | | |

OR

| SITUATIONS | NAME OF CONTRACEPTIVE | MODE OF ACTION |
|---|-----------------------|----------------|
| 1. Spacing between the children. | | |
| 2. Preventing physical meeting of sperms and ova. | | |
| 3. Terminal method to prevent any pregnancy in females. | | |

| 23. | <p>A) Explain how the Wings of Birds and Wings of Butterfly show convergent evolution?</p> <p>B) State an example of such convergent evolution which is shown by Plants.</p> | 2 1 | | | | | | |
|-------------|--|----------------|-----------------------------------|---|------------------------------------|---|------------------------------------|----------------|
| 24. | Trace the development of a mature EMBRYO SAC from a MMC (Megaspore mother cell) using schematic diagram. | 3 | | | | | | |
| 25. | <p>Study the table below and answer the questions that follow:</p> <table border="1" style="width: 100%; margin: 10px 0;"> <thead> <tr> <th style="width: 25%;">Individuals</th> <th style="width: 75%;">No. of chromosomes and condition:</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>Have 47 chromosomes but is fertile</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Have 47 chromosomes and is Sterile</td> </tr> </tbody> </table> <p>a) Name the disorder which the individuals "A" and "B" are suffering from respectively, along with the karyotype of both.</p> <p>b) Write the Characteristics of A and B individuals that make them distinct from a normal person.</p> | Individuals | No. of chromosomes and condition: | A | Have 47 chromosomes but is fertile | B | Have 47 chromosomes and is Sterile | 1.5 1.5 |
| Individuals | No. of chromosomes and condition: | | | | | | | |
| A | Have 47 chromosomes but is fertile | | | | | | | |
| B | Have 47 chromosomes and is Sterile | | | | | | | |
| 26. | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Figure 3: UPRIGHT PYRAMID</p> </div> <div style="text-align: center;">  <p>Figure 4: INVERTED PYRAMID</p> </div> </div> <p>I) Provide a situation with example that produce Inverted type of Pyramid in case of "Number of individuals".</p> <p>II) Why Upright Type pyramid is produced in case of flow of energy from one trophic level to another.</p> | 1.5 1.5 | | | | | | |
| 27. | Study the Graph given below regarding the use of pesticides in the Field with Bt Cotton crop and field with non-Bt crop and answer the questions that follows: | | | | | | | |

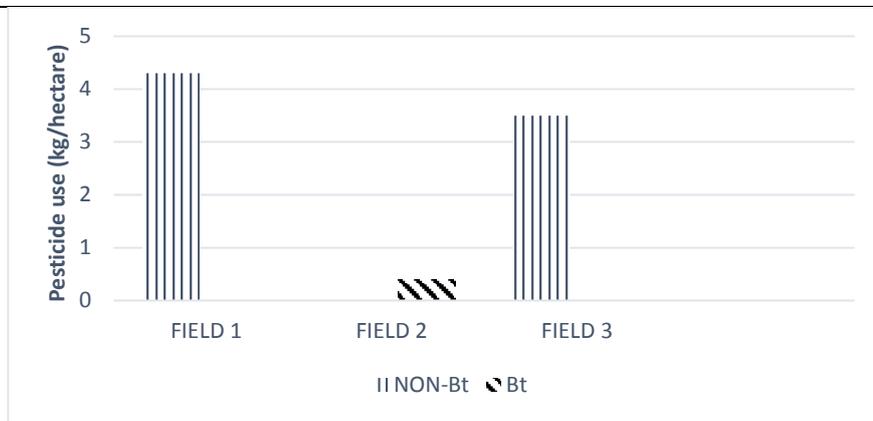


Figure 5: Graph showing use of pesticides in different field.

I) Why field 2 requires less pesticide? Which specific gene would be incorporated in the cotton crop if it has to be protected against the cotton bollworm?

1

II) State what happens with the insects (in form of a flow chart) when they feed on this Bt Crop.

2

28. Analyse the following situations to mention the name of the DRUG and source of its extraction:

I) A Drug which is given to Arun by doctors after he undergoes a major foot surgery.

1

II) Chetan is addicted to this drug which causes health problems like High BP and increased heart rate.

1

III) Rahul is suggested by his peers to use this drug to enhance his performance in an Interschool Race. However, he refused.

1

SECTION-D (CBQ: 4 marks)

29. Study the pedigree given below and answer the questions that follow:

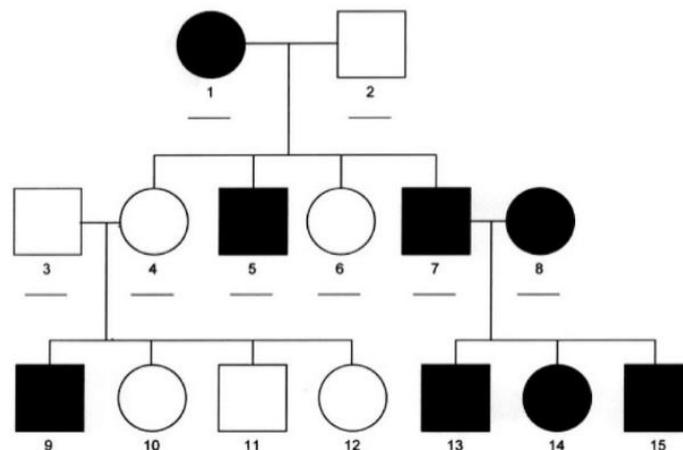


Figure 6: Pedigree Chart for a Disease

A) On the basis of the inheritance pattern what conclusion can you draw about the type of disorder. Name the Genetic disorder which follows such pedigree.

1

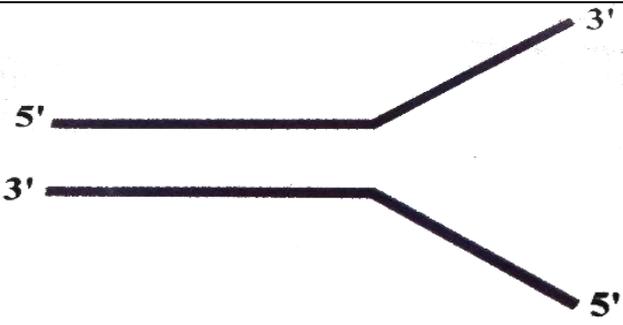
B) As per the pedigree females are seen to be less susceptible to the disease than males. What shall be the pre-conditions for the daughter to be diseased, show using a cross.

2

C) Why is it so that all the sons in second generation (5,7) show the disease?

1

Or

| | | |
|-----|---|--|
| | What could be the possible genotype of individuals 3 & 4. | |
| 30. | <p>Raghu was reading an article regarding Treatment of COVID-19. He read that one of the treatments for this disease was isolation of monoclonal Antibodies from the recovered patients and its injection into the patients with active infection to generate an immune response. While after a period of time Vaccines were developed as a method of prevention and vaccines like Covishield, Covaxin and others were administered to protect the public from this disease.</p> <p>Being a student of biology answer the following questions that arouse in mind of Raghu:</p> <p>A) Is the immunity provided by Monoclonal antibodies different from immunity provided by Vaccines? B) Draw a labelled Diagram of antibody. C) State the property on which the concept of vaccination is based on.</p> <p style="text-align: center;">OR</p> <p>Name the cells which are responsible for humoral immune response. Why such response is called as Humoral?</p> | <p>1</p> <p>2</p> <p>1</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> |
| | SECTION-E (5 marks) | |
| 31. |  <p style="text-align: center;"><i>Figure 7: Replication Fork</i></p> <p>A) Draw the newly synthesised strands along with polarity in front of both the open strands of replication fork. B) Why One of them is called as a discontinuous strand? C) Meselson and Stahl have proved that DNA replicates semi-conservatively, but who gave the hypothesis for this method of DNA replication? D) Which Organism and technique was used by Meselson and Stahl to prove semi-conservative nature of DNA replication?</p> <p style="text-align: center;">OR</p> <p>A) One of the conditions that must be fulfilled by genetic material is that it shall be Stable. The evidence for this was provided by which Experiment and How? B) Explain how the Use of Radioactivity helped in Confirmation of DNA as the genetic material?</p> | <p>1.5</p> <p>1</p> <p>1</p> <p>1.5</p> <p>2</p> <p>3</p> |
| 32. | Given below is a figure showing transport of ovum, fertilisation and passage of growing embryo through fallopian tube in a human female. Observe and answer the questions that follow: | |

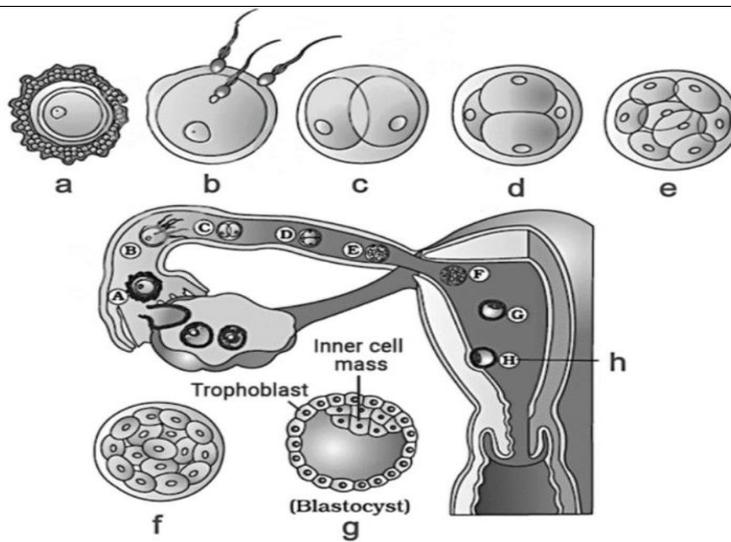


Figure 8: Passage of growing embryo from Fallopian tube to Uterus.

- A) The daughter cells in growing embryo are called as _____?
- B) What is “e” and how many daughter cells does it have?
- C) State the Role of Trophoblast and Inner cell Mass in the further development of Embryo.

1
2
2

OR

Observe the figure given below and answer the following questions:

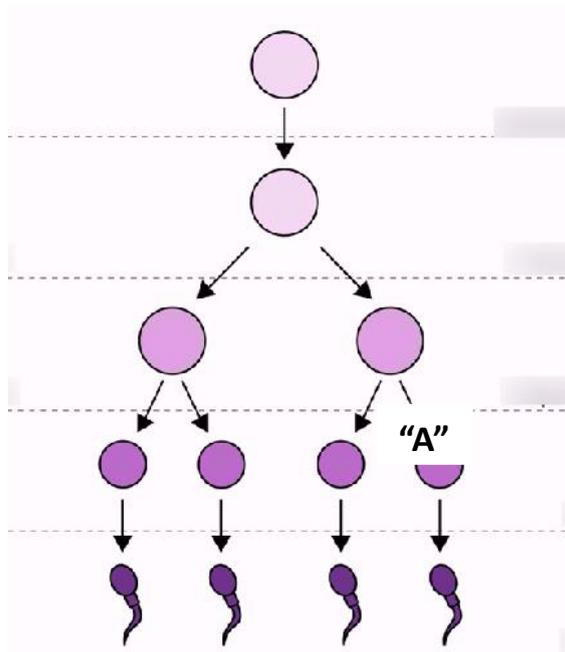


Figure : Spermatogenesis

- A) Explain the process “A” as seen in fig given above and name the hormone which is essential for this process to take place?

2

- B) Draw a labelled Diagram of the product of “A” Process.

- C) State how Spermatogenesis in males is different from Oogenesis in females.

1.5

1.5

33. Observe the figure given below and answer the following questions:

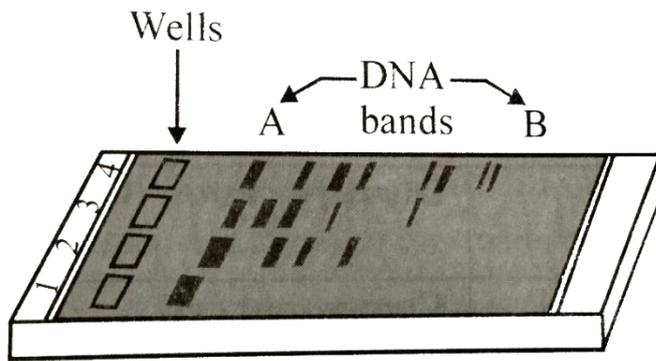


Figure 10: DNA Electrophoresis.

- I) Which of the two DNA Bands A and B would be smallest? Give reason for your answer. 1
- II) Which enzyme is used to obtain the fragments of DNA? Can you name one such enzyme? 2
- III) Name the dye which is used to stain the DNA fragments. Would these stained fragments of DNA be visualised in normal light? If not, what is the procedure to see them. 2

OR

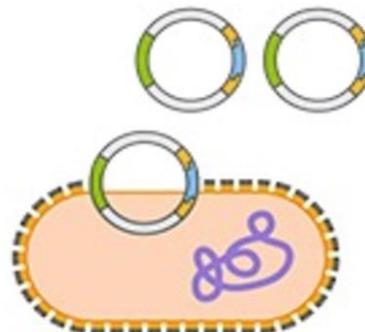
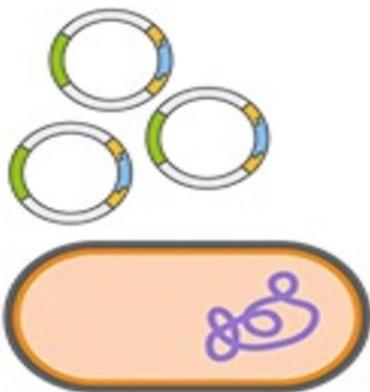


Fig 1: NON- COMPETENT BACTERIAL CELL Fig 2: COMPETENT BACTERIAL CELL

- i) What is a competent cell? How can the non-competent Bacterial cell be converted into Competent bacterial cell? 1
- ii) What role can temperature play to facilitate the uptake of foreign DNA (plasmids) by these competent bacterial cells? 2
- iii) What are other methods that could be used to introduce the foreign plasmids into these competent cell?

