



EF1GH/1



प्रश्न-पत्र कोड
Q.P. Code 57/1/3

रोल नं.

Roll No.

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निर्धारित समय : 3 घण्टे

Time allowed : 3 hours

अधिकतम अंक : 70

Maximum Marks : 70

नोट /

कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ हैं ।

Please check that this question paper contains 31

प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को परीक्षार्थी उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें ।

Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

(iii) कृपया जाँच कर लें कि इस प्रश्न-पत्र में प्रश्न हैं ।

Please check that this question paper contains 33

कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें ।

u

(v) इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है । प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा । 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे ।

15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.



सामान्य निर्देश:

निम्नलिखित निर्देशों को बहुत सावधानी से पढ़िए और उनका सख्ती से पालन कीजिए :

- (i) इस प्रश्न-पत्र में 33 प्रश्न हैं। सभी प्रश्न अनिवार्य हैं।
- (ii) यह प्रश्न-पत्र पाँच खण्डों में विभाजित है – खण्ड क, ख, ग, घ एवं ङ।
- (iii) खण्ड क में प्रश्न संख्या 1 से 16 तक बहुविकल्पीय (MCQ) प्रकार के एक-एक अंक के प्रश्न हैं।
- (iv) खण्ड ख में प्रश्न संख्या 17 से 21 तक अति लघु-उत्तरीय (VSA) प्रकार के दो-दो अंकों के प्रश्न हैं।
- (v) खण्ड ग में प्रश्न संख्या 22 से 28 तक लघु-उत्तरीय (SA) प्रकार के तीन-तीन अंकों के प्रश्न हैं।
- (vi) खण्ड घ में प्रश्न संख्या 29 तथा 30 केस-आधारित चार-चार अंकों के प्रश्न हैं। प्रत्येक प्रश्न में उप-प्रश्न हैं तथा एक उप-प्रश्न में आंतरिक विकल्प दिया गया है।
- (vii) खण्ड ङ में प्रश्न संख्या 31 से 33 तक दीर्घ-उत्तरीय (LA) प्रकार के पाँच-पाँच अंकों के प्रश्न हैं।
- (viii) प्रश्न-पत्र में समग्र विकल्प नहीं दिया गया है। यद्यपि, खण्ड ख के 1 प्रश्न में, खण्ड ग के 1 प्रश्न में, खण्ड घ के 2 प्रश्नों में तथा खण्ड ङ के 3 प्रश्नों में आंतरिक विकल्प का प्रावधान दिया गया है। परीक्षार्थी को इन प्रश्नों में से किसी एक प्रश्न का उत्तर लिखना है।
- (ix) जहाँ कहीं आवश्यक हो, साफ-सुथरे और उचित रूप से नामांकित चित्र बनाए जाने चाहिए।

प्रश्न संख्या 1 से 16 तक बहुविकल्पीय (MCQ) प्रकार के एक-एक अंक के प्रश्न हैं।

16×1=16





General Instructions :

Read the following instructions carefully and strictly follow them :

- (i) *This question paper contains **33** questions. **All** questions are **compulsory**.*
- (ii) *This question paper is divided into **five** sections – Section **A, B, C, D** and **E**.*
- (iii) *In **Section A** – Questions no. **1** to **16** are multiple choice (MCQ) type questions, carrying **1** mark each.*
- (iv) *In **Section B** – Questions no. **17** to **21** are very short answer (VSA) type questions, carrying **2** marks each.*
- (v) *In **Section C** – Questions no. **22** to **28** are short answer (SA) type questions, carrying **3** marks each.*
- (vi) *In **Section D** – Questions no. **29** and **30** are case-based questions, carrying **4** marks each.*
- (vii) *In **Section E** – Questions no. **31** to **33** are long answer (LA) type questions, carrying **5** marks each.*
- (viii) *There is no overall choice. However, an internal choice has been provided in **1** question in Section B, **1** question in Section C, **2** questions in Section D and **3** questions in Section E. A candidate has to attempt only **one** of the alternatives in such questions.*
- (ix) *Use of calculators is **not** allowed.*

*Questions no. **1** to **16** are Multiple Choice (MCQ) type Questions, carrying **1** mark each. **16×1=16***

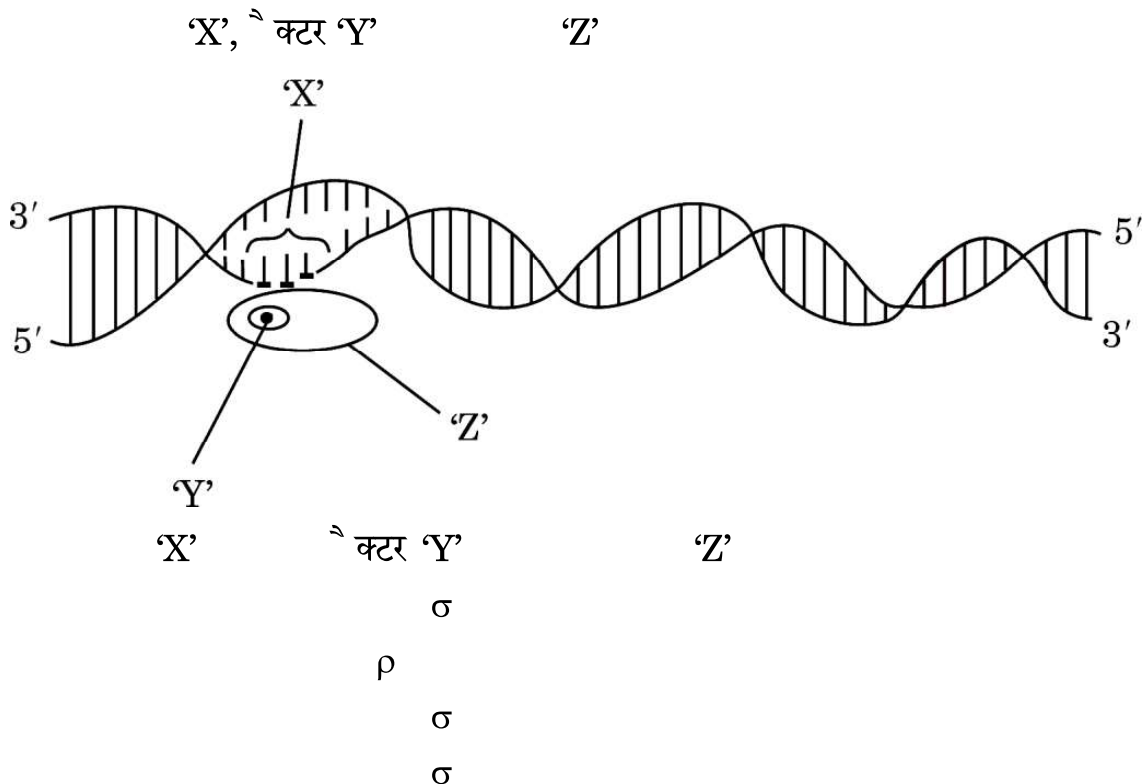


स्तंभ I
(गर्भनिरोधी युक्ति)

स्तंभ II
(कार्य का तरीका)

गर्भाशय ग्रीवा की श्लेष्मा की मोटाई बढ़

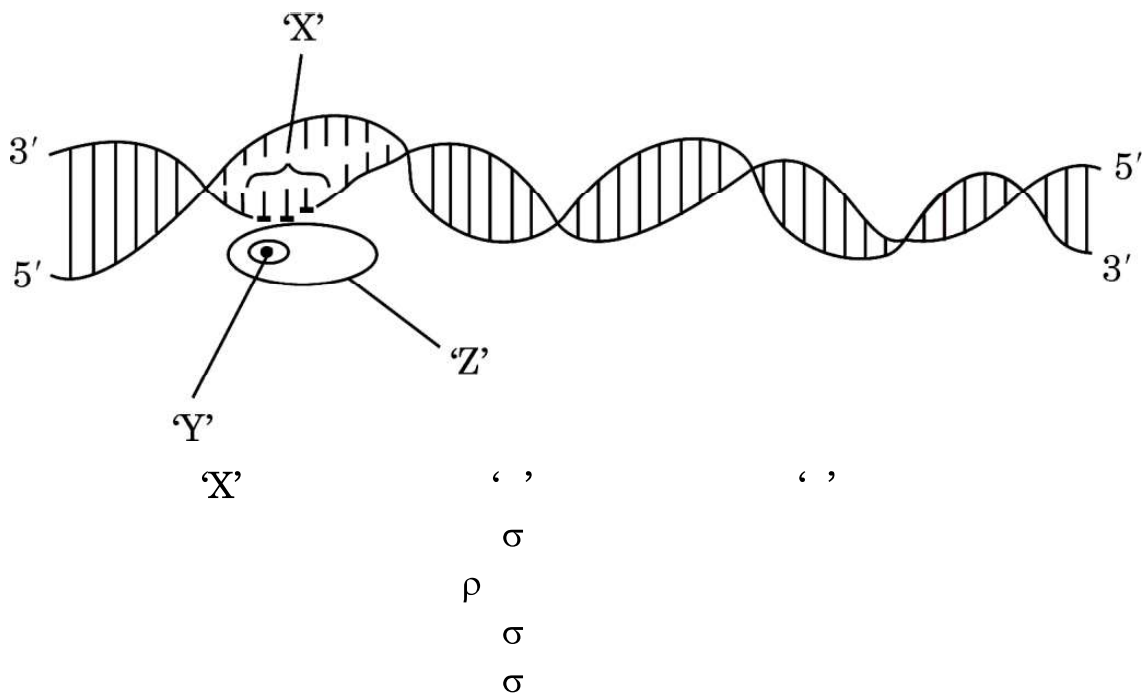
विकल्प:





Options :

'X', the factor 'Y' and the enzyme 'Z' involved in the

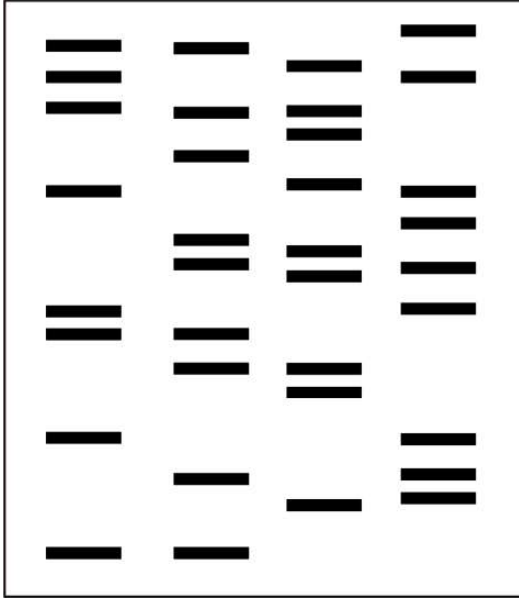




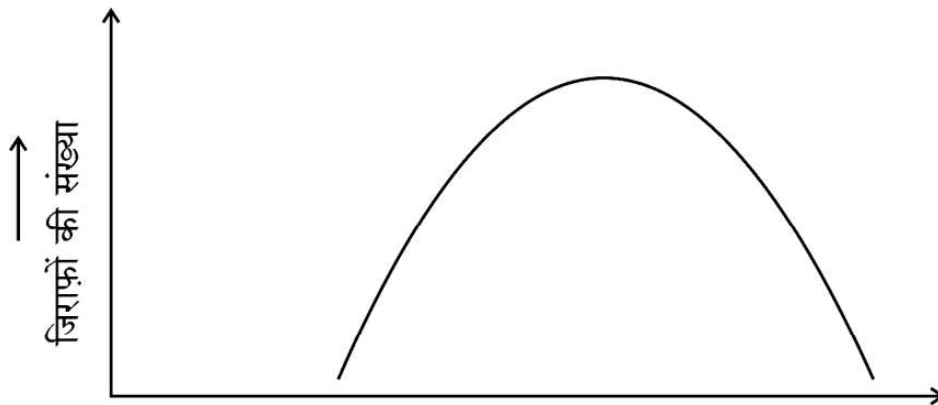
डीएनए अंगुलिछापी तकनीक द्वारा प्राप्त एक बच्चे 'X'

सा विकल्प उस बच्चे 'X'

बच्च



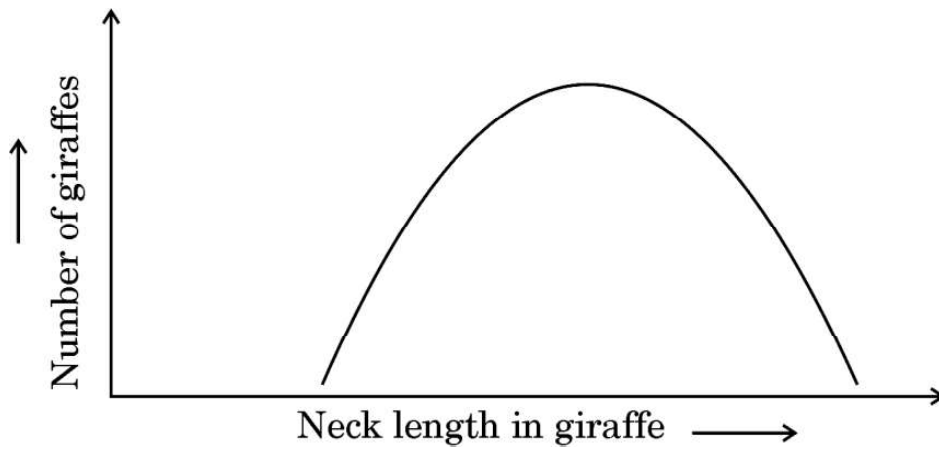
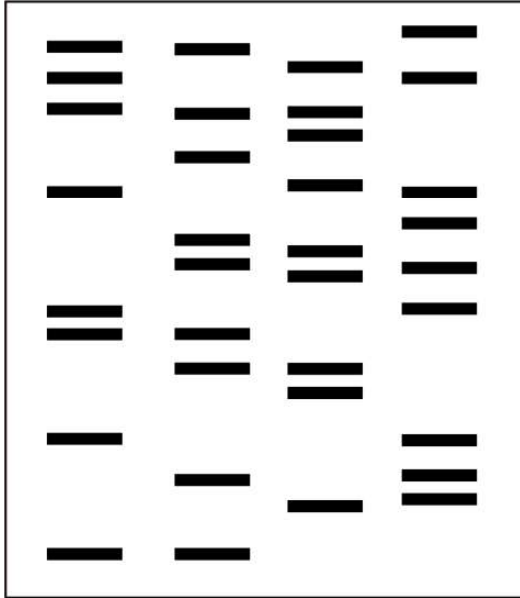
जिराफ़ की गर्दन की लंबाई के संबंध में प्राकृतिक वरण के प्रक्रम को सही ढंग से परिभाषित करने वाले विकल्प का चयन कीजिए



- जिराफ़ की गर्दन की लंबाई →
- क्योंकि लंबी गर्दन वाले जिरा.
 - क्यों
 - क्यों
 - क्यों



child 'X' and three individuals 1, 2 and 3. Which one of the following the possible parents of the child 'X'





तालिका में डीएनए के निम्नलिखित में से किस नमूने से पॉलीमरेज़ चेन रिएक्शन

		उच्च तापमान °	
		°	
		°	
		उच्च तापमान °	

‘ ,

नहीं

ऑसिलेटोरिया
राइज़ोबियम
एज़ोस्पाइरिलम
ग्लोमस



		o	
		o	
		o	
		o	

Which one of the following is used during 'RNA i' process, to silence the

not

Oscillatoria

Rhizobium

Azospirillum

Glomus





स्तंभ I
(एंजाइम)

स्तंभ II
(प्रकार्य)

डीएनए के छोरों से न्यूक्लियोटाइड्स को

प्रतिबंधन एक्सोन्यूक्लिज़

डीएनए खण्डों को जोड़ता है

प्रतिबंधन एंडोन्यूक्लिज़

विकल्प:

कुक्कु

कस्कुटा

प्रश्न संख्या 13 से 16 के लिए, दो कथन दिए गए हैं — जिनमें एक को अभिकथन (A) तथा दूसरे को कारण (R) द्वारा अंकित किया गया है। इन प्रश्नों के सही उत्तर नीचे दिए गए कोडों (a), (b), (c) और (d) में से चुनकर दीजिए।

अभिकथन और कारण दोनों सही हैं और कारण , अभिकथन की सही व्याख्या करता है।

अभिकथन और कारण दोनों सही हैं, परन्तु कारण , अभिकथन की सही व्याख्या नहीं करता है।

अभिकथन सही है, परन्तु कारण ग़लत है।

अभिकथन ग़लत है, परन्तु कारण सही है।





Function

Options :

Cuscuta

For Questions number 13 to 16, two statements are given — one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

not



अधिकथन (A) :

कारण (R) :

अधिकथन (A) :

कारण (R) :

अधिकथन (A) :

कारण (R) :

अधिकथन (A) :

कारण (R) :

खण्ड ख

(क) हिबिस्कस

(ख)

2

2

प्रतिजैविकों (एंटीबायोटिक्स) का अंधाधुंध उपयोग (सेवन) क्यों नहीं करना चाहिए

“

”

2



Assertion (A) :

Reason (R) :

Assertion (A) :

Reason (R) :

Assertion (A) :

Reason (R) :

Assertion (A) :

Reason (R) :

Hibiscus

2

2

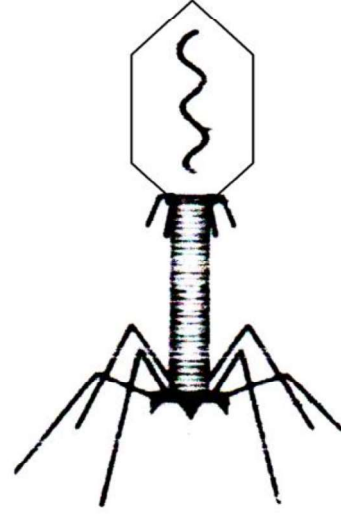
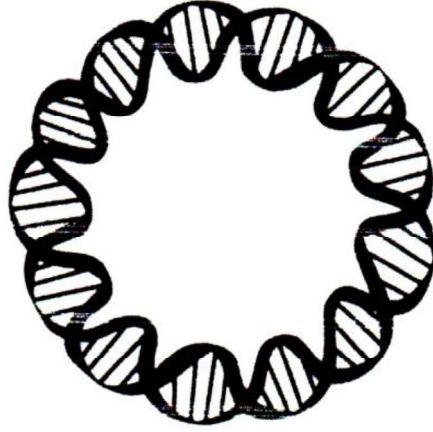
“

”

2



नीचे दिए गए चित्रों में चिह्नित 'A' तथा 'B' संरचनाओं को पहचान कर उनके नाम लिखिए :

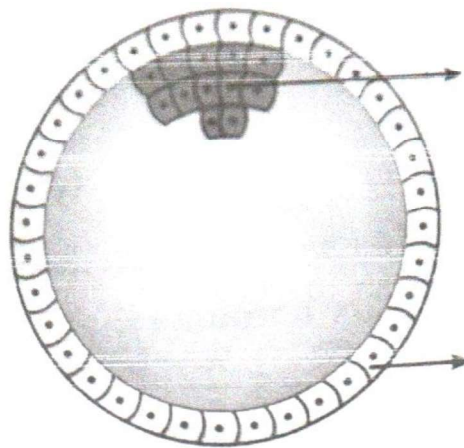


2

अथवा

- (ख) उस प्रक्रम की व्याख्या कीजिए जिसके द्वारा एक जीवाणु कोशिका को इसके परिवेश से विजातीय डीएनए को प्राप्त करने के लिए द्विसंयोजी धनायन तथा ताप प्रघात द्वारा ' ' ,

2

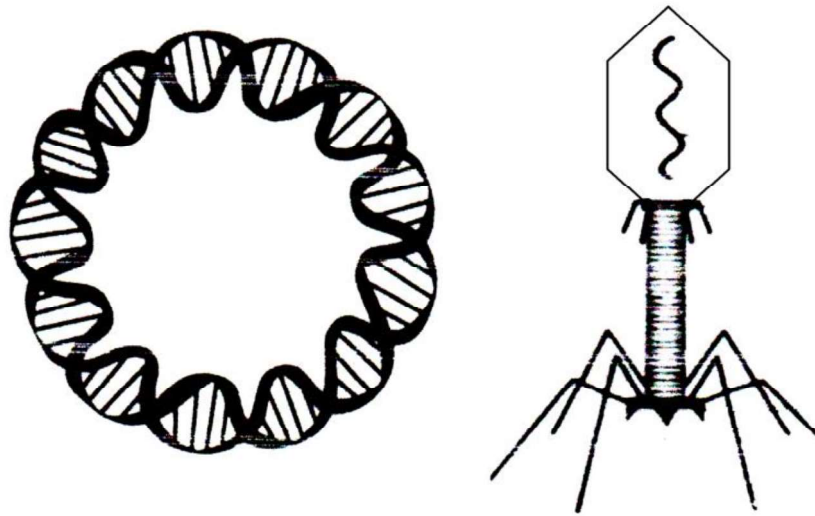


'X' 'Y'

2



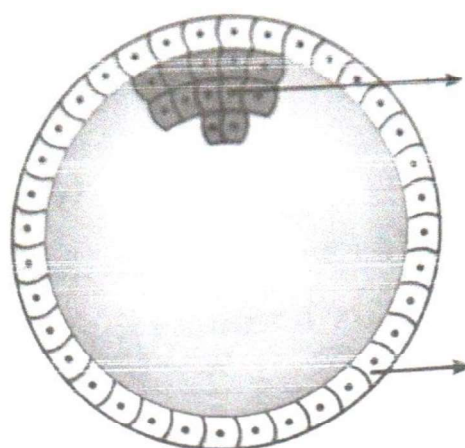
Identify and name the structures 'A' and 'B' marked in the



2

'competent' to take up foreign DNA from its surroundings, using

2



two parts labelled 'X' and 'Y'

2



खण्ड ग

2

आई.सी.एस.आई.
आई.यू.टी.
जी.आई.एफ.टी.

1

अथवा

3

युक्तांडपी तथा वियुक्तांडपी स्त्रीकेसर

3

(क)

(ख)

ओस्ट्रालोपिथेसिन

(ग)

होमो हैबिलिस

होमो इरैक्टस

3

एंडोन्यूक्लिएज़

3

(क)

(ख)

3





2

1

3

3

Australopithecines

Homo habilis

Homo erectus

3

—

3

3

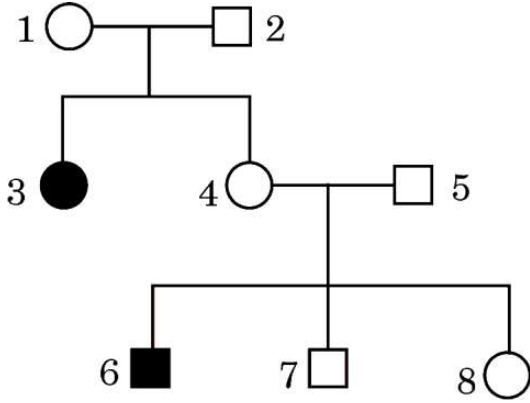


(क) ‘ , ’

(ख) ‘ , ’

(ग) ‘ , ’

3



क्या

क्या यह रोग लिंग सहलग्न

3

खण्ड घ

रसायनविज्ञ जैकवे मोनॉड तथा आनुवंशिकीविज्ञ र्क्वास जैकब के संयुक्त प्रयासों ई. कोलाई में लैक्टोज़ उपापचय पर उनके द्वारा “लैक ”

लैक

(क) लैक लैक) को अनुलेखनीय नियमित तंत्र क्यों कहा जाता है

1

(ख) “ लैक

”

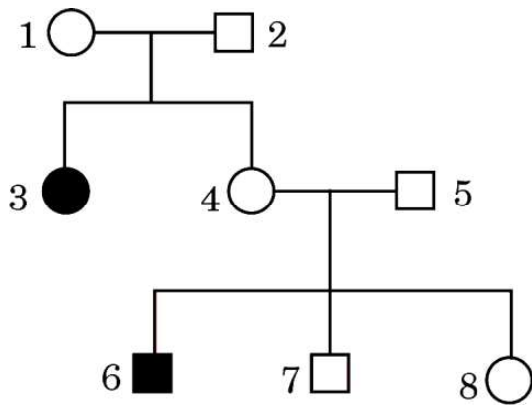
$\frac{1}{2}$





Write the characteristics of 'stem cells'
'stem cells'

3



3

E. coli and introducing the concept of “*lac* operon” they

lac

1

“ *lac*

”

$\frac{1}{2}$



(ग) लैंक

' ' जीन के रूप में चिह्नित क्यों किया

$\frac{1}{2}$

(घ)

लैंक

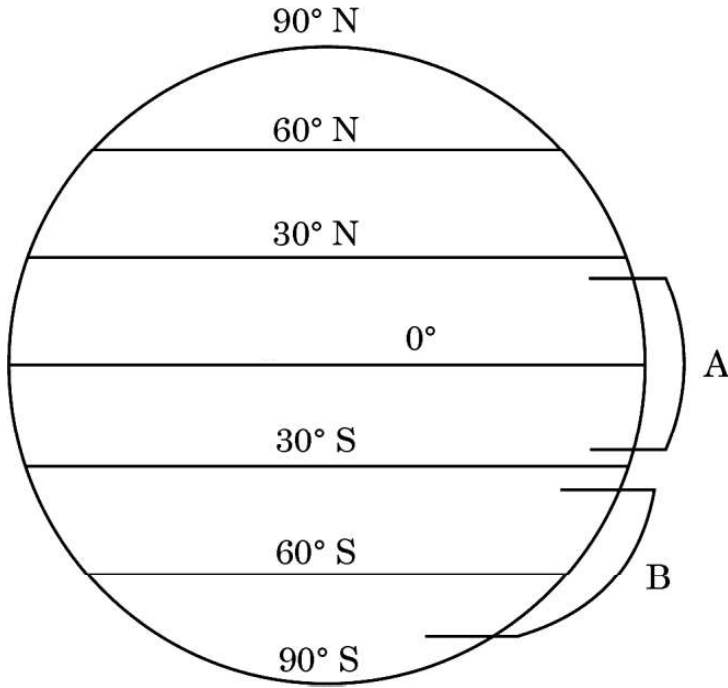
2

अथवा

लैंक

2

'A' 'B' क्षेत्र चिह्नित किए गए हैं



'A' 'B'

3

1

अथवा

बैर बताइए ऐसा क्यों है

1



lac operon marked as 'i' gene

$\frac{1}{2}$

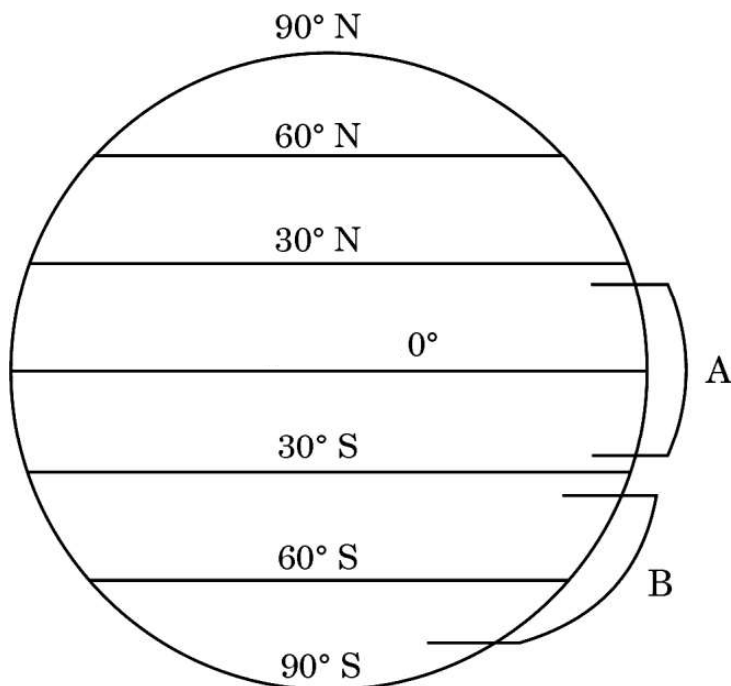
lac

2

lac

2

regions marked 'A' and 'B' respectively. Answer the question



from region 'A' to region 'B'

3

1

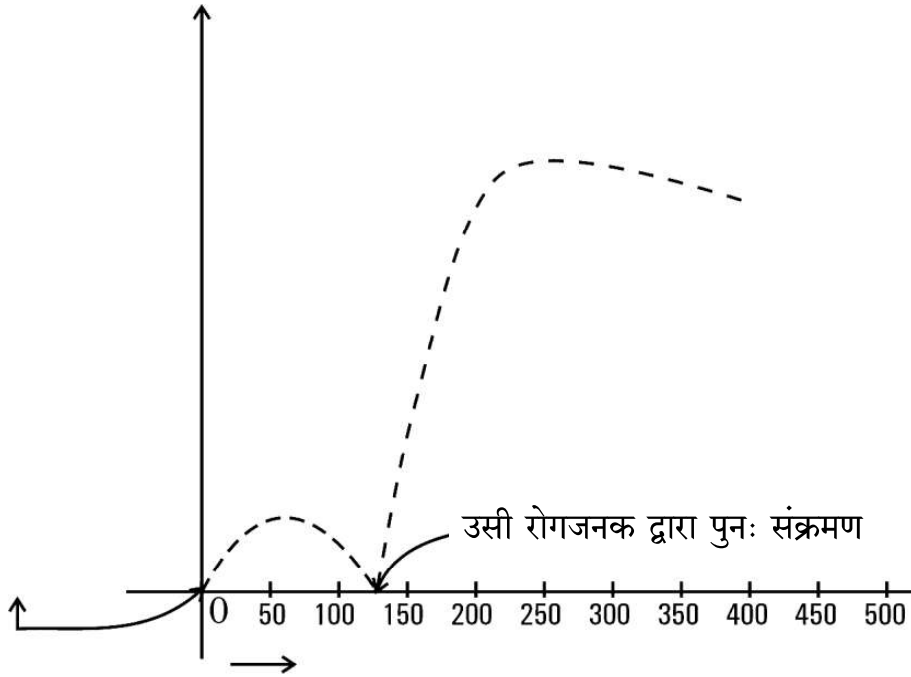
1



खण्ड ड

हमारे देश में बच्चे के जन्म के समय से उसके

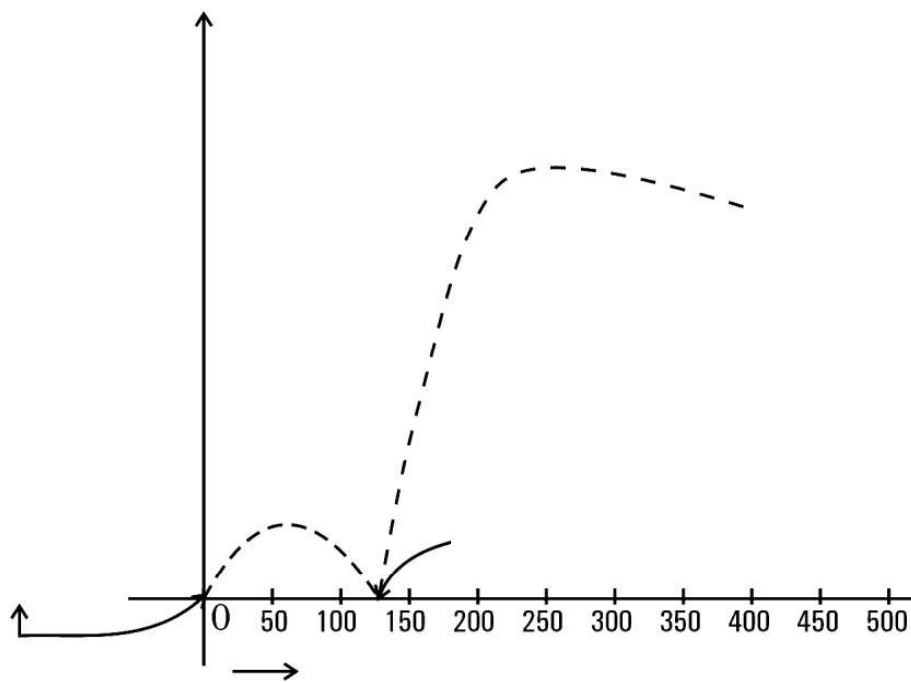
रोगजनक द्वारा संक्रमण तथा बच्चे के रक्त में प्रतिरक्षी अणुओं की सान्द्रता को दर्शाया



टीकाकरण के कारण प्रतिरक्षी अणुओं की सान्द्रता में वृद्धि क्यों होती है

यदि चार माह के बाद बच्चे को उसी रोगजनक का संक्रमण हो जाता है, तो रक्त में प्रतिरक्षी अणुओं की सान्द्रता बहुत तीव्रता से बढ़ती है। व्याख्या कीजिए कि ऐसा क्यों होता है।







नीचे दी गई तालिका से विभिन्न प्रकार की प्रतिरक्षा तथा वह कैसे प्राप्त होती हैं, के विषय में सूचना प्राप्त होती है। तालिका में अंकित 'P', 'Q', 'R', 'S' 'T'

5

			'P'	'Q'
			'R'	
		'S'		(वैक्सीन) लेना
		'T'		(इंजेक्शन लेना)

अथवा

' ' का रासायनिक नाम क्या है
क्यों माना जाता है

कोकेन

5





‘ ’ ‘ ’ ‘ ’ ‘ ’

‘ ’

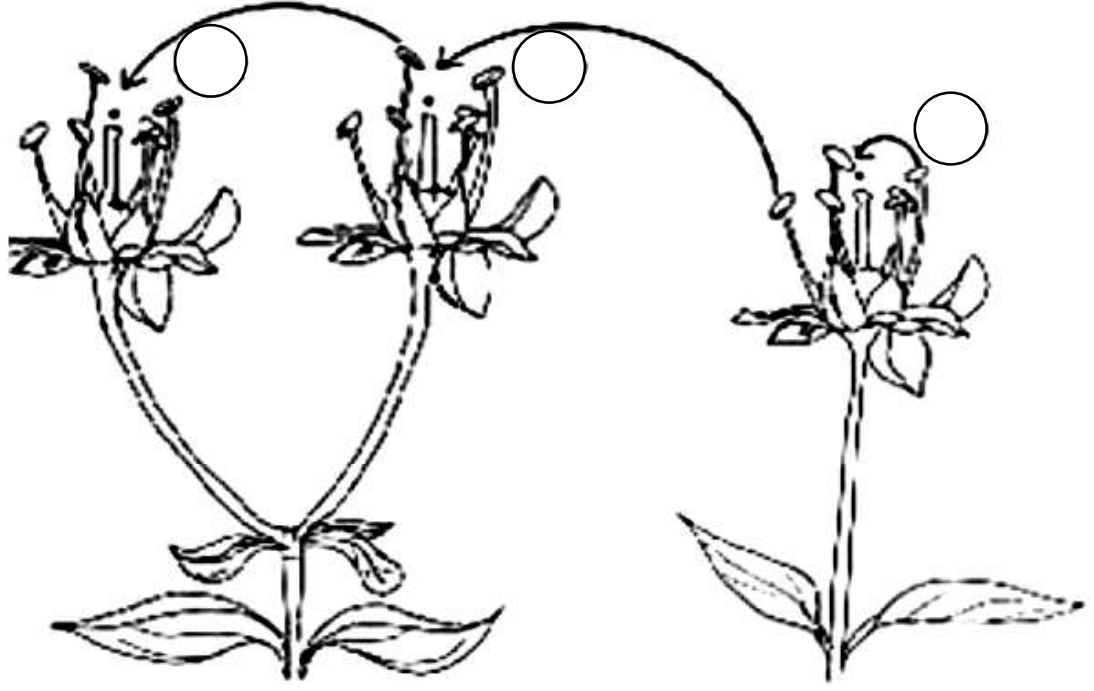
5

			P'	Q'
			R'	
		S'		
		T'		

What is the chemical name of 'smack'

5





'1', '2' '3'

शब्दावली) क्या हैं

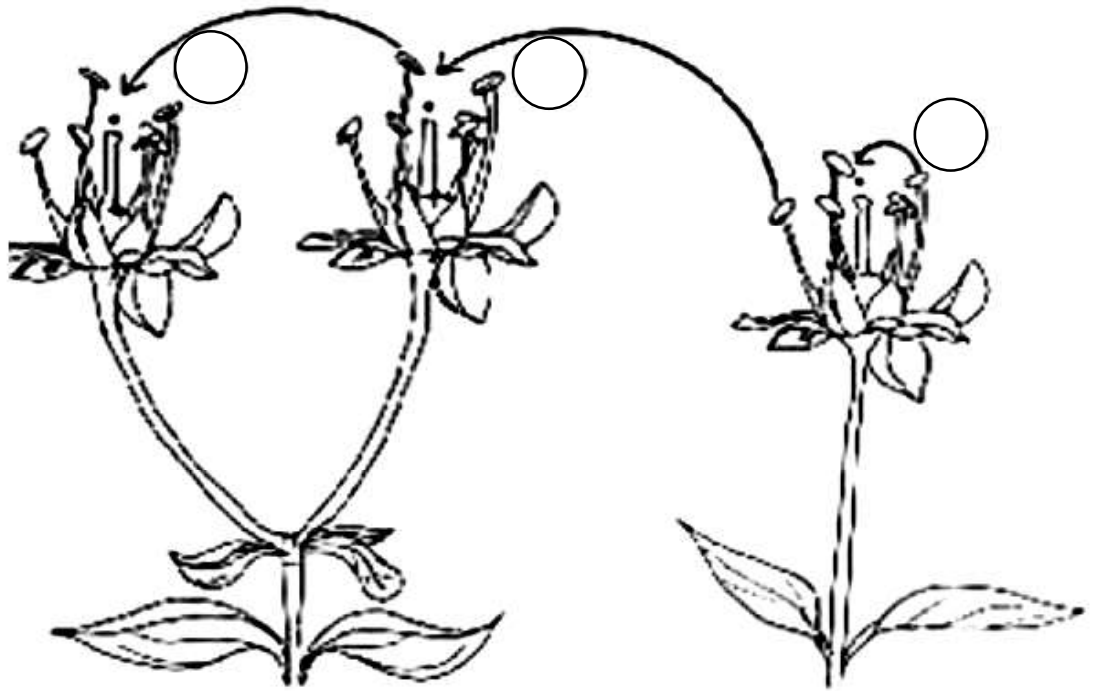
ल परागण संपन्न कराने हेतु क्या उपाय अपनाते हैं

वैलिसनेरिया

अन्त

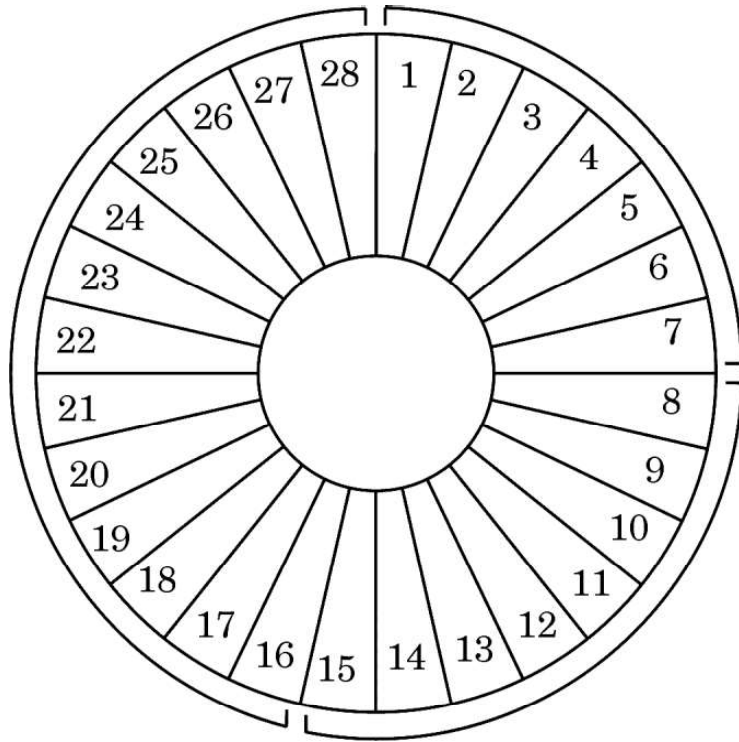
अथवा





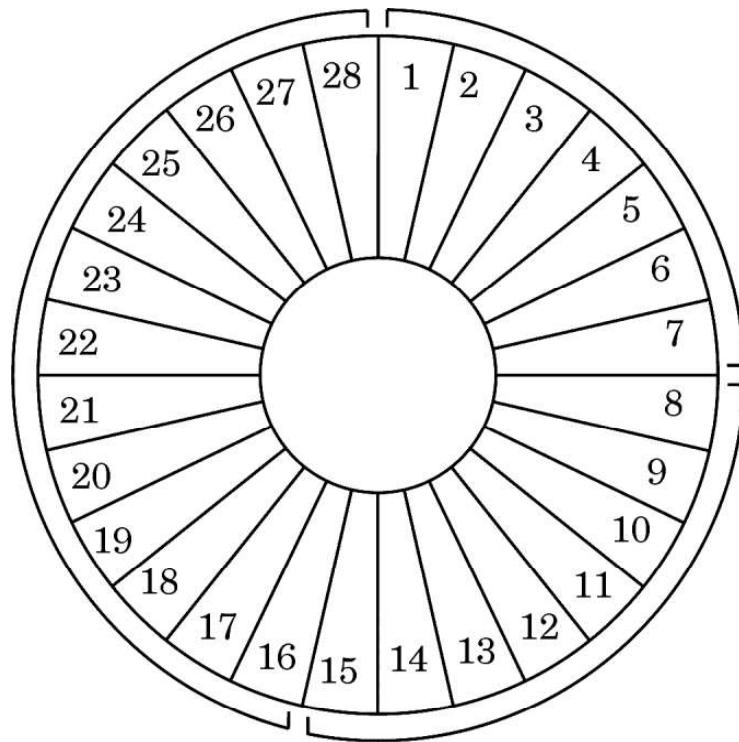
'1', '2' and '3'

Vallisneria



शब्द क्या हैं

-
-
-
-
-
-
-



-
-
-
-
-
-
-



क्या मानव विकास अनुकूली विकिरण का एक उदाहरण है

5

5





5

5

Marking Scheme
Strictly Confidential

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Senior School Certificate Examination, 2023

SUBJECT NAME BIOLOGY (SUBJECT CODE 044) (PAPER CODE 57/1/3)

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark(√) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 0-70 has to be used. Please do not hesitate to award full marks if the answer deserves it.



12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past:-</p> <ul style="list-style-type: none"> ● Leaving answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totaling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totaling on the title page. ● Wrong totaling of marks of the two columns on the title page. ● Wrong grand total. ● Marks in words and figures not tallying/not same. ● Wrong transfer of marks from the answer book to online award list. ● Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) ● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.
15	Any un assessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the “ Guidelines for spot Evaluation ” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.



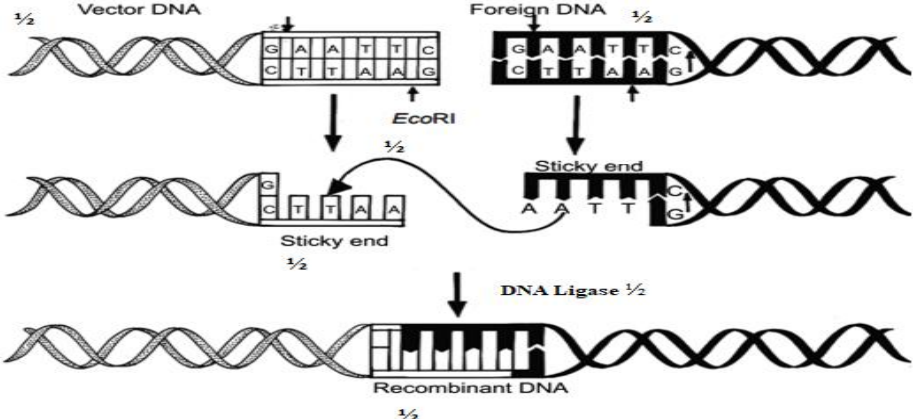
MARKING SCHEME
Senior Secondary School Examination, 2023
BIOLOGY (Subject Code– S57091A)
[Paper Code:57/1/3]

Maximum Marks: 80

Q. No.	EXPECTED ANSWER / VALUE POINTS	Marks	Total Marks
SECTION A		1	1
1	(c) when the sperm gains entry in to the cytoplasm of the ovum		
2.	(c) 1300	1	1
3.	(a) / P – (ii), Q – (iv), R – (iii), S– (i)	1	1
4.	(c) / Rice	1	1
5.	(c) / X = Promoter, Y = Sigma factor, Z = RNA polymerase.	1	1
6.	(c) / 1 and 3	1	1
7.	(c) / Directional selection as giraffes with longer neck lengths are selected // (d)/Stabilizing selection as giraffe with medium neck lengths are selected.	1 // 1	 1
8.	(a) I High temperature / 90°C Heat stable	1	1
9.	(b) dsRNA	1	1
10.	(d) Glomus	1	1
11.	(d) / P = (iii), Q = (i), R = (ii), S = (iv)	1	1
12.	(b) (i) and (iv)	1	1
13.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
14.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
15.	(c) Assertion (A) is true, but Reason (R) is false.	1	1
16.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
SECTION B			
17.	(a) From micropylar end, through the synergids (filiform apparatus)/filiform (within synergids) apparatus guides the entry of pollen tube (b) One male nucleus fuses with two polar nuclei to form Primary endosperm nucleus and termed triple fusion, other male nucleus fuses with egg cell nucleus to form zygote i.e. undergoes Syngamy	½×2 ½×2	 2
18.	(a) Aims to conserve worldwide loss of wetlands (b) Ashtamudi Wetland (Kerala), Bhitarkanika mangroves (Odisha), Bhoj wetlands (M.P.), Chandra Taal (H.P.), (or any other correct site) (Any two)	1 ½+½	 2
19.	(a) Bacterial infections are becoming resistant to antibacterial medications/ allow resistant bacteria (hard to kill-bad bugs) to increase in numbers faster than susceptible bacteria (easy to kill bugs) and can transfer through food chains to humans (or any other correct reason) (b) Antibiotic may wipe out some but not all of the bacteria the surviving bacteria shall multiply / become more resistant to first-line of treatment / increasing risk of complications/increased cost associated with prolonged illness (or any other correct reason)	1 1	 2

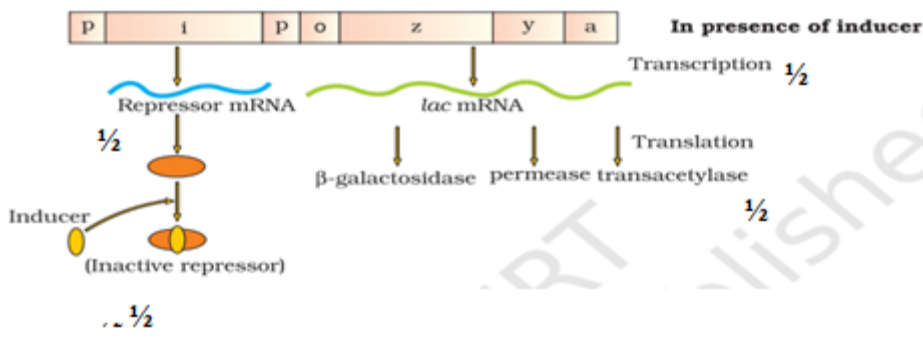
20.	<p>(a)</p> <p>(i) 'A; Circular DNA/Plasmid 'B' Bacteriophage</p> <p>(ii)(Plasmid)-Can carry foreign gene into the host cell/acts as cloning vector/has selectable marker/ independent of the control of chromosomal DNA/ high copy number (Bacteriophage) -Cloning vector have the ability to replicate in bacterial cells / independent of the control of chromosomal DNA / high copy number per cell.</p> <p style="text-align: center;">OR</p> <p>(b) Treating bacteria with specific concentration of calcium (ions)which increases the efficiency with which DNA enters the bacteria through pores in its cell wall ,recombinant DNA can then be forced into such cells by incubating the cells with recombinant DNA on ice, followed by placing them briefly at 42⁰C (heat shock), then putting them back on ice.</p>	<p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2×4</p>	<p>2</p>												
21.	<p>(a) Blastocyst</p> <p>(b) Uterine wall/endometrium/innermost layer of uterine wall.</p> <p>(c) (Outer layer/trophoblast) 'X'- helps in implantation in uterus/attachment to endometrium. (Inner cell mass) 'Y'- gets differentiated into embryo.</p>	<p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p>	<p>2</p>												
SECTION C															
22.	<p>(a) (i) (1) ZIFT : Zygote intrafallopian transfer. (2) ICSI : Intracytoplasmic sperm injection. (3) IUT : Intra uterine transfer. (4) GIFT : Gamete intrafallopian transfer.</p> <p>(ii) •GIFT •GIFT allows the eggs to fertilize and develop in the fallopian tube/ IVF places a directly fertilized egg (zygote) into the uterus/ <i>in vivo</i> fertilisation is involved in GIFT.</p> <p style="text-align: center;">OR</p> <p>(b) (i)</p> <table border="1" data-bbox="245 1330 1158 1480"> <tr> <td>Perisperm</td> <td>Pericarp:</td> </tr> <tr> <td>Persistent nucellus in some seeds</td> <td>The wall of ovary develops into wall of fruit.</td> </tr> </table> <p>(ii)</p> <table border="1" data-bbox="320 1592 951 1671"> <tr> <td>Syncarpous</td> <td>Apocarpous</td> </tr> <tr> <td>fused pistils.</td> <td>free pistils.</td> </tr> </table> <p>iii)</p> <table border="1" data-bbox="301 1778 1027 1966"> <tr> <td>Plumule :</td> <td>Radicle :</td> </tr> <tr> <td>Future stem/ terminal part of epicotyl / shoot tip of embryonal axis</td> <td>Future root/ terminal part of hypocotyl / root tip of embryonal axis</td> </tr> </table>	Perisperm	Pericarp:	Persistent nucellus in some seeds	The wall of ovary develops into wall of fruit.	Syncarpous	Apocarpous	fused pistils.	free pistils.	Plumule :	Radicle :	Future stem/ terminal part of epicotyl / shoot tip of embryonal axis	Future root/ terminal part of hypocotyl / root tip of embryonal axis	<p>1/2 × 4</p> <p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p> <p>1</p>	<p>3</p>
Perisperm	Pericarp:														
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Plumule :	Radicle :														
Future stem/ terminal part of epicotyl / shoot tip of embryonal axis	Future root/ terminal part of hypocotyl / root tip of embryonal axis														



23.	<p>(a) Primary Sludge: All the solids that settle down, during the primary treatment of sewage water.</p> <p>(b) Activated Sludge: Produced during the secondary treatment or biological treatment of sewage, primary effluent + aerobic microbes flocs (bacteria and fungus) – get converted to a sediment whose BOD has reduced significantly.</p> <p>(c) Anaerobic sludge digesters: Large tanks where activated sludge is treated with anaerobic bacteria which digest the bacteria and fungi, and produce a mixture of CH₄, H₂S and CO₂/ Biogas</p>	1/2 × 2										
24.	<p>(a) <i>Dryopithecus</i>, <i>Ramapithecus</i></p> <p>(b) Time period : 2 million years ago Place : East African grasslands</p> <p>(c)</p> <table border="1" data-bbox="146 748 868 936"> <tbody> <tr> <td><i>Homo habilis</i></td> <td><i>Homo erectus</i></td> </tr> <tr> <td>Brain capacity between 650 – 800 cc</td> <td>Brain capacity 900 cc</td> </tr> <tr> <td>probably did not eat meat.</td> <td>probably ate meat</td> </tr> </tbody> </table>	<i>Homo habilis</i>	<i>Homo erectus</i>	Brain capacity between 650 – 800 cc	Brain capacity 900 cc	probably did not eat meat.	probably ate meat	1/2+1/2 1/2 1/2 1/2 1/2	3 3			
<i>Homo habilis</i>	<i>Homo erectus</i>											
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25.		1/2×6	3									
26.	<p>(a)</p> <table border="1" data-bbox="146 1505 1257 1733"> <thead> <tr> <th>S. No.</th> <th>Malignant tumor</th> <th>Benign tumor</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Cells grow very rapidly and invade and damage the surrounding normal tissue.</td> <td>Comparatively slow growth and remain confined to their original location and do not spread to other parts of the body</td> </tr> <tr> <td>2</td> <td>Show metastasis</td> <td>Do not show metastasis</td> </tr> </tbody> </table> <p style="text-align: right;">(Any one difference)</p> <p>(b) • Metastasis</p> <ul style="list-style-type: none"> • Cells from these tumors slough off and reach distant sites through blood, wherever they get lodged in the body they start a new tumor there. 	S. No.	Malignant tumor	Benign tumor	1	Cells grow very rapidly and invade and damage the surrounding normal tissue.	Comparatively slow growth and remain confined to their original location and do not spread to other parts of the body	2	Show metastasis	Do not show metastasis	1 1 1/2 × 2	3
S. No.	Malignant tumor	Benign tumor										
1	Cells grow very rapidly and invade and damage the surrounding normal tissue.	Comparatively slow growth and remain confined to their original location and do not spread to other parts of the body										
2	Show metastasis	Do not show metastasis										



27.	<p>(a) They have the ability of self-renewal / to divide, and differentiate into any kind of cell/tissue/organ.</p> <p>(b) – Inner cell mass of blastocyst / umbilical cord / Bone marrow (or any other correct source) (Any one)</p> <p>(c) Diabetes treatment via forming islets of Langerhans, Restoration of vision by injecting stem cells, to treat rheumatoid arthritis, reduces pancreatic cancer, to treat genetic disorder like cystic fibrosis, spinal cord injurie, heart disease, any other correct application (Any two)</p>	$\frac{1}{2} \times 2$ 1 $\frac{1}{2} \times 2$	3
28.	<p>(a) •Recessive • Individuals 1 and 2 don't have disease but their offspring individual 3 shows the disease.</p> <p>(b) Individual 3 is homozygous</p> <p>(c) Individual 7/8</p> <p>(d) Individual 2/ 5</p> <p>(e) Autosomal disorder</p>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3
SECTION D			
29.	<p>(a) In presence of lactose repressor protein dose not bind to the operator region (O) and allow RNA polymerase to transcribe the operon. // In absence of lactose repressor protein bind to the operator region (O) and prevent RNA polymerase from transcribing the operon.</p> <p>(b) Presence of Permease enzyme coded by gene 'y' is required that allows lactose to enter the cell for switching on the operon / so that lactose enter inside the cell.</p> <p>(c) 'i' stands for 'inhibitor/ this gene transcribes repressor protein which binds to the 'operator' site and switch off the operon.</p> <p>(d)</p> <div data-bbox="172 1473 1082 1809" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">In absence of inducer</p> </div> <p style="text-align: center;">OR</p> <p>(d)</p>	1 // 1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2} \times 4$	

		$\frac{1}{2} \times 4$	4
30.	<p>(a) Species diversity decreases as we move from region A to region B.</p> <p>Reasons : less Constant mean annual temperature, lesser habitable land area, availability of lesser solar energy, lesser productivity, any other correct reason in 'B' region.</p> <p style="text-align: center;">(Any two)</p> <p>(b) More the 1200 species of birds, Indian land mass being largely in the tropical latitudes.</p> <p style="text-align: center;">OR</p> <p>(b) Amazonian rainforest (in South America), mainly being in tropical region.</p>	<p>1</p> <p>1+1</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>	4
SECTION E			
31.	<p>(a) (i) The vaccine contains the antigen, which stimulates or activates immune cells to produce antibodies (by B lymphocytes) / which generates primary response or humoral immune response.</p> <p>(ii) Memory cells generate, amnestic response/secondary response</p> <p>(iii) P = Yes Q = Catching an infection/getting infected R = No S = Yes T = No</p> <p style="text-align: center;">OR</p> <p>(b) (i) • Diacetylmorphine • as it is highly addictive, and being a depressant it slows down body functions.</p> <p>(ii) (1) <i>Cannabis sativa</i>, affects the cardiovascular system of the body.</p> <p>(2) <i>Erythroxylum coca</i> /coca plant , interferes with the transport of neurotransmitter dopamine / produces sense of euphoria / increased energy.</p> <p>(3) <i>Papaver somniferum</i>, acts as depressant/ slows down body function/ reduces pain/sedative</p>	<p>$\frac{1}{2} + 1$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} \times 5$</p> <p>1</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>	5
32.	<p>(a) (i) (1) Autogamy (2) Geitonogamy (3) Xenogamy</p> <p>(ii) (1) Water lily: pollinated by insects/wind.</p>	<p>$\frac{1}{2} \times 3$</p> <p>$\frac{1}{2}$</p>	



	<p>(2) Vallisneria : Female flowers on long stalks reach water surface male flowers or pollen released on water and carried by water current to female flowers to achieve pollination.</p> <p>(iii) Genetic : Self-incompatibility / prevents self-pollen (same flower or other flowers of same plant) from fertilizing the ovules by inhibiting pollen germination, pollen tube growth in pistil.</p> <p>Physiological : Pollen release and stigma receptivity are not synchronized, either pollen matures earlier and stigma later or pollen matures later than stigma.</p> <p style="text-align: center;">OR</p> <p>(b) (i) (1) Menstrual period (2) Follicular phase/proliferative phase (3) Luteal phase/secretory phase (4) Ovulatory phase</p> <p>(ii)</p> <table border="1" data-bbox="145 792 1241 1576"> <thead> <tr> <th></th> <th>Days</th> <th>Ovarian hormones</th> <th>Pituitary hormones</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>8-12</td> <td>Follicular growth / proliferation of endometrial cells.</td> <td>Simulates follicular Development/ secretion of estrogen by growing follicles</td> </tr> <tr> <td>2</td> <td>13-15</td> <td>Maturation of ovarian follicles/ formation of graafian follicles / thickening of endometrium.</td> <td>Rupture of graafian follicle to release ovum.</td> </tr> <tr> <td>3</td> <td>16-18</td> <td>Maintenance of endometrium</td> <td>Secretion of progesterone from corpus luteum.</td> </tr> </tbody> </table>		Days	Ovarian hormones	Pituitary hormones	1	8-12	Follicular growth / proliferation of endometrial cells.	Simulates follicular Development/ secretion of estrogen by growing follicles	2	13-15	Maturation of ovarian follicles/ formation of graafian follicles / thickening of endometrium.	Rupture of graafian follicle to release ovum.	3	16-18	Maintenance of endometrium	Secretion of progesterone from corpus luteum.	<p>1</p> <p>$\frac{1}{2} \times 2$</p> <p>$\frac{1}{2} \times 2$</p> <p>$\frac{1}{2} \times 4$</p> <p>$\frac{1}{2} \times 6$</p> <p>5</p>	
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33.	<p>(a) (i). Many varieties of finches (black bird) were found on the island (Galapagos),</p> <ul style="list-style-type: none"> . Originally all birds had seed eating features, . Gradually as they moved to other geographical areas, . The beak structures changed according to the food available there and many other altered beaks arose. . Some becoming insectivorous and others remaining vegetarian, . Hence the process of evolution starting from a point and radiating to other areas of habitats is called adaptive radiation. <p>(ii) . No</p>	<p>$\frac{1}{2} \times 6$</p> <p>1</p>																	



. human evolution is an example of progressive evolution and not adaptive radiation, parent species of Homosapiens have evolved from Homo habilis and to homo erectus lineage.

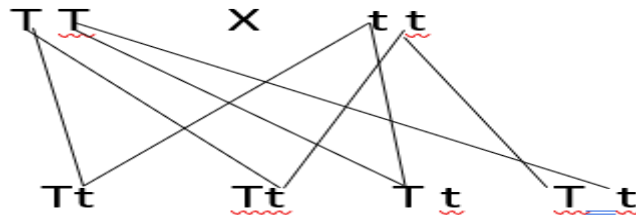
1/2+1/2

OR

(b) Test cross
Genotype of tall plant can be TT or Tt

1

Cross made with pure dwarf tt
Case I Given tall pant - TT

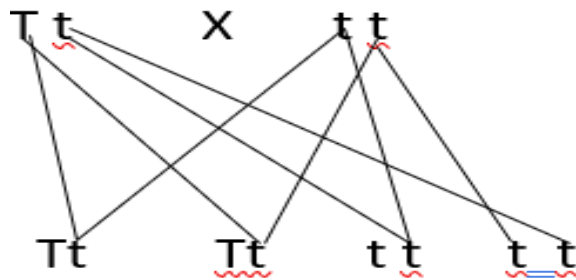


1

If the genotype of the tall pea plant (given) was TT. Then the phenotype of all plant of this cross = 100% Tall

1

CASE-II
Given tall plant - Tt



1

If the genotype of the tall pea plant (given) was Tt Then phenotype of plant in this cross = 50 % Tall
50 % Dwarf

1

5



