

Test Booklet No. _____

This booklet consists of 150 questions and pages.

RGUPET/2025/1004/106

RGUPET 2025
Common Entrance Test, 2025
DOCTOR OF PHILOSOPHY IN GENETICS AND PLANT BREEDING

Full Marks: 150

Time: 3 Hours

Roll No.

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Day and Date of Examination: _____

Signature of Invigilator(s) _____

Signature of Candidate _____

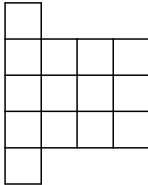
General Instructions:

PLEASE READ ALL THE INSTRUCTIONS CAREFULLY BEFORE MAKING ANY ENTRY.

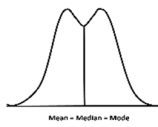
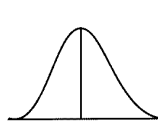
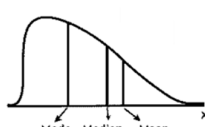
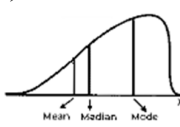
1. DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Candidate must write his/her Roll Number on the space provided.
3. This Test Booklet contains 150 Multiple Choice Questions (MCQs) from the concerned subject. Each question carries 1 mark.
4. Please check the Test Booklet to verify that the total pages and total number of questions contained in the test booklet are the same as those printed on the top of the first page. Also check whether the questions are in sequential order or not.
5. Candidates are not permitted to enter into the examination hall after the commencement of the entrance test or leave the examination hall before completion of Examination.
6. Making any identification mark in the OMR Answer Sheet or writing Roll Number anywhere other than the specified places will lead to disqualification of the candidate.
7. Candidates shall maintain silence inside and outside the examination hall. If candidates are found violating the instructions mentioned herein or announced in the examination hall, they will be summarily disqualified from the entrance test.
8. In case of any dispute, the decision of the Entrance Test Committee shall be final and binding.
9. The OMR Answer Sheet consists of two copies, the Original copy and the Student's copy.

1	The “Mission Sudarshan Chakra”, recently launched by the Prime Minister of India, primarily relates to				development of a multilayered air and missile defence system
	a) a national renewable energy mission	b) a national digital currency mission	c) development of a multilayered air and missile defence system	d) a national mission to modernise Indian Railways	(c)
2	“Pushpak”- a national mission being implemented by the Indian Institute of Technology, Bombay is related to the development of				Drone technology
	a) Helicopters	b) Dairy technology	c) Drone technology	d) Artificial intelligence	(c)
3	North East India’s first underwater tunnel project, announced in 2024, is proposed to connect				Numaligarh and Gohpur
	a) Dibrugarh and Dhemaji	b) Jorhat and Majuli	c) Numaligarh and Gohpur	d) Guwahati and North Guwahati	(c)
4	Which of the following statements are correct? A. Canada hosted the 51 st G7 summit in 2025. B. Four players were honoured with the Khel Ratna Award 2025. C. Sweden was ranked first in Global Innovation Index 2024. D. Operation Sindoor was Launched by India to attack terrorist bases in Pakistan on 7 th May 2025.				(a)
	a) A, B and D	b) A,B and C	c) Only A	d) All of the above	A, B and D
5	Which of the followings are correct? A. Lip Butan has been appointed as the new CEO of Intel in March 2025 B. Shri C P Radhakrishnan has been appointed as the Vice President of India C. India’s rank in the Human Development Index 2025 released by UNDP is 99 D. India has become the 2 nd largest road network in the World.				(d)
	a) A and B only	b) A, B and C only	c) A, C and D only	d) A, B, D only	A, B, D only
6	Which of the following sentences is false? A. Palk Strait joins India and Sri Lanka B. The Radcliffe Line is between India and Bangladesh C. The MacMohan Line separates India and China D. The Durand Line is between Iran and Afghanistan.				
	a) A, B	b) B, C	c) C, D	d) B, D	(d)
7	Assertion (A): Eclipses do not occur on all full moon and new moon days. Reason (R): The moon revolves round the earth in an elliptical orbit.				A and R are true but R

					doesnot explain A
	a) A and R are true and R correctly explains A.	b) A and R are true but R does not explain A.	c) A is true R is false	d) R is true but A is false	(b)
8	Right to equality is a-				Fundamental right
	a) fundamental right	b) social right	c) cultural right	d) legal right	(a)
9	The author of the book “Midnight’s Children” is-				Salman Rushdie
	a) Shakespeare	b) Leo Tolostoy	c) Salman Rushdie	d) R K Narayan	(c)
10	Match the organizations with their headquarters:				
	A. UNESCO		1. New York		
	B. WHO		2. Paris		
	C. UNICEF		3. Geneva		
	D. IMF		4. Washington D.C.		
	a) A–3, B–2, C–4, D–1	b) A–2, B–3, C–1, D–4	c) A–2, B–4, C–3, D–1	d) A–1, B–3, C–2, D–4	(b)
11	He said, “Happy new year!” The correct indirect speech of the above is-				He wished me a happy new year.
	a) He said the new year was happy.	b) He wished me a happy new year.	c) He said to me that happy new year.	d) I was wished a happy new year.	(b)
12	Identify the correct sentence(s) from the following. A. One of my friends is a doctor. B. I don’t know nothing about her. C. It is a two-hour journey. D. We will be definitely there at the yesterday’s programme.				
	a) A, B	b) B, C	c) A, C	d) C, D	(c)
13	“She drank the _____ milk that was there in the flask.” The appropriate quantifier to fill in the blank is-				little
	a) all	b) little	c) sour	d) few	(b)
14	“a/ great /and/ reality/their/ theory/in/there/ disparity/is” The correct reordered meaningful sentence with the above jumbled words/phrases is- P. There is a great theory and their reality in disparity. Q. There is a great disparity in their theory and reality. R. Their great disparity is in a theory and reality there. S. Their great theory is a reality and in disparity there.				There is a great disparity in their theory and reality.
	a) P	b) Q	c) R	d) S	(b)
15	The correct match of synonyms and antonyms is:				A-ii, B-iii, C-i, D-iv

	A. Futile	i. Help		
	B. Generic	ii. Effective		
	C. Hinder	iii. Individual		
	D. Inception	iv. Termination		
	a) A-i, B-ii, C-iii, D-iv	b) A-iii, B-ii, C-iv, D-iii	c) A-iv, B-iii, C-i, D-ii	d) A-ii, B-iii, C-i, D-iv
1 6	The total number of squares in the following figure is: 			
	a) 24	b) 20	c) 22	d) 18
1 7	Fill in the blank in the following pattern. ELFY GLHX ILJW ----- MLNU			
	a) KLLV	b) KLMX	c) JLLV	d) JLMX
1 8	Raghav introduces Vineet as the only son of the only brother of his father's wife. How Raghav and Vineet are related?			
	a) brother	b) cousin	c) uncle	d) son-in-law
1 9	Which two numbers should be interchanged to make the given equation mathematically correct? $3 \times 6 + 72 \div 8 - 24 = 12$			
	a) 6, 8	b) 6, 24	c) 3, 8	d) None
2 0	If BANKER is coded as CAOKFR, then how would LAWYER be coded?			
	a) LBWZES	b) LBWYFR	c) MAXYFR	d) MAXZES
2 1	Same error occurs at the same size in every measurement, and such errors can only be eliminated either by thinking through the sources of problems and removing them. This type of error is termed as:			
	a) Random errors	b) Systematic errors	c) Cascading errors	d) Perpetual errors
2 2	Hypothesis-driven research begins with a hypothesis. A hypothesis is a statement about the world that can be true or false, and whose truth is being tested.			
	a) A valid hypothesis is based on 'that exists'	b) A hypothesis is a positive conclusion	c) A hypothesis can never be tested	d) A valid hypothesis must be falsifiable
2 3	Which of the following statements that could be considered as valid scientific hypotheses? A. Eating two ounces of olive oil a day decreases the odds of contracting heart disease. B. What is the best fertilizer to use to get large and tasty tomatoes?			

	C. Macs are better than PCs. D. Briar's Aspirin cures headaches faster than RCS Aspirin.														
	a) A, B	b) A, B, C	c) A, D	d) B, C	c										
2 4	Relate the 'function or relationship' (A) and 'comment' (B) and select the appropriate answer A: Find how the speed of sound in air at fixed pressure depends upon air temperature. B: The control variable is temperature, and the response variable is sound speed.				Answer										
	a) Functional relationship is correct and the comment is true for the relationship	b) Functional relationship is incorrect but the comment is true for the relationship	c) Functional relationship is correct but the comment is false for the relationship	d) Neither the functional relationship is correct nor the comment is true	a										
2 5	Relate 'sampling design' and its 'method' <table border="1"><tr><td>Sampling Design</td><td>Method</td></tr><tr><td>A. Deliberate</td><td>i. Sample collected as information received and survey progresses</td></tr><tr><td>B. Simple random</td><td>ii. sample drawn from a heterogeneous group</td></tr><tr><td>C. Stratified</td><td>iii purposive selection of particular units</td></tr><tr><td>D. Sequential</td><td>iv. every item in the population has an equal chance of inclusion</td></tr></table>				Sampling Design	Method	A. Deliberate	i. Sample collected as information received and survey progresses	B. Simple random	ii. sample drawn from a heterogeneous group	C. Stratified	iii purposive selection of particular units	D. Sequential	iv. every item in the population has an equal chance of inclusion	Answer
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	a) A-iii, B-iv, C-ii, D-i	b) A-ii, B-iv, C-iii, D-i	c) A-i, B-iii, C-ii, D-iv	d) A-iii, B-ii, C-iv, D-i	a										
2 6	Number of observations in a normal distribution is 1000. How many observations will be there between $\mu+1\sigma$ and $\mu-1\sigma$				Answer										
	a) 500	b) 680	c) 720	d) 950	b										
2 7	Which of the following are reasons for citing a paper? A. use its ideas, definitions, terms in a Research B. provides upcoming facts regarding undergoing Research Question. C. to adopt part/full methodology it adopted for a certain task. D. to refer to data also used in Current Research.				Answer										
	a) A, B, C	b) B, C, D	c) A, C, D	d) A, B, D	c										
2 8	Scholars who wish to meet publication expectations mostly resort to a variety of techniques to increase their output and crank up their citation ranking, which are not considered ethical. Identify these techniques: A. Gift authorship B. Extensive experiments C. Salami Slicing D. Extensive referencing				Answer										
	a)A, B, C	b) A, B, D	c) B, C, D	d) A, C, D	d										
2 9	Match the references (APA 7 style):				Answer										

	A. Journal Article	i. Edwards, A. A., Steacy, L. M., Siegelman, N., Rigobon, V. M., Kearns, D. M., Rueckl, J. G., & Compton, D. L. (2022). Unpacking the unique relationship between set for variability and word reading development: Examining word- and child-level predictors of performance. <i>Journal of Educational Psychology</i> , 114(6), 1242–1256. https://doi.org/10.1037/edu0000696																																											
	B. Authored Book	ii. Levenson, H., Jinich, S., Vaz, A., & Rousmaniere, T. (2025). <i>Deliberate practice in emotionally focused couple therapy</i> . American Psychological Association. https://doi.org/10.1037/0000436-000																																											
	C. Webpage	iii. Zeleke, W. A., Hughes, T. L., & Drozda, N. (2020). Home–school collaboration to promote mind–body health. In C. Maykel & M. A. Bray (Eds.), <i>Promoting mind–body health in schools: Interventions for mental health professionals</i> (pp. 11–26). American Psychological Association. https://doi.org/10.1037/0000157-002																																											
	D. Edited Book Chapter	iv. Taras, Z. (2024, May 30). <i>Situational irony can be funny, tragic or even terrifying</i> . howstuffworks. https://entertainment.howstuffworks.com/arts/literature/situational-irony.htm																																											
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30	Which one of the following refers to positive skewness?																																												
	a) 	b) 	c) 	d) 	c																																								
31	How much is the degree of freedom for the following data table?				Answer																																								
	<table><tr><th>S. No.</th><th>X_i</th><th>Hypothesised mean $m_{H_0} = 578 \text{ kg.}$</th><th>$D_i = (X_i - \mu_{H_0})$</th><th>$D_i^2$</th></tr><tr><td>5</td><td>572</td><td>578</td><td>−6</td><td>36</td></tr><tr><td>6</td><td>578</td><td>578</td><td>0</td><td>0</td></tr><tr><td>7</td><td>570</td><td>578</td><td>−8</td><td>64</td></tr><tr><td>8</td><td>572</td><td>578</td><td>−6</td><td>36</td></tr><tr><td>9</td><td>596</td><td>578</td><td>18</td><td>324</td></tr><tr><td>10</td><td>544</td><td>578</td><td>−34</td><td>1156</td></tr><tr><td>$n = 10$</td><td></td><td></td><td>$\Sigma D_i = -60$</td><td>$\Sigma D_i^2 = 1816$</td></tr></table>				S. No.	X_i	Hypothesised mean $m_{H_0} = 578 \text{ kg.}$	$D_i = (X_i - \mu_{H_0})$	D_i^2	5	572	578	−6	36	6	578	578	0	0	7	570	578	−8	64	8	572	578	−6	36	9	596	578	18	324	10	544	578	−34	1156	$n = 10$			$\Sigma D_i = -60$	$\Sigma D_i^2 = 1816$	
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32	Find out the Null hypothesis for the given table				Answer																																								
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	a) $\mu_{H_0} = 578\text{kg.}$	b) $\mu_{H_0} \neq 578\text{kg.}$	c) $\mu_{H_0} = - 578\text{kg.}$	d) $\mu_{H_0} = \pm 578\text{kg.}$	a										
3 3	What will be sum of the deviations of observations from the regression line?				Answer										
	a) $-\infty$	b) 0	c) $+\infty$	d) undefined	b										
3 4	Derive from the following diagram Assertion: In this normal distribution 5 percent of the sample are rejected. Justification: It shows a two tailed hypothesis test model at 90 percent confidence level				Answer										
	a) Assertion is true and justification explains the Assertion	b) Assertion is false but justification explains the Assertion	c) Assertion is true and justification is true but does not explain the Assertion	d) Assertion is true and justification for the Assertion is incorrect	d										
3 5	Match into pairs for the Statistical method with appropriate details mentioned: <table><thead><tr><th>Statistical method</th><th>Details</th></tr></thead><tbody><tr><td>A. Correlation</td><td>i. Order 2, 3, 4,</td></tr><tr><td>B. Polynomial regression</td><td>ii. More than two population on same characteristics</td></tr><tr><td>C. ANOVA</td><td>iii. Test of homogeneity</td></tr><tr><td>D. Chi square</td><td>iv. Requires only two variables</td></tr></tbody></table>				Statistical method	Details	A. Correlation	i. Order 2, 3, 4,	B. Polynomial regression	ii. More than two population on same characteristics	C. ANOVA	iii. Test of homogeneity	D. Chi square	iv. Requires only two variables	Answer
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	a) A-i, B-ii, C-iii, D-iv	b) A-iv, B-i, C-ii, D-iii	c) A-iv, B-ii, C-i, D-iii	d) A-iii, B-i, C-ii, D-iv	b										

36	Match the following and give the correct answer:				Answer
	A. Nature of Interaction holding atom B. Rate of Chemical Reaction C. Increase the rate of reaction D. hydrocarbon chain insoluble in water i Kinetics ii Bond iii Lipid iv catalyst				
	a) A(i), B(ii), C(iii), D(iv)	b) A(ii), B(i), C(iv), D(iii)	c) A(iii), B(ii), C(i), D(iv)	d) A(ii), B(iii), C(i), D(iv)	(b)
37	In a simple harmonic motion, the velocity of a particle is maximum at:				Answer
	a) Mean position	b) Extreme position	c) Halfway between mean and extreme	d) At all positions	(a)

38	In a double-slit experiment, if the distance between slits is doubled, what happens to the fringe spacing on the screen?				Answer										
	a) Fringe spacing halves	a) Fringe spacing doubles	c)Fringe spacing remains the same	d)Fringe spacing quadruples	(a)										
39	A block slides down a frictionless inclined plane. Which of the following statements is true?				Answer										
	a) Mechanical energy is not conserved	b) Potential energy decreases, kinetic energy increases	c) Kinetic energy decreases	d)Acceleration is zero	(b)										
40	Which of the following is true for a photon in a vacuum?				Answer										
	a) It has mass but no energy	b) It has energy but no rest mass	c) It has rest mass and energy	d) It can be accelerated by a force	(b)										
41	If $f(x) = \begin{cases} x-2 /(x-2), & x \neq 0 \\ 0, & otherwise \end{cases}$				Answer										
	a) -1	b) 1	c) 0	d) does not exist	d										
42	If $y = x^5 - 5x^4 + 5x^3 - 1$, then the value of $\frac{d^6y}{dx^6}$ is				Answer										
	a) $120x - 120$	b) 120	c) 0	d) cannot be evaluated.	c										
43	Which of the following is/are not true for a function f defined on closed interval $[a, b]$ to satisfy Rolle's theorem? A. f is continuous on closed interval $[a, b]$. B. f is differentiable on the open interval (a, b) C. $f(a) = f(b)$ D. $f(k) = 0$ for at least one $k \in [a, b]$.				Answer										
	a) A and B	b) only D	c) B and C	d) Only C	b										
44	A group which satisfies commutatively property is known a														
	a) Abelian group	b) Quotient group	c) Coset group	d) Normal group	a										
45	Let M^T denotes transpose matrix of M and I is identity matrix. Match the following: <table border="1"><tr><td>A. M is idempotent</td><td>i. $M = M^T$</td></tr><tr><td>B. M is symmetric</td><td>ii. $M = -M^T$</td></tr><tr><td>C. M is skew-symmetric</td><td>iii. $M^2 = I$</td></tr><tr><td>D. M is involution</td><td>iv. $M^2 = M$</td></tr><tr><td colspan="2"></td></tr></table>				A. M is idempotent	i. $M = M^T$	B. M is symmetric	ii. $M = -M^T$	C. M is skew-symmetric	iii. $M^2 = I$	D. M is involution	iv. $M^2 = M$			Answer
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46	Relate the statements: A: Assertion–SSDs are faster than HDDs. B: Justification–Because SSDs use flash memory instead of spinning disks.				Answer										

	a) Both A and B are true, and B is the correct explanation of A	b) Both A and B are true, but B is NOT the correct explanation of A	c) A is true, but B is false	d) A is false, but B is true	(a)
47	Match the pairs:				Answer
	A. Machine Learning	i Enables machines to understand and process human language			
	B. Natural Language Processing (NLP)	ii Uses data to learn and improve predictions automatically			
	C. Computer Vision	iii Analyzes and interprets visual data like images and videos			
	D. Expert Systems	iv Mimics human decision-making using rules and knowledge base			
	a) A – iv, B – i, C – iii, D – ii.	b) A – iv, B – iii, C – i, D – ii.	c) A – ii, B – i, C – iii, D – iv.	d) A – iii, B – i, C – iv, D – ii.	(c)
48	Which programming language is widely used for AI and ML development?				Answer
	a) Python	b) JavaScript	c) C#	d) HTML	(a)
49	Which of the following statement is true:				Answer
	a) A byte is made up of 16 bits.	b) ROM is volatile memory that loses data when power is switched off.	c) A compiler translates high-level code into machine code line by line.	d) A firewall is used to protect a computer network from unauthorized access.	(d)
50	What is a network of networks called?				Answer
	a) Intranet	b) Internet	c) WAN	d) LAN	(b)
51	H. Flor proposed the gene-for-gene hypothesis while working on which crop?				Answer
	a) Wheat	b) Oats	c) Linseed	d) Sesamum	c
52	Which among the following is true about Eastern blotting technique?				Answer
	a) It is used for analyzing post-translational modifications	b) It is used for detecting specific proteins within a sample	c) It is used for identifying specific RNA sequences within a sample	d) It is used for analyzing and detecting specific DNA sequences	a
53	A: Assertion: Promoter is a DNA sequence located downstream to a start site B: Justification: DNA polymerase binds to the promoter region to start the process of transcription In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	d

54	Match the crops with their center of origin				Answer
	A. Soybean		i. USA		
	B. Sunflower		ii. Peru		
	C. Potato		iii. China		
	D. Chickpea		iv. India		
	a) A-iii, B-i, C-ii, D-iv	b) A-i,B-ii,C-ii,D-iv	c) A-iv,B-ii,C-iii,D-i	d) A-iv,B-i,C-iii,D-ii	a
55	In a DNA molecule, if 30% of the bases are adenine, what will be the percentage of cytosine bases?				Answer
	a) 10%	b) 20%	c) 30%	d) 40%	b
56	Atlas 66, a wheat variety is known for its				Answer
	a) High protein content	b) High Zinc content	c) Rust resistance	d) Drought tolerance	a
57	Which of the following statement is NOT TRUE about Speed breeding?				Answer
	a) Speed breeding uses controlled environment to grow crops	b) Speed breeding extends the photoperiod to encourage flowering	c) Speed breeding increases the breeding cycle to produce new varieties	d) Speed breeding increases the generation advancement to fasten genetic gain	c
58	A: Assertion: AB blood group are universal acceptor and O blood group are universal donor B: Justification: Blood group in humans are controlled by gene <i>I</i> and has multiple alleles In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
59	Match the following				Answer
	A. Kozak sequence		i. DNA polymerase I		
	B. Shine Dalgarno sequence		ii. Prokaryotic transcription		
	C. Klenow fragment		iii. Eukaryotic translation		
	D. Pribnow box		iv. Prokaryotic translation		
	a) A-i, B-iii, C-ii, D-iv	b) A-iii, B-iv, C-i, D-ii	c) A-ii, B-i, C-iv, D-iii	d) A-iv, B-i, C-ii, D-iii	b
60	A female drosophila with long wings, normal eyes was crossed with a male with vestigial wings, ebony eyes. Their F ₁ was testcrossed to yield 800 parental types and 200 recombinant types. What is the recombination frequency between the two genes?				Answer
	a) 25%	b) 20%	c) 40%	d) 80%	b
61	Janak is a genetically modified crop variety of which crop?				Answer
	a) Bt brinjal	b) GM Soybean	c) Bt Cotton	d) Golden rice	a
62	Which among the following is a FALSE statement?				Answer

	a) General combining ability (GCA) is associated with additive gene action	b) Specific combining ability (SCA) is associated with dominance gene action	c) SCA is important in the development of synthetic varieties	d) Good synthetic varieties can be maintained through open pollination	c								
63	A: Assertion: Mapping functions are used to convert recombination frequencies into genetic map distances B: Justification: Kosambi mapping function considers no interference between genes In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	c								
64	Match the following with their year of establishment <table><tr><td>A. PPVFRA</td><td>i. 1992</td></tr><tr><td>B. CBD</td><td>ii. 2010</td></tr><tr><td>C. Nagoya Protocol</td><td>iii. 2001</td></tr><tr><td>D. Cartagena Protocol</td><td>iv. 2000</td></tr></table>				A. PPVFRA	i. 1992	B. CBD	ii. 2010	C. Nagoya Protocol	iii. 2001	D. Cartagena Protocol	iv. 2000	Answer
A. PPVFRA	i. 1992												
B. CBD	ii. 2010												
C. Nagoya Protocol	iii. 2001												
D. Cartagena Protocol	iv. 2000												
	a) A-iv B-iii, C-ii, D-i	b) A-i, B-iv, C-iii, D-ii	c) A-ii, B-i, C-iv, D-iii	d) A-iii, B-i, C-ii, D-iv	d								
65	The genotypic and the phenotypic variance was found to be 65 q/ha and 70 q/ha respectively for grain yield in an outbred variety of maize. What is the heritability for the trait?				Answer								
	a) 92%	b) 85%	c) 65%	d) 78%	a								
66	In a monocot seed, the scutellum is				Answer								
	a) A protective layer of plumule	b) The endosperm	c) A single cotyledon	d) The pericarp of the seed	c								
67	Choose the incorrect statement about male sterility				Answer								
	a) CGMS is the most commonly used male sterility system for hybrid seed production	b) CMS is used for vegetatively propagated crops	c) GMS is used for hybrid seed production in pigeon pea	d) Male sterility is governed by a dominant gene in most of the crops	d								
68	A: Assertion: A gene pool is the complete set of genes and their alleles present in the population of a species B: Justification: Mini core collection represents 1% of the entire germplasm collection while retaining maximum genetic diversity In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	b								

69	Match the following seed testing methods				Answer
A. Tetrazolium test		i. Seed vigour			
B. Brick gravel test		ii. Seed germination			
C. Paper towel test		iii. Seed viability			
D. Grow out Test		iv. Genetic Purity of seed lot			
	a) A-iii, B-i, C-ii, D-iv	b) A-i, B-ii, C-iii, D-iv	c) A-i, B-iii, C-iv, D-ii	d) A-iv, B-ii, C-iii, D-i	a
70	In maize, the grain yield per plant of two parents P₁ and P₂ was found to be 40 g and 50 g , respectively. The F ₁ hybrid obtained from their cross gave a grain yield of 70 g per plant. The value of heterobeltiosis would be				Answer
	a) 40%	b) 50%	c) 30%	d) 16%	a
71	Which of the following is the correct sequence of female gametophyte development?				Answer
	a) Meiosis – Embryo sac – MMC – Fertilization – Megaspore	b) MMC - Meiosis – Megaspore – Embryo sac – fertilization	c) Embryo sac – fertilization – Megaspore - MMC	d) Fertilization – embryo sac – Megaspore - Meiosis	b
72	Choose the incorrect statement				Answer
	a) Standard deviation is the square root of variance	b) Coefficient of variation (CV) is expressed as a percentage and is unitless	c) A lower CV indicates higher relative variability	d) When all values in a dataset are equal, the variance is zero	c
73	A: Assertion: According to Flor hypothesis, for each plant having a resistance (R) gene there is a corresponding avirulence (Avr) gene in the pathogen B: Justification: Incompatible reaction between resistance (R) and avirulence (Avr) gene leads to resistance In the light of the above statements, choose the <i>correct answer</i> from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
74	Match the crop with their source of male sterility				Answer
A. Milo		i. Sorghum			
B. Wild abortive		ii. Pearl millet			
C. PET1		iii. Sunflower			
D. Tift 23A		iv. Rice			
	a) A-i, B-ii,C-iii,D-iv	b) A-ii, B-i,C-iii,D-iv	c) A-i, B-iv,C-iii,D-ii	d) A-ii, B-ii,C-iv,D-ii	c
75	Use of double haploids in plant breeding helps to				Answer
	a) Reduce generation time	b) Increases generation time	c) Develop somatic hybrids	d) Introgression of transgenic traits	a
76	According to the Vr-Wr graph, when the regression line passes below the origin, it indicates				

	a) Complete Dominance	b) Partial Dominance	c) Overdominance	d) No dominance	c								
77	Which of the following set of statements is TRUE for the process of cell division?												
	a) Cell division occurs in somatic cells only	b) Cell division creates variation	c) Cell division is necessary for growth and development	d) Cells divide to produce gametes	a								
78	A: Assertion: If a cell has 10 DNA molecule in the G1 phase, then in G2 there will be 20 DNA molecule B: Justification: The two strands of DNA double helix are held together by hydrogen bonds In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	b								
79	Match the following <table><tr><td>A. Gravity Separator</td><td>i. Seed stickiness</td></tr><tr><td>B. Magnetic Separator</td><td>ii. Seed texture</td></tr><tr><td>C. Inclined Drapper</td><td>iii. Seed weight</td></tr><tr><td>D. Indent Cylindrical Separator</td><td>iv. Seed length</td></tr></table>				A. Gravity Separator	i. Seed stickiness	B. Magnetic Separator	ii. Seed texture	C. Inclined Drapper	iii. Seed weight	D. Indent Cylindrical Separator	iv. Seed length	Answer
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C. Inclined Drapper	iii. Seed weight												
D. Indent Cylindrical Separator	iv. Seed length												
	a) A-iii, B-i, C-ii, D-iv	b) A-iv, B-i, C-iii, D-ii	c) A-iv, B-i, C-ii, D-ii	d) A-i, B-ii, C-iv, D-i	a								
80	A set of virulence genes (<i>vir</i> genes), located in the <i>Agrobacterium</i> Ti-plasmid, is activated by				Answer								
	a) octopine	b) nopaline	c) acetosyringone	d) auxin	c								
81	The phytohormone, which is also known as the stress hormone is				Answer								
	a) Auxin	b) Cytokinin	c) ABA	d) Ethylene	c								
82	Which statement is True about the Cell theory? A. The concept of cell theory was given by Schleiden and Schwann B. All cells arise spontaneously from non-living matter C. All living organism are composed of cells D. The cell is the functional unit of life				Answer								
	a) A, B and C only	b) A, C and D only	c) B, C and D only	d) A, B and D only	b								
83	A: Assertion: Nobilization of cane was used to improve inferior Indian cane B: Justification: Crossing was done between <i>Saccharum officinarum</i> with <i>Saccharum sinense</i> In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	c								

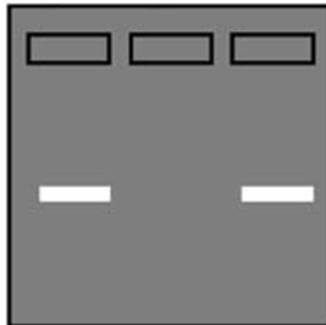
84	Match the crop with their inflorescence type				Answer
A. Rice		i. Spike			
B. Wheat		ii. Capitulum			
C. Mustard		iii. Panicle			
D. Sunflower		iv. Raceme			
	a) A-ii, B-iii, C-i, D-iv	b) A-iv, B-i, C-ii, D-i	c) A-iii, B-i, C-iv, D-ii	d) A-ii, B-iv, C-i, D-iii	c
85	Which one of the following is the correct order of electron transport during light reaction in the thylakoid membrane of chloroplast?				Answer
	a) P680 – Cytochrome b6f – PC – PQ	b) P680 – PC - Cytochrome b6f – PQ	c) P680 – PQ – PC – Cytochrome b6f	d) P680 – PQ - Cytochrome b6f – PC	d
86	Anti-nutritional factor present in pea is				Answer
	a) BOAA	b) Trypsin inhibitor	c) Glucosinolate	d) vicine	b
87	Which among the following is not true about enzyme? A. Enzymes act specifically for its substrate B. Enzymes increase the rate of reaction C. Enzymes increase the activation energy D. Enzymes are mostly proteins				Answer
	a) A and D only	b) B and C only	c) B only	d) C only	d
88	A: Assertion: Proline is accumulated in plants under drought stress B: Justification: Proline are amino acids which acts as an osmoprotectant and helps in scavenging reactive oxygen species In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
89	Pair the term with the name of the scientist				Answer
A. Genetics		i. Wilhelm Johanssen			
B. Gene		ii. William Bateson			
C. Linkage		iii. Wilhelm Waldeyer			
D. Chromosome		iv. T.H. Morgan			
	a) A-i, B-ii, C-iv, D-iii	b) A-iv, B-ii, C-iii, D-i	c) A-i, B-ii, C-iii, D-iv	d) A-ii, B-i, C-iv, D-iii	d
90	A couple has 4 children. What is the probability that they have 2 girls and 2 boys?				
	a) 1/4	b) 1/2	c) 3/8	d) 3/4	c
91	Which of these contrasting characters of pea were studied by Mendel? A. Flower colour B. Seed shape C. Pod colour D. Flower shape				Answer
	a) A, B, C and D	b) A, B, and C only	c) B, C and D only	d) B and D only	b

92	Which of the following statements is not true about miRNA? A. miRNA is single stranded RNA molecule B. miRNA has a 21-25 nucleotide sequence C. miRNA is processed by the RNA protein complex RISC D. miRNA generally does not act on the level of transcription				Answer
	a) Only B and C	b) Only A and B	c) Only C	d) Only D	d
93	A: Assertion: The source of A genome in Wheat is <i>Triticum durum</i> B: Justification: Cultivated hexaploid bread wheat is <i>T. aestivum</i> In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	d
94	Match the following				Answer
	A. North Carolina Designs		i. Kearsey and Jinks		
	B. Triple Test Cross		ii. Comstock and Robinson		
	C. Line x Tester		iii. Jinks and Hayman		
	D. Diallele		iv. Kempthorne		
	a) A-ii, B-i, C-iv, D-iii	b) A-i, B-ii, C-iv, D-iii	c) A-iv, B-iii, C-ii, D-i	d) A-i, B-iv, C-ii, D-iii	a
95	Heritability of plant height is 75% and selection differential is 15 cm. What is the expected genetic gain in plant height?				
	a) 11.2 cm	b) 5 cm	c) 0.05 cm	d) 20 cm	a
96	In Chi-square test, if the observed data are in accordance to the expected ratio, it suggests that the calculated chi-square value at n-1 degree of freedom is				Answer
	a) Greater than the table chi-square value	b) Less than the table chi-square value	c) Equal to the table chi-square value	d) Zero or close to zero	b
97	Which of the following is NOT correct?				Answer
	a) Horizontal resistance is always more stable than vertical resistance	b) Horizontal resistance shows race-specificity	c) Horizontal resistance is governed by polygenes	d) Polygenes show gene-for gene relationship with minor virulence genes of the pathogen	b
98	A: Assertion: The C-value paradox is the lack of relationship between genome size and complexity of an organism B: Justification: Genome of an organism largely consist of non-coding sequences In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a

99	Match the genes with their target traits				Answer
	A. <i>Xa21</i>	i. Lysine content			
	B. <i>Pita</i>	ii. Drought tolerance			
	C. <i>opaque-2</i>	iii. Bacterial blight resistance			
	D. DREB	iv. Blast resistance			
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-iii, C-iv, D-i	c) A-iii, B-iv, C-i, D-ii	d) A-iv, B-i, C-ii, D-iii	c
100	Shell coining in snails is governed by gene exhibiting maternal effect. What will be the phenotype of the progeny when a sinistral (dd) female is crossed with a dextral male (DD) parent?				Answer
	a) It will be heterozygote, dextral shell coiling	b) It will be homozygote, dextral shell coiling	c) It will be heterozygote, sinistral shell coiling	d) It will be homozygote, sinistral shell coiling	c
101	Which among the following is an examples of <i>In-situ</i> germplasm conservation?				Answer
	a) Gene sanctuary	b) Botanical gardens	c) Seed gene bank	d) Field gene bank	a
102	Which statement is not true about genetic code? A. The genetic code is degenerate B. The genetic code is ambiguous C. UAA, UGA and UGA are the stop codons D. The sequences of bases in an anticodon is complementary to the codon				Answer
	a) A and B only	b) B only	c) C and D only	d) D only	b
103	A: Assertion: Insect resistance transgenic cotton has been developed by transferring <i>cry</i> gene from <i>B. thuringiensis</i> B: Justification: The <i>cry</i> gene is derived from a soil bacterium In the light of the above statements, choose the correct answer from the options given beslow:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
104	Pair the polymerase enzymes with their role in RNA synthesis				Answer
	A. RNA pol I		i. rRNA synthesis		
	B. RNA pol II		ii. mRNA synthesis		
	C. RNA pol III		iii. siRNA synthesis		
	D. RNA pol IV		iv. tRNA synthesis		
	a) A-i, B-iii, C-iii, D-iv	b) A-iii, B-ii, C-i, D-iv	c) A-ii, B-iii, C-iv, D-i	d) A-i, B-ii, C-iv, D-iii	d
105	The map distance between genes A and B is 12 units, between B and C is 5 units and C and A is 7 units. The order of the gene in a linkage map constructed on the above data would be				Answer
	a) C-A-B	b) B-A-C	c) A-B-C	d) A-C-B	d
106	The isolation distance in sorghum plant to avoid contamination with Johnson grass is				Answer
	a) 200 m	b) 100 m	c) 400 m	d) 600 m	c

107	Choose the correct answer for the following statement i. Transcription synthesizes RNA using only one strand of the DNA as a template ii. The TATA box is a DNA sequences found in the promoter region iii. The newly synthesized RNA strand is complementary to the sense strand iv. In eukaryotes, transcription occurs in the nucleus				Answer
	a) i and iv only	b) i and ii only	c) i, ii and iv only	d) i, ii and iii only	c
108	A: Assertion: Linkage is the association of closely located genes on the same chromosome that are inherited together B: Justification: Linkage result in formation of more parental phenotype In the light of the above statements, choose the correct answer from the options given below:				
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
109	Match the following breeding methods with their founders				Answer
	A. Ear-to-row		i. Goulden		
	B. SSD		ii. Love		
	C. Bulk		iii. Lonnquist		
	D. Pedigree		iv. Nilsson-Ehle		
	a) A-iii, B-i, C-iv, D-ii	b) A-i, B-ii, C-iii, D-iv	c) A-ii, B-iii, C-iv, D-i	d) A-iv, B-i, C-ii, D-iii	a
110	Total number of gametes produced by a heterozygote with AaBBCCdDEe genotype would be				Answer
	a) 4	b) 8	c) 16	d) 32	b
111	Which among the following has a recalcitrant seed?				Answer
	a) Tomato	b) Cotton	c) Jackfruit	d) Apple	c
112	Which is not True about Marker-assisted breeding (MAS)?				Answer
	a) MAS helping in minimizing linkage drag	b) MAS requires no prior knowledge of genome sequence	c) MAS accelerated the breeding process	d) MAS relies on association between markers and the target gene	b
113	A: Assertion: Pericentric inversion includes the centromere within the inverted segments of the chromosome B: Justification: It results in production of dicentric and acentric chromosomes with duplications and deletions In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	c

114	Pair the principle/theories with their scientist				Answer							
<table><tr><td>A. Transformation principle</td><td>i. Charles Darwin</td></tr><tr><td>B. Epigenesis Theory</td><td>ii. August Weismann</td></tr><tr><td>C. Germplasm Theory</td><td>iii. Frederick Griffith</td></tr><tr><td>D. Pangenesis Theory</td><td>iv. Friedrich Wolff</td></tr></table>				A. Transformation principle		i. Charles Darwin	B. Epigenesis Theory	ii. August Weismann	C. Germplasm Theory	iii. Frederick Griffith	D. Pangenesis Theory	iv. Friedrich Wolff
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115	What is the smallest perfect F ₂ population when 5 genes are segregating?				Answer							
	a) 64	b) 256	c) 1024	d) 16	c							
116	Seed replacement rate (SRR) of rice hybrid is				Answer							
	a) 40%	b) 60%	c) 80%	d) 100%	d							
117	Which among the following statement is True? 1. Augmented field design is used when the number of test entries is large and resources are limited 2. Latin square design (LSD) controls heterogeneity in only one direction 3. Factorial Design study only one factor at a time 4. Error control is not needed if the sample size is large				Answer							
	a) 1 only	b) 4 and 3 only	c) 2 only	d) 1 and 4 only	a							
118	A: Assertion: In CRISPR-Cas9 system, cas9 is an endonuclease enzyme that creates double-stranded break in DNA B: Justification: cas9 requires a guide RNA and a PAM sequence to bind to the target DNA In the light of the above statements, choose the <i>correct answer</i> from the options given below:				Answer							
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a							
119	Match the crops with their ploidy level				Answer							
<table><tr><td>A. Potato</td><td>i. 3x</td></tr><tr><td>B. Banana</td><td>ii. 4x</td></tr><tr><td>C. Sugarcane</td><td>iii. 8x</td></tr><tr><td>D. Wheat</td><td>iv. 6x</td></tr></table>				A. Potato		i. 3x	B. Banana	ii. 4x	C. Sugarcane	iii. 8x	D. Wheat	iv. 6x
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120	Calculate the inbreeding depression when two parents are crossed to produce F ₁ with mean value of F ₁ is 50 units and F ₂ is 15 units				Answer							
	a) 1.3	b) 0.7	c) 2.3	d) 0.5	b							
121	The study of pollen grains is called as				Answer							
	a) Anthology	b) Cytology	c) Palynology	d) Histology	c							
122	Choose the false statement				Answer							
	a) Self-incompatibility is a mechanism that promotes cross-fertilization	b) In sporophytic SI, pollen compatibility is determined by the pollen's genotype	c) SI is controlled by the S-gene locus	d) Gametophytic SI was first discovered by East and Mangelsdorf	b							

123	A: Assertion: The Multiple factor hypothesis explains the continuous variation observation in many traits B: Justification: Quantitative traits are completely determined by genes and do not show discrete segregation In the light of the above statements, choose the <i>correct answer</i> from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	c								
124	Pair crops with their chromosome number <table><tr><td>A. <i>Brassica nigra</i></td><td>i. 2n=36</td></tr><tr><td>B. <i>Brassica oleracea</i></td><td>ii. 2n=18</td></tr><tr><td>C. <i>Brassica juncea</i></td><td>iii. 2n=20</td></tr><tr><td>D. <i>Brassica campestris</i></td><td>iv. 2n=16</td></tr></table>				A. <i>Brassica nigra</i>	i. 2n=36	B. <i>Brassica oleracea</i>	ii. 2n=18	C. <i>Brassica juncea</i>	iii. 2n=20	D. <i>Brassica campestris</i>	iv. 2n=16	Answer
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	a) A-iii, B-i, C-iv, D-ii	b) A-i, B-ii, C-iii, D-iv	c) A-ii, B-iii, C-iv, D-i	d) A-iv, B-ii, C-i, D-iii	d								
125	P₁ P₂ F₁  BB bb Bb The gel electrophoresis image shows one band for parent genotype BB and the F₁ hybrid (Bb) also shows only a single band, similar to P₁. Which type of molecular marker does this pattern represent?				Answer								
	a) Co-dominant marker	b) Dominant marker	c) Biochemical marker	d) Morphological marker	b								
126	In India, seed certification for released varieties is _____ under the Seed Act of 1966				Answer								
	a) Compulsory	b) Voluntary	c) Statuary	d) Tentative	a								
127	What is genetic gain?				Answer								
	a) Population improvement	b) Higher heritability	c) Response to selection is the difference between the mean phenotype of the selected individuals and the original population mean	d) Selection differential, phenotypic variation and selection intensity	c								
128	A: Assertion: In a Hary Weinberg Equilibrium (HWE), gene and genotypic frequencies remain constant from generation to generation B: Justification: Founder effect is a deviation from HWE				Answer								

	In the light of the above statements, choose the correct answer from the options given below:				
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	b
129	Pair the crops with their targeted genes used for the crop improvement using biotechnological approaches				Answer
	A. Cotton	i. <i>Psy</i>			
	B. Mustard	ii. <i>cry I Ac</i>			
	C. Soybean	iii. <i>EPSPS</i>			
	D. Rice	iv. <i>bar</i>			
	a) A-iii, B-iv, C-i, D-ii	b) A-iv, B-iii, C-ii, D-i	c) A-ii, B-iv, C-iii, D-i	d) A-i, B-ii, C-iii, D-iv	c
130	If $q=0.2$, the frequency of aa genotype would be?				Answer
	a) 0.8	b) 0.16	c) 0.64	d) 0.04	d
131	The bioinformatic tool 'STRING' is used for				Answer
	a) Predicting the 3D structure of a protein	b) Identifying the ORF in a DNA sequence	c) Predicating the protein-protein interaction	d) Multiple sequence alignment	c
132	Choose the statement that is NOT TRUE about DArT markers				Answer
	a) It is a dominant marker	b) Prior sequence information is required to design this marker	c) It is a microarray-based hybridization technique	d) It is used for diversity analysis	a
133	A: Assertion: Haplo-Diplo sex determination is found in honeybees B: Justification: In haplodiploidy, drones are always sterile In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	
134	Match the following				Answer
	A. Sex-linked	i. Milk production in cow			
	B. Sex-Influenced	ii. Baldness in men			
	C. Sex-limited	iii. Sick cell anemia			
	D. Autosomal disease	iv. Hemophilia			
	a) A-i, B-ii, C-iii, D-iv	b) A-ii, B-ii, C-iv, D-iii	c) A-iv B-ii, C-i, D-iii	d) A-iii, B-iv, C-ii, D-i	c
135	A normal girl marries a normal male. One child had a recessive disease out of their four children. What are the genotypes of the parents for gene a which is responsible for the disease?				Answer
	a) AA x Aa	b) AA x aa	c) Aa x Aa	d) Aa x aa	c
136	Which among the following is used for phylogenetic tree construction?				Answer
	a) BLAST	b) FASTA	c) MEGA	d) RASMOL	c
137	Which among the following is not true about mutation?				Answer

	a) They are recurrent	b) They are random	c) They are permanent changes in DNA sequence	d) They are always deleterious in nature	d								
138	A: Assertion: Cytoplasmic inheritance shows reciprocal differences B: Justification: Genes showing cytoplasmic inheritance are present in the cytoplasmic organelles In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a								
139	Match the following <table border="1"><tr><td>A. Breakage and reunion theory</td><td>i. Sharp (1934)</td></tr><tr><td>B. Classical theory</td><td>ii. Darlington (1932)</td></tr><tr><td>C. Chiasmatype theory</td><td>iii. Belling (1933)</td></tr><tr><td>D. Copy choice theory</td><td>iv. Janssen (1909)</td></tr></table>				A. Breakage and reunion theory	i. Sharp (1934)	B. Classical theory	ii. Darlington (1932)	C. Chiasmatype theory	iii. Belling (1933)	D. Copy choice theory	iv. Janssen (1909)	Answer
A. Breakage and reunion theory	i. Sharp (1934)												
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D. Copy choice theory	iv. Janssen (1909)												
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140	In case of sporophytic self-incompatibility, the cross $S_1S_3 \times S_1S_2$ will show which of the following? i.				Answer								
	a) 100% compatibility	b) 50% compatibility	c) 75% compatibility	d) 100% incompatibility	b								
141	Coefficient of variation (CV%) is computed using which of the following formulae?				Answer								
	a) $\frac{SE}{\sqrt{x}} \times 100$	b) $\frac{SE}{\bar{x}} \times 100$	c) $\frac{SD}{\bar{x}} \times 100$	d) $\frac{SD}{\sqrt{x}} \times 100$	c								
142	<i>Brassica oleracea</i> is a parent species of which of the following? I. <i>Brassica juncea</i> II. <i>Brassica carinata</i> III. <i>Brassica napus</i> IV. <i>Brassica campestris</i>				Answer								
	a) I, IV	b) II, III	c) IV, III	d) I, II	b								
143	A: Assertion: The c value paradox defines that there is no direct relationship between genome size and organism's complexity B: Justification: Low Cot value indicates lesser number of repetitive DNA sequences In the light of the above statements, choose the correct answer from the options given below:				Answer								
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	c								

144	Match the scientist with their discoveries				Answer
A. Beadle and Tatum		i. Operon concept			
B. Temin and Baltimore		ii. Jumping genes			
C. Jacob and Monod		iii. Reverse transcriptase			
D. McClintock		iv. One gene-one enzyme			
	a) A-i, B-iii, C-iv, D-ii	b) A-iv, B-iii, C-i, D-ii	c) A-ii B-iv, C-i, D-iii	d) A-iii, B-iv, C-ii, D-i	b
145	A man with blood group AB is married to a woman of blood group B. Which of the following is the probable genotypes of their new born child?				Answer
	a) $I^A I^O$, $I^A I^B$, $I^B I^B$, $I^B I^O$	b) $I^A I^O$, $I^A I^B$, $I^A I^A$, $I^B I^O$	c) $I^B I^O$, $I^O I^O$, $I^B I^B$, $I^A I^A$	d) $I^A I^O$, $I^O I^O$, $I^B I^O$, $I^B I^B$	a
146	MAGIC in plant breeding stands for				Answer
	a) Multi-parent Advanced Generation Inter-Cross	b) Multi-parental Associated Genomic Interaction	c) Multi-allelic Genomic Introgression Consortium	d) Marker-Assisted Gene Introgression in Crops	a
147	Which among the following is not true about QTL mapping? A. It requires a suitable mapping population B. It relies on phenotyping of mapping population for the concerned trait C. QTL detection increases as the distance between the marker and QTL increases D. QTL detection is based on linkage analysis				Answer
	a) A, B, C	b) B, C	c) C only	d) D only	c
148	A: Assertion: Double haploid (DH) is a permanent population used for fast production of homozygous lines B: Justification: DH are produced from the haploid cells by chromosome doubling In the light of the above statements, choose the correct answer from the options given below:				Answer
	a) Both A and B are true and B is the correct explanation of A	b) Both A and B are true but B is NOT the correct explanation of A	c) A is true but B is false	d) A is false but B is true	a
149	Match the following				Answer
A. Primase		i. Primer removal			
B. RNase H		ii. Promotes double helix opening			
C. DnaA		iii. Primer synthesis			
D. Gyrase		iv. Replication swivel, DNA supercoiling			
	a) A-i, B-iii, C-iv, D-ii	b) A-ii, B-ii, C-iv, D-ii	c) A-i,v B-i, C-i, D-iii	d) A-iii, B-i, C-ii, D-iv	d
150	A plant breeder wants to evaluate the yield performance of 250 rice genotypes in a field trial, but has limited land area. Which of the following experimental designs would be most appropriate ?				Answer
	a) Randomized Block Design	b) Factorial Design	c) Augmented Field Design	d) Split-plot Design	c

