



ગુજરાત માધ્યમિક અને ઉચ્ચતર માધ્યમિક શિક્ષણ બોર્ડ, ગાંધીનગર

Std. 12 : (Science Stream) Biology (056)

Annual Exam

Paper Scheme

Time : 3 hrs.

Total marks : 100

Note : This blue print is for the guidance of students, teachers, Examiners, moderators etc. The Moderators, teacher and experts in higher secondary of the respective subject may do essential changes keeping the objectives in mind.

Weightage as per objective :

Objectives	Knowledge	Understanding	Application	Higher order thinking skill		Total
				Synthesis/ Analysis	Inference/ Evaluative	
Part-A Mark	05	15	15	08	07	50
Part-B Mark	05	15	15	09	06	50
Total Mark (%)	10	30	30	17	13	100

Weightage as per type of question : PART-A

No.	Type of Question	No. of Question	Total Marks
1.	Multiple choice questions	50	50

Weightage as per type of question : PART-B

No.	Type of Question	No. of Question		Total Question	Total Marks
		No.	Optional No.		
1.	Short Answer Type (SA-I)	08	04*	12	16
2.	Short Answer Type (SA-II)	06	03*	09	18
3.	Long Answer Type (LA)	04	02*	06	16
	Total	18	09*	27	50

Weightage as per Chapter :

No.	Name of Chapter	Chapterwise Weightage			Unitwise Weightage Without Option
		PART-A Mark	PART-B		
			General	Optional	General with Option
1.	Reproductions in organisms	3	2	3	Unit-1 26
2.	Sexual Reproduction in flowering plants	3	6	-	
3.	Human Reproduction	3	4	-	
4.	Reproductive Health	5	-	2	
5.	Principle of Inheritance and variation	3	9	-	Unit-2 22
6.	Molecular basis of inheritance	5	5	6	
7.	Evolution	-	-	-	
8.	Human health and disease	4	5	3	Unit-3 18
9.	Strategies for enhancement in food production	-	-	-	
10.	Microbes in Human welfare	6	3	2	
11.	Biotechnology : Principles and process	4	4	3	Unit-4 16
12.	Biotechnology and its Applications	5	3	-	
13.	Organisms and Populations	6	4	4	Unit-5 18
14.	Ecosystem	-	-	-	
15.	Biodiversity and conservation	3	5	2	
16.	Environmental Issues	-	-	-	
	Total Marks	50	50	25	100

Note :

- Unitwise weightage can not be changed, chapter wise marks can be changed judiciously.
- Marks for the general option shown in above format is for given sample paper. It may be different for other question paper.



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Std. 12 : (Science Stream) Biology (056) Annual Exam

Time : 3 hrs.

Scheme of Questions Paper

Total marks : 100

Question No.	Details of Section / Question	Marks
	PART - A	
1 to 50	50 Multiple Choice Questions, each of 1 mark	50
	PART - B	
1 to 12	SECTION - A	16
	8 Short Answer type questions, (SA-I) Each of 2 marks Attend any 8 out of 12 questions	
13 to 21	SECTION - B	18
	6 Short Answer type Questions, (SA-I) Each of 3 marks Attend any 6 out of 9 questions	
22 to 27	SECTION - C	16
	4 Long Answer Type Questions, (LA) Each of 4 marks Attend any 4 out of 6 questions	
	Total Marks	100

- Note :**
- Time : one hour for Part -A
 - Time : two hours for Part - B



Biology 056 (E)

Std. 12 (Science Stream)

Time : 3 Hours

Class - XII

Total Marks : 100

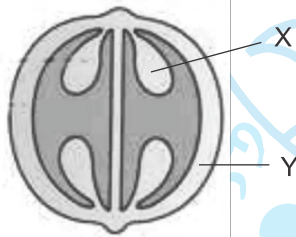
Time : 1 Hour

PART-A

Total Marks : 50

- Introductions :**
- (1) There are 50 objective type (MCQ) questions in Part-A and all questions are compulsory.
 - (2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
 - (3) Read each question carefully, select proper alternative and answer in the OMR sheet.
 - (4) The OMR sheet given for answering the questions. The answer of each questions is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle (●) of the correct answer with ball pen.
 - (5) Rough work is to be done in the space provided for this purpose in the test booklet only.
 - (6) Set No. of question paper printed on the upper most right side of the question Paper is to be written in the column provided in the OMR Sheet.

- (1) What is the speciality of *Strobilanthus kunthiana* for flowering ?
(A) Everyday flowering shown
(B) Every year flowering shown in particular season.
(C) Every year only one day flowering shown.
(D) Every 12 years flowering shown.
- (2) Identify X and Y from given diagram.



- (A) X = Seed, Y = Embryo.
- (B) X = Pericarp, Y = Embryo
- (C) X = Seed, Y = Pericarp
- (D) X = Pericarp, Y = Seed

- (3) By which organ vegetative propagation take place in banana ?
(A) Runner (B) Bulbil (C) Sucker (D) Rhizome
- (4) **Assertion A :** Pollen grain can withstand high temperature and strong acids and alkali.
Reason R : Exine of pollen grain made up of sporopollenin.
(A) A and R both are true and R is true expatiation of A.
(B) A and R both are true but R is not correct explanation of A.
(C) A is correct but R is wrong.
(D) A is wrong but R is correct.
- (5) Which temperature is suitable for storage of pollen grain for long duration.
(A) 0° C (B) 37° C (C) 100° C (D) -196° C
- (6) Identify group from following which have perisperm.
(A) Black pepper, Sugar beet (B) Black pepper, Pea
(C) Sugar beat, gram (D) Pea, Bean



(7) Match the Column-I and Column-II properly.

Column-I	Column-II
(P) Myometrium	(i) Outer most layer of uterus
(Q) Perimetrium	(ii) middle layer of uterus
(R) Endometrium	(iii) Inner most layer of uterus
(S) Mons pubis	(iv) It is made up of fatty tissue
(A) (P-i), (Q-ii), (R-iv), (S-iii)	
(B) (P-ii), (Q-i) (R-iii), (S-iv)	
(C) (P-ii), (Q-iii), (R-iv), (S-i)	
(D) (P-iv), (Q-iii), (R-ii), (S-i)	

(8) Choose the option from the following for correct statements.

- (1) Sperms take the nutritions from sertoli cells.
- (2) Sertoli cells produced androgens.
- (3) Leyding cells synthesized androgens.
- (4) Leyding cells produces from the Ovaries.
- (5) Menstrual cycle not shown during the pregnancy.

- (A) 1, 3 and 5 are correct (B) 3 and 5 are correct
(C) 2, 4, 5 are correct (D) 3, 4 5 are correct

(9) After the use of which method no possibility of repregnancy ?

- (A) Physical barrier method (B) Chemical barrier method
(C) Sterility method (D) Natural barrier method

(10) Sexual tramitted diseases transmitted by which micro organisms ?

- (A) Virus, Bacteria (B) Fungi, protozoan
(C) Virus, Bacteria, Fungi (D) Virus, Fungi, Bacteria, Protozoan.

(11) **Assertion - A** : During 10 to 17 days of menstrual cycle couple should away from the sexual inter course.

Reason -R : During the 10 to 17 days of meanstrual cycle maximum possibility of fertilization is there.

- (A) A and R both are correct and R is correct explanation of A.
(B) A and R both are correct but R is not correct explanation of A.
(C) A is correct but R is wrong.
(D) A is wrong but R is correct.

(12) The function of copper ion relasing from IUDs copper device placed in uterus is _____.

- (A) More protection given to sperms.
(B) Prevent the process of to release ovum.
(C) Prepare the uterus for embryo implantation.
(D) Obstrac the motility of sperms and fertilization ability.

(13) Chromosomes behaviour is also like genes. Which scientist studied it ?

- (A) Correns and Tshermark (B) Morgan and De'vries
(C) Sutton and Boveri (D) Mendel and Boveri.

(14) Which situation is responsible for turner's syndrome ?

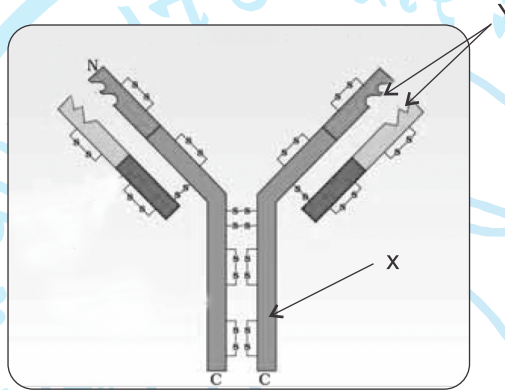
- (A) XXY (B) XXX (C) XYY (D) XO

(15) What is the ratio of colour blindness in man ?

- (A) 0.4% (B) 8% (C) 40% (D) 80 %



- (16) Which genetic codon associates with two functions ?
(A) UAA (B) AUG (C) CUC (D) GAG
- (17) Give the full form of VNTR.
(A) Variable Number of Tandem Repeats
(B) Variable Nucleotides of Tandem Repeats
(C) Variable Nucleotide of Tandem Ribosomes
(D) Variable Number of Tandem Ribosomes.
- (18) Isolation of segments of DNA by the help of which method ?
(A) Gas Chromatography (B) Electrophoresis
(C) PCR (D) Lygase
- (19) Continuous more fever, weakness, pain in abdomen portion headache and pores produce in gut symptoms are seen in which disease these ?
(A) Pneumonia (B) Typhoid (C) Filariasis (D) Malaria
- (20) Labelled X and Y in given diagram.



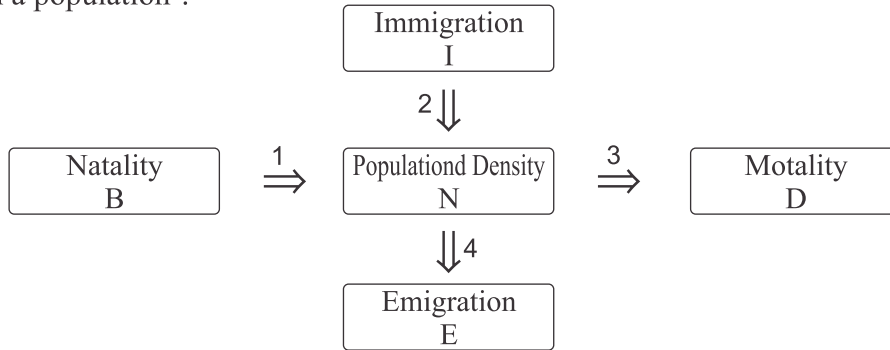
- (A) X = Heavy chain, Y = Light Chain
(B) X - Heavy chain, Y = Antigen binding site.
(C) X = Light chain, Y = Antigen binding site.
(D) X = Antigen binding site, Y = Light chain
- (21) Match the columns and choose correct option.
- | Column-I | Column-II |
|-------------------------------------|---------------------|
| (i) Physical barrier | (P) Leucocytes |
| (ii) Physiological barrier | (Q) Skin |
| (iii) Cellular barrier | (R) Interferon |
| (iv) Cytoplasmic barrier (cytokine) | (S) Tears from eyes |
- (A) (i-P), (ii-S), (iii-R), (iv-Q)
(B) (i-Q), (ii-S), (iii-P) (iv-R)
(C) (i-Q), (ii-P), (ii-R), (iv-S)
(D) (i-P), (ii-R), (iii-Q), (iv-S)
- (22) Choose related option.
(A) Aspergillus niger - Acetic acid
(B) Acetobacter aceti - citric acid
(C) Trichoderma polysporum - Statins
(D) Clostridium butylicum - Butyric acid



- (23) Free living fungus *Trycoderma* is useful _____
- (A) For killing the insects
(B) For killing the ladybug and dragon by
(C) As a biocontrollar of plant disease
(D) For the production of antibiotics
- (24) Mycorrhiza : glomus fungus : Free living bacteria for nitrogen fixation : _____
- (A) Rhizobium (B) Thiobacillus
(C) Pseudomonas (D) Azatobater
- (25) **Statement-X** : Bakulo virus causes the disease in insects and other arthropada.
Statement-Y : Bakulo virus act as in placed under biocontroller which nucleopolyhydro virus genus.
- (A) X and Y both the statements are correct.
(B) X is correct but Y is wrong.
(C) X is wrong but Y is correct
(D) X an Y both the statements are wrong.
- (26) Function of restriction endonuclease enryme is _____
- (A) It cuts the DNA molecule from specific site.
(B) It identify specific squence for the lined DNA lygase.
(C) It inhibits the mechanism of DNA polymerase.
(D) It removes the nucleotide from ends of DNA molecule.
- (27) Which is/are the step/steps for the formation of genetically modified organism.
- (A) Identification of DNA with desirable genes.
(B) Introductin of the identified DNA into the host.
(C) Maintenance of introduced DNA in the host and transfer of DNA to its progeny.
(D) All of these.
- (28) According to PCR method which is the correct sequeue for the three steps.
- (A) Extension - Annealing - Denaturation
(B) Denaturation - Annealing - Extension
(C) Annealing - Denaturation - Extension
(D) Denaturation - Extension - Annealing
- (29) For getting desirable product in bioreactor which desirable situation is provided ?
- (A) Temperature, pH, O₂ and CO₂ (B) Temperature, pH, O₂ and vitamin
(C) Reactant, Salt, pH and Density (D) Salt, Vitamin, O₂ and Pressure
- (30) Which vitamin is more present in golden rice ?
- (A) Vitamin -D (B) Vitamin -C
(C) Vitamin -A (D) Vitamin -B₁₂
- (31) First time genetherapy was used in the treatment of
- (A) Adenosine deaminase (B) Arthritis
(C) Diabetes melitus (D) Small pox



- (32) Choose the correct option for 1, 2, 3 and 4. What kind of changes are represented by this chart in a population ?



- | | 1 | 2 | 3 | 4 |
|-----|----------|----------|----------|----------|
| (A) | Increase | Decrease | Increase | Decrease |
| (B) | Decrease | Increase | Decrease | Increase |
| (C) | Increase | Increase | Decrease | Decrease |
| (D) | Decrease | Decrease | Increase | Increase |
- (33) Which of the following organism reproduces once during its life span ?
(A) Pacific salman (B) Bamboo
(C) Parrot (D) A and B both
- (34) Where principle states that two closely related species competing for the same resources cannot coexist indefinitely and competitively inferior one will be eliminated eventually ?
(A) Darwin (B) Gaus's competitive exhaustion principle
(C) Morgan (D) Mendel
- (35) The birds from Siberia and other extremely cold northern region arrive in which national park of India as host ?
(A) Kevladev (Kedala) National Park - Bharatpur, Rajastham
(B) Kaziranga National Park - Assam
(C) Kanha National Park - Madhya Pradesh
(D) Gir national Park - Gujarat
- (36) From the following which represents maximum species at global biodiversity ?
(A) Algae (B) Lichens
(C) Moss (D) Fungi
- (37) How many new regions are added in the list of Hot spots ?
(A) 9 (B) 25 (C) 34 (D) 10
- (38) How many species extinct according to IUCN Red list (2004) documented in last 500 years ?
(A) 784 (B) 748 (C) 27 (D) 584
- (39) Human partein Anti-trypsin is used in the treatment of which disease ?
(A) Arthritis (B) Alzimer (C) Amphysema (D) Cancer



- (40) Which hormones in female are produced during pregnancy only ?
(A) HCG (B) hPL (C) Relaxing (D) All Given
- (41) The final aim of these techniques is to conceive a child, from the following which option is correct.
(A) GIFT, ICSI, ZIFT (B) GIFT, PIDs, SITs
(C) PIDs, SITs, ZIFT (D) ET, MTP, IUI PIDs
- (42) What is the time taken by E coli to complete replication ?
(A) 10 min (B) 2 hours (C) 24 hours (D) 18 min
- (43) In eukaryotes, coding sequence means...
(A) introns (B) exons (C) terminator (D) Cistron
- (44) Which cells engulfs and kill the microbes ?
(A) PMNL (B) Monocytes (C) Natural killer cells (D) All given
- (45) Which of the following produces citric acid ?
(A) Clostridium butiricum (B) Aspergillus nizer
(C) Lactobacilus (D) A, B both
- (46) Which of the following is free living N_2 - fixing bacteria ?
(A) Azospirillum (B) Azatobacter
(C) Rhizobium (D) A, B both
- (47) Which of the following is the method for celluler protection in all eukauyotes ?
(A) RNAi (B) Splicing (C) Caping (D) Tailing
- (48) Which bond binds both the strand - strand A and Strand - B in insulin ?
(A) H-bond (B) Peptide (C) Disulphide (D) Glycocidic
- (49) Choose the correct option from the following, which explains parasitism better.
(A) One organism gets benefited
(B) Both the organisms get benefited
(C) One gets benefit, but other is not affected.
(D) One gets benefit, but other is affected
- (50) Which plant takes support of sexual deceit ?
(A) Mediterrean orchid (B) Fig tree
(C) Strobilus Kunthiana (D) Commelina

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Time : 2 Hours

PART-B

Total Marks : 50

- Introduction :** (1) Write in a clear legible hand writing.
(2) There are three sections in Part-B of the question paper and total 1 to 18 questions are there.
(3) General options are given.
(4) The numbers at right side represents the marks of the questions.
(5) Start new section on new page.
(6) Maintain sequence.

Section-A

- **Answer any 8 questions from question number 1 to 12 Each of 2 marks. [16]**
- (1) Explain the formation of zygote.
 - (2) Explain the process of microporogenesis.
 - (3) Explain about infertility.
 - (4) Describe briefly about Co-dominance.
 - (5) Explain the words nucleosome and nucleoids.
 - (6) Explain the molacular structure of antibody. (Diagram is not necessary)
 - (7) 'In Ecology water is represented as abiotic factor' - Explain this statement.
 - (8) Explain alien species invasions with exanple.
 - (9) Explain about : Medicat Termination of pregnancy.
 - (10) Explain : Biochemical characterisation of transforming principle.
 - (11) Explain the role of microbes as biofertilisers.
 - (12) Explain : Ex-situ conservation.

Section-B

- **Answer any 6 questions from question number 13 to 21 Each of 3 marks. [18]**
- (13) Give main characteristics of genetic code.
 - (14) Explain about allergies.
 - (15) Explain the role of microbers in production of chemicals and enzymes.
 - (16) Describe in brief about genetically engineered Insulin.
 - (17) Why do we conserve and protect the bio-diversity ?
 - (18) Describe about carbon - cycle. (Chart is not necessary)
 - (19) Explain asexual reproduction in plants with examples.
 - (20) What is Immunity ? Explain the barriers of Innate immunity.
 - (21) Describe briebly seperation and isolation of DNA fragments.

Section-C

- **Answer any 4 question from question number 22 to 27 Each of 4 marks. [16]**
- (22) Explain with chart the process of female gamete formation in human.
 - (23) Describe the inheritance of two genes with chart in pea according to Mendel.
 - (24) Describe experiment of Meselson and stahl.
 - (25) Explain vector PBR 322 with restriction sites and cloning sites in *E.Coli*.
 - (26) Describe salient features of Human genome project (HGP)
 - (27) Describe ary four population interactions.

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Annual Exam

Sample Blueprint

Time : 3 hrs.

Total marks : 100

Que : 1 Perform the practical work for given material (8)

Illustrate your observation table and conclusion, show it to the examiner and answer the viva.

- Practicals included in this question : 9, 10, 23, 24

-- Distribution of marks :

• Practical work	02
• Observation table/conclusion	02
• Performance	02
• Viva	02
	<hr/>
	08

Note : • InPractical 9 and 10 per availability of time, less number of beads can be given to the student.

- These practicals can be performed in a pair of students.

Que : 2 Perform the practical work for given Material. (07)

Illustrate your observation table and conclusion, show it to the examiner and answer the viva.

- Practicals included in the question : 11, 12, 15, 16

-- Distribution of marks :

• Observation table/conclusion	04
• Viva	03
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	07

Que : 3 Perform the experiment for the given. (07)

Illustrate your observation table and conclusion, show it to the examiner and answer the viva.

- Practicals included : 1,2,3,13

Note : • For practical - 1, give any one available flower.

-- Distribution of marks :

• Write two points	:	0.5 x 2 = 01
(One point from androecium and second point from gynoecium)		
• Draw two diagram as per points	:	0.5 x 2 = 01
• Performance	:	03
• Viva	:	02
		<hr/>
		07



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- marks distribution for practical : 2,3,13
- Observation table/conclusion/ : 04
Practical work/any one chart drawn
 - Viva : 03
- 07**

Que : 4 Identify and draw labelled diagram and describe arranged apparatus/photo graph/slide/chart. (8)

(6 Specimens are there. Each of 4 marks.)

- Practicals included : 4,5,8,14,17,18
 - Arrange one specimen from above practicals.
- Distribution of marks :
- Identification of specimen : 01
 - Diagram of Specimen : 01
 - Description of Specimen : 02
- 04**
- Total 6 specimens and each specimen carries 4 marks.

Que : 5 Journal (4)

