

# National Testing Agency

<b>Question Paper Name :</b>	Fish Biotechnology 17th September Shift 2
<b>Subject Name :</b>	Fish Biotechnology
<b>Creation Date :</b>	2021-09-17 18:54:51
<b>Duration :</b>	120
<b>Total Marks :</b>	480
<b>Display Marks:</b>	Yes

## Fish Biotechnology

<b>Group Number :</b>	1
<b>Group Id :</b>	190889132
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	480
<b>Is this Group for Examiner? :</b>	No

## Part A: General Knowledge

<b>Section Id :</b>	190889320
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory

<b>Number of Questions :</b>	20
<b>Number of Questions to be attempted :</b>	20
<b>Section Marks :</b>	80
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	190889360
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 19088915142 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

Which of the following is the device used to measure the power and speed of the wind?

1. Avometer
2. Anemometer
3. Airometer
4. Aviontimeter

**Options :**

- 19088960461. 1
- 19088960462. 2
- 19088960463. 3
- 19088960464. 4

**Question Number : 2 Question Id : 19088915143 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1**

Optical fibre used the concept of which of the following?

1. Reflection
2. Refraction
3. Total internal reflection
4. Total internal refraction

**Options :**

- 19088960465. 1
- 19088960466. 2
- 19088960467. 3
- 19088960468. 4

**Question Number : 3 Question Id : 19088915144 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Yellow vein mosaic is the viral disease of which of the following plants?

- 1. Ladyfinger
- 2. Papaya
- 3. Sugarcane
- 4. Banana

**Options :**

- 19088960469. 1
- 19088960470. 2
- 19088960471. 3
- 19088960472. 4

**Question Number : 4 Question Id : 19088915145 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following organ(s) is affected by Mumps disease?

- 1. Entire body
- 2. Skin
- 3. Eye
- 4. Parotid

**Options :**

- 19088960473. 1
- 19088960474. 2
- 19088960475. 3

19088960476. 4

**Question Number : 5 Question Id : 19088915146 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following is the chemical name of vitamin B<sub>2</sub>?

1. Riboflavin
2. Calciferol
3. Pyridoxin
4. Niacin

**Options :**

19088960477. 1

19088960478. 2

19088960479. 3

19088960480. 4

**Question Number : 6 Question Id : 19088915147 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following is not the input unit of the computer?

1. Mouse
2. Keyboard
3. Screen
4. Scanner

**Options :**

19088960481. 1

19088960482. 2

19088960483. 3

19088960484. 4

**Question Number : 7 Question Id : 19088915148 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The digital computer operates on which of the following principle?

1. Measurement
2. Calculation
3. Logical
4. Electrification

**Options :**

19088960485. 1

19088960486. 2

19088960487. 3

19088960488. 4

**Question Number : 8 Question Id : 19088915149 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The non-cooperation movement of Gandhiji was launched in which of the following year?

1. 1915
2. 1922
3. 1920
4. 1930

**Options :**

19088960489. 1

19088960490. 2

19088960491. 3

19088960492. 4

**Question Number : 9 Question Id : 19088915150 Question Type : MCQ Option Shuffling : No Is**

**Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

An Islamic revivalist movement named Wahabi movement was founded by which of the following person?

1. Sian Saheb
2. Syed Ahmed
3. Haji Shariat-Allah
4. DaduMian

**Options :**

19088960493. 1

19088960494. 2

19088960495. 3

19088960496. 4

**Question Number : 10 Question Id : 19088915151 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following is considered as the “Magna Carta of England Education in India”?

1. Hunter education commission
2. Lord Macaulay’s Minute
3. Wood’s Despatch
4. Thomas Babington Macaulay

**Options :**

19088960497. 1

19088960498. 2

19088960499. 3

19088960500. 4

**Question Number : 11 Question Id : 19088915152 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following nutrient does not come under the ambit of 'macro-nutrients in Soil Health Card?

1. Nitrogen
2. Zinc
3. Phosphorous
4. Potassium

**Options :**

19088960501. 1

19088960502. 2

19088960503. 3

19088960504. 4

**Question Number : 12 Question Id : 19088915153 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Cole crops, root crops and legumes come under the ambit of which of the following?

1. Olericulture
2. Pomology
3. Viticulture
4. Arboriculture

**Options :**

19088960505. 1

19088960506. 2

19088960507. 3

19088960508. 4

**Question Number : 13 Question Id : 19088915154 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The study of individual trees, shrubs, vines, and perennial woody plants is known as which of the following?

1. Turf management
2. Arboriculture
3. Pomology
4. Viticulture

**Options :**

19088960509. 1

19088960510. 2

19088960511. 3

19088960512. 4

**Question Number : 14 Question Id : 19088915155 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The ministry is implementing MIDH (Mission for Integrated Development of Horticulture) with effect from which of the following year?

1. 2012-13
2. 2019-20
3. 2015-16
4. 2014-15

**Options :**

19088960513. 1

19088960514. 2

19088960515. 3

19088960516. 4

**Question Number : 15 Question Id : 19088915156 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



The interaction of soils with living things, particularly plants are well known as which of the following?

1. Edaphology
2. Pedology
3. Soil zoology
4. Pedogenesis

**Options :**

19088960517. 1

19088960518. 2

19088960519. 3

19088960520. 4

**Question Number : 16 Question Id : 19088915157 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following systems has also incorporated social aspects in itself?

1. Landscaping
2. Permaculture
3. Horticulture
4. Forest gardening

**Options :**

19088960521. 1

19088960522. 2

19088960523. 3

19088960524. 4

**Question Number : 17 Question Id : 19088915158 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

What do you term the phenomenon whereby the specific gene is added to the plant for producing a desirable phenotype?

1. Genetic manipulation
2. Genetic recombination
3. Genetic modification
4. Genetic hybridisation

**Options :**

19088960525. 1

19088960526. 2

19088960527. 3

19088960528. 4

**Question Number : 18 Question Id : 19088915159 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

What is the focus of the participatory plant breeding program?

1. Scientists
2. Plants
3. Environment
4. Farmers

**Options :**

19088960529. 1

19088960530. 2

19088960531. 3

19088960532. 4

**Question Number : 19 Question Id : 19088915160 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

How do you term the form of agriculture, in which, industrialized production of crops and animal products takes place?

1. Manufactured agriculture
2. Modern agriculture
3. Industrial agriculture
4. Mechanistic agriculture

**Options :**

19088960533. 1

19088960534. 2

19088960535. 3

19088960536. 4

**Question Number : 20 Question Id : 19088915161 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Micro-irrigation fund of Rs. 5.000 crore has been placed with which of the following organization?

1. NABARD
2. IDBI
3. SBI
4. RRBs

**Options :**

19088960537. 1

19088960538. 2

19088960539. 3

19088960540. 4

## **Part B Core : Fishery Science-III**

**Section Id :** 190889321

**Section Number :** 2

**Section type :** Online

<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	50
<b>Number of Questions to be attempted :</b>	50
<b>Section Marks :</b>	200
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	190889361
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 21 Question Id : 19088915162 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The current rapid depletion of biological diversity of planet earth is termed as

1. End of the world
2. Doomsday
3. Fifth extinction
4. Sixth extinction

**Options :**

19088960541. 1

19088960542. 2

19088960543. 3

19088960544. 4

**Question Number : 22 Question Id : 19088915163 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which statement is true for criteria "Endangered"?

1. 80% reduction in population size in last 10 years
2.  $< 100 \text{ km}^2$  area extent of occurrence
3.  $< 2500$  mature individuals
4. 20% reduction in population size over 3 generations

**Options :**

- 19088960545. 1
- 19088960546. 2
- 19088960547. 3
- 19088960548. 4

**Question Number : 23 Question Id : 19088915164 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Genetic Diversity is NOT described using

- 1. Polymorphism
- 2. Average heterozygosity
- 3. F indices
- 4. Selection differential

**Options :**

- 19088960549. 1
- 19088960550. 2
- 19088960551. 3
- 19088960552. 4

**Question Number : 24 Question Id : 19088915165 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

If a population is in Hardy Weinberg Equilibrium, the expected heterozygote frequency of locus with allele p and q is:

- 1.  $p^2$
- 2.  $q^2$
- 3. pq
- 4.  $2pq$

**Options :**

- 19088960553. 1
- 19088960554. 2

19088960555. 3

19088960556. 4

**Question Number : 25 Question Id : 19088915166 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The size of mitochondrial DNA in eukaryotes is

1. 12 KB
2. 16.6 KB
3. 26 KB
4. 40.5 KB

**Options :**

19088960557. 1

19088960558. 2

19088960559. 3

19088960560. 4

**Question Number : 26 Question Id : 19088915167 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

DNA barcode represents sequence of

1. 16 S
2. Co1
3. D loop
4. Atpase 6

**Options :**

19088960561. 1

19088960562. 2

19088960563. 3

19088960564. 4

**Question Number : 27 Question Id : 19088915168 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

An individual produces 10 viable offspring in its life. The fitness is

1. 0.1
2. 1
3. 10
4. 0.01

**Options :**

19088960565. 1

19088960566. 2

19088960567. 3

19088960568. 4

**Question Number : 28 Question Id : 19088915169 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The probability that two alleles at a locus are identical by descent is

1. Genetic load
2. Inbreeding coefficient
3. Heritability
4. Breeding value

**Options :**

19088960569. 1

19088960570. 2

19088960571. 3

19088960572. 4

**Question Number : 29 Question Id : 19088915170 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following statements is NOT true for idealised population?

1. There is no migration
2. All individuals are hermaphrodites
3. Mutation is ignored
4. Has overlapping generation

**Options :**

19088960573. 1

19088960574. 2

19088960575. 3

19088960576. 4

**Question Number : 30 Question Id : 19088915171 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

For no differentiation between fragments, the  $F_{ST}$ =

1. 0
2. 1
3. 0.5
4. <1

**Options :**

19088960577. 1

19088960578. 2

19088960579. 3

19088960580. 4

**Question Number : 31 Question Id : 19088915172 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



Selection favouring heterozygotes and rare alleles is called

1. Positive selection
2. Directional selection
3. Disruptive selection
4. Balancing selection

**Options :**

19088960581. 1

19088960582. 2

19088960583. 3

19088960584. 4

**Question Number : 32 Question Id : 19088915173 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The genotypic value "G" is

1.  $A+D+E$
2.  $A+D+Eg$
3.  $A+D+I$
4.  $P+A+D+I$

**Options :**

19088960585. 1

19088960586. 2

19088960587. 3

19088960588. 4

**Question Number : 33 Question Id : 19088915174 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The ratio that tells us about the degree of genetic determination is

1.  $H^2$
2.  $h^2$
3.  $r$
4.  $r^2$

**Options :**

19088960589. 1

19088960590. 2

19088960591. 3

19088960592. 4

**Question Number : 34 Question Id : 19088915175 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The total number of gametes in a population is called

1. Genotypic value
2. Effective population size
3. Base population
4. Gene pool

**Options :**

19088960593. 1

19088960594. 2

19088960595. 3

19088960596. 4

**Question Number : 35 Question Id : 19088915176 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Inter allelic interaction causes

1. Dominance deviation
2. Interaction deviation
3. Breeding value
4. Environmental variance

**Options :**

- 19088960597. 1
- 19088960598. 2
- 19088960599. 3
- 19088960600. 4

**Question Number : 36 Question Id : 19088915177 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The number of tetrads found in meiotic prophase in an organism with diploid number of 12 is

- 1. 6
- 2. 12
- 3. 18
- 4. 24

**Options :**

- 19088960601. 1
- 19088960602. 2
- 19088960603. 3
- 19088960604. 4

**Question Number : 37 Question Id : 19088915178 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The homologous chromosomes are NOT necessarily identical in their

- 1. Overall size
- 2. Centromere placement
- 3. Arm ratio
- 4. Alleles

**Options :**

- 19088960605. 1
- 19088960606. 2
- 19088960607. 3

19088960608. 4

**Question Number : 38 Question Id : 19088915179 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The mutation at a different location in the genome which compensates for the effect of first mutation is called

1. Forward mutation
2. Back mutation
3. Supressor mutation
4. Reverse mutation

**Options :**

19088960609. 1

19088960610. 2

19088960611. 3

19088960612. 4

**Question Number : 39 Question Id : 19088915180 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The most common autosomal aneuploid is

1. trisomy 13
2. trisomy 15
3. trisomy 18
4. trisomy 21

**Options :**

19088960613. 1

19088960614. 2

19088960615. 3

19088960616. 4

**Question Number : 40 Question Id : 19088915181 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A group of individuals born at the same time is called

1. Survivors
2. Biotic potential
3. Population
4. Cohort

**Options :**

19088960617. 1

19088960618. 2

19088960619. 3

19088960620. 4

**Question Number : 41 Question Id : 19088915182 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The genome size of *E coli* is about

1. 3.4 mbp
2. 3.8 mbp
3. 4.9 mbp
4. 4.6 mbp

**Options :**

19088960621. 1

19088960622. 2

19088960623. 3

19088960624. 4

**Question Number : 42 Question Id : 19088915183 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The plasmids capable of freely replicating and able to intergrate into bacterial chromosomes are called

1. Repliosomes
2. Episomes
3. F factor
4. Hfr cell

**Options :**

19088960625. 1

19088960626. 2

19088960627. 3

19088960628. 4

**Question Number : 43 Question Id : 19088915184 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A DNA molecule 300 bp long has 20 complete rotations. This DNA molecule is

1. Positively supercoiled
2. Negatively supercoiled
3. Relaxed
4. Cannot predict the type of supercoiling

**Options :**

19088960629. 1

19088960630. 2

19088960631. 3

19088960632. 4

**Question Number : 44 Question Id : 19088915185 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following components provides rigidity to cell membrane?

1. Glycerol
2. Sterol
3. Phospholipid
4. Ribose

**Options :**

19088960633. 1

19088960634. 2

19088960635. 3

19088960636. 4

**Question Number : 45 Question Id : 19088915186 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The zygotene phase of cell cycle is characterised by

1. Chiasmata formation
2. Crossing over
3. Pairing of homologous chromosomes
4. Tetrad formation

**Options :**

19088960637. 1

19088960638. 2

19088960639. 3

19088960640. 4

**Question Number : 46 Question Id : 19088915187 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The Lock and Key model for the interaction between enzyme and substrate was proposed by

1. Parlor
2. Emil Fischer
3. Kosland
4. Arora

**Options :**

19088960641. 1

19088960642. 2

19088960643. 3

19088960644. 4

**Question Number : 47 Question Id : 19088915188 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The human gene with no intron is

1. Histone H1 gene
2. Histone H4 gene
3. Histone H2 gene
4. Histone H3 gene

**Options :**

19088960645. 1

19088960646. 2

19088960647. 3

19088960648. 4

**Question Number : 48 Question Id : 19088915189 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



The length of DNA present in nucleosome core particle is

1. 146 bp
2. 165 bp
3. 200 bp
4. 146 Kbp

**Options :**

19088960649. 1

19088960650. 2

19088960651. 3

19088960652. 4

**Question Number : 49 Question Id : 19088915190 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The sequence of anti sense RNA is same as

1. Template strand
2. Non template strand
3. Positive strand
4. Coding strand

**Options :**

19088960653. 1

19088960654. 2

19088960655. 3

19088960656. 4

**Question Number : 50 Question Id : 19088915191 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Ochre refers to the codon

1. UAG
2. UGA
3. UGG
4. UAA

**Options :**

19088960657. 1

19088960658. 2

19088960659. 3

19088960660. 4

**Question Number : 51 Question Id : 19088915192 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The term nucleic acid was first coined by

1. Watson and Crick
2. Avery, Mac Loed and McCarty
3. Dressler
4. Richard Altmann

**Options :**

19088960661. 1

19088960662. 2

19088960663. 3

19088960664. 4

**Question Number : 52 Question Id : 19088915193 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Inosine *cannot* pair with

1. Adenine
2. Uracil
3. Cytosine
4. Thymine

**Options :**

- 19088960665. 1
- 19088960666. 2
- 19088960667. 3
- 19088960668. 4

**Question Number : 53 Question Id : 19088915194 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Pyrosequencing is a method of DNA sequencing based on the principle of

- 1. Synthesis by sequencing
- 2. Sequencing by ligation
- 3. Sequencing by synthesis
- 4. Ligation by synthesis

**Options :**

- 19088960669. 1
- 19088960670. 2
- 19088960671. 3
- 19088960672. 4

**Question Number : 54 Question Id : 19088915195 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

How many bands of DNA would be expected in Messelson and Stahl's experiment after two rounds of conservative replication?

- 1. 1
- 2. 4
- 3. 2
- 4. 3

**Options :**

- 19088960673. 1
- 19088960674. 2

19088960675. 3

19088960676. 4

**Question Number : 55 Question Id : 19088915196 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

How many base pairs are required in the minimal sequence required for oriC to function?

1. 200 bp
2. 245 bp
3. 300 bp
4. 150 bp

**Options :**

19088960677. 1

19088960678. 2

19088960679. 3

19088960680. 4

**Question Number : 56 Question Id : 19088915197 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which organelle contains the catalase enzyme?

1. Golgi
2. Lysosome
3. Endoplasmic reticulum
4. Peroxisome

**Options :**

19088960681. 1

19088960682. 2

19088960683. 3

19088960684. 4

**Question Number : 57 Question Id : 19088915198 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Teleost haemoglobin bind to 2 oxygen molecules

**Statement II:** Teleost haemoglobin exists as a tetramer

In light of the above statements, choose the *most appropriate* answer from the options given below

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

19088960685. 1

19088960686. 2

19088960687. 3

19088960688. 4

**Question Number : 58 Question Id : 19088915199 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following amino acids tastes bitter?

1. Glycine
2. Alanine
3. Leucine
4. Aspartate

**Options :**

19088960689. 1

19088960690. 2

19088960691. 3

19088960692. 4

**Question Number : 59 Question Id : 19088915200 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** More than 50% of the nitrogenous waste is excreted as ammonia in teleosts

**Statement II:** The majority of ammonia is excreted across the branchial epithelium as  $\text{NH}_4^+$

In light of the above statements, choose the *most appropriate* answer from the options given below

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

19088960693. 1

19088960694. 2

19088960695. 3

19088960696. 4

**Question Number : 60 Question Id : 19088915201 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following hormones are amino acid derivatives

A. Thyroid hormones

B. Catecholamins

C. Prostaglandins

D. Serotonin and melatonin

Choose the *correct* answer from the options given below:

1. A and C only
2. B and C only
3. A, B and D only
4. A, C and D only

**Options :**

19088960697. 1

19088960698. 2

19088960699. 3

19088960700. 4

**Question Number : 61 Question Id : 19088915202 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** In crustaceans, Methyl farnesoate (MF) is known as a juvenile hormone, which plays a role in reproduction

**Statement II:** Methyl farnesoate (MF) is produced in the mandibular organ (MO) of crustaceans

In light of the above statements, choose the *most appropriate* answer from the options given below

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

19088960701. 1

19088960702. 2

19088960703. 3

19088960704. 4

**Question Number : 62 Question Id : 19088915203 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following hormones have extracellular receptors?

A.Prolactin

B.Epinephrine

C.Thyroxine

D.Serotonin

Choose the *correct* answer from the options given below:

1. A, B and D only
2. B, C and D only
3. A and C only
4. A and D only

**Options :**

19088960705. 1

19088960706. 2

19088960707. 3

19088960708. 4

**Question Number : 63 Question Id : 19088915204 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



Which of the following amino acids is a precursor of nitric oxide?

1. Tyrosine
2. Tryptophan
3. Arginine
4. Alanine

**Options :**

19088960709. 1

19088960710. 2

19088960711. 3

19088960712. 4

**Question Number : 64 Question Id : 19088915205 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which sugar molecule contains nine carbons?

1. Neuraminic acid
2. Verbacose
3. Glucosamine
4. NANA

**Options :**

19088960713. 1

19088960714. 2

19088960715. 3

19088960716. 4

**Question Number : 65 Question Id : 19088915206 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following tests can be used to differentiate glucose and fructose?

1. Tollen's test
2. Seliwanoff's test
3. Fehling's test
4. Schiff's test

**Options :**

19088960717. 1

19088960718. 2

19088960719. 3

19088960720. 4

**Question Number : 66 Question Id : 19088915207 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Trehalose is a monosaccharide present in crustacean extracellular fluid

**Statement II:** Trehalose is a reducing sugar

In light of the above statements, choose the *most appropriate* answer from the options given below

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

19088960721. 1

19088960722. 2

19088960723. 3

19088960724. 4

**Question Number : 67 Question Id : 19088915208 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Chitin is which form of sugar?

1. Homopolysaccharide
2. Heteropolysaccharide
3. Disaccharide
4. Monosaccharide

**Options :**

19088960725. 1

19088960726. 2

19088960727. 3

19088960728. 4

**Question Number : 68 Question Id : 19088915209 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following enzymes are NOT components of the TCA cycle?

A. Isocitrate dehydrogenase

B. Lactate dehydrogenase

C. Malate dehydrogenase

D. Pyruvate dehydrogenase

Chose the *correct* answer from the options given below:

1. A and C only
2. B and D only
3. A and C only
4. B and C only

**Options :**

19088960729. 1

19088960730. 2

19088960731. 3

19088960732. 4

**Question Number : 69 Question Id : 19088915210 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The allergic protein present in shrimp muscle is

1. Troponin
2. Lectin
3. Tropomyosin
4. Actin

**Options :**

19088960733. 1

19088960734. 2

19088960735. 3

19088960736. 4

**Question Number : 70 Question Id : 19088915211 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following is an osmoregulatory strategy of a freshwater teleost?

1. Iso-osmotic regulation
2. Osmoconforming
3. Hypo-osmotic regulation
4. Hyper-osmotic regulation

**Options :**

19088960737. 1

19088960738. 2

19088960739. 3

19088960740. 4

## **Part C : Fish Biotechnology**

<b>Section Id :</b>	190889322
<b>Section Number :</b>	3
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	50
<b>Number of Questions to be attempted :</b>	50
<b>Section Marks :</b>	200
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	190889362
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 71 Question Id : 19088915212 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following statements best describes the chemical composition of the plasma membrane?

1. It is composed of two layers - one layer of phospholipids and one layer of proteins
2. It is a bilayer of phospholipids with associated proteins and carbohydrates
3. It is composed of equal number of phospholipids, proteins and carbohydrates
4. It is a bilayer of proteins with associated lipids and carbohydrates

**Options :**

19088960741. 1

19088960742. 2

19088960743. 3

19088960744. 4

**Question Number : 72 Question Id : 19088915213 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The detoxification of xenobiotic compounds occur in

1. Rough endoplasmic reticulum
2. Smooth endoplasmic reticulum
3. Ribosomes
4. Cytosol

**Options :**

19088960745. 1

19088960746. 2

19088960747. 3

19088960748. 4

**Question Number : 73 Question Id : 19088915214 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The wall of microtubules is composed of

1. Globular proteins
2. Glycoproteins
3. Carbohydrates
4. Nucleic acid

**Options :**

19088960749. 1

19088960750. 2

19088960751. 3

19088960752. 4

**Question Number : 74 Question Id : 19088915215 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Cdk2/cyclinE function in

1. G<sub>1</sub>/S transition
2. G<sub>2</sub>
3. M
4. G<sub>2</sub>/M transition

**Options :**

19088960753. 1

19088960754. 2

19088960755. 3

19088960756. 4

**Question Number : 75 Question Id : 19088915216 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Guanine nucleotides regulate G proteins.

**Statement II:** G proteins become activated when bound to GDP.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960757. 1

19088960758. 2

19088960759. 3

19088960760. 4

**Question Number : 76 Question Id : 19088915217 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** In response to some G-protein-mediated signals, a special type of lipid molecule associated with the plasma membrane is cleaved to form IP3 and Calcium.

**Statement II:** Protein kinase A activation is one possible result of signal molecules binding to G protein-linked receptors.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960761. 1

19088960762. 2

19088960763. 3

19088960764. 4

**Question Number : 77 Question Id : 19088915218 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which family of proteins regulates the intrinsic pathway of apoptosis?

1. Caspase-2
2. Caspase-8
3. Bcl-4
4. Bcl-2

**Options :**

19088960765. 1

19088960766. 2

19088960767. 3

19088960768. 4

**Question Number : 78 Question Id : 19088915219 Question Type : MCQ Option Shuffling : No**



**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A nucleotide is formed of which of the following units?

1. Nitrogen base and phosphate
2. Sugar and phosphate
3. Nitrogen base, sugar and phosphate
4. Nitrogen base and sugar

**Options :**

19088960769. 1

19088960770. 2

19088960771. 3

19088960772. 4

**Question Number : 79 Question Id : 19088915220 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which one of the following is left handed DNA?

1. A DNA
2. B DNA
3. C DNA
4. Z DNA

**Options :**

19088960773. 1

19088960774. 2

19088960775. 3

19088960776. 4

**Question Number : 80 Question Id : 19088915221 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The most abundant type of RNA in the cell is

1. rRNA
2. tRNA
3. mRNA
4. hnRNA

**Options :**

19088960777. 1

19088960778. 2

19088960779. 3

19088960780. 4

**Question Number : 81 Question Id : 19088915222 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following reactions is required for proofreading during DNA replication by DNA polymerase III?

1. 5' to 3' endonuclease activity
2. 5' to 3' exonuclease activity
3. 3' to 5' exonuclease activity
4. 3' to 5' endonuclease activity

**Options :**

19088960781. 1

19088960782. 2

19088960783. 3

19088960784. 4

**Question Number : 82 Question Id : 19088915223 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Rho-dependent termination of transcription in *E. coli* requires

1. ATP
2. RNA polymerase
3. About 50 nucleotides of uncomplexed mRNA
4. ATP and about 50 nucleotides of uncomplexed mRNA

**Options :**

19088960785. 1

19088960786. 2

19088960787. 3

19088960788. 4

**Question Number : 83 Question Id : 19088915224 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following is a non-sense codon?

1. GUG
2. AUG
3. UAA
4. UCU

**Options :**

19088960789. 1

19088960790. 2

19088960791. 3

19088960792. 4

**Question Number : 84 Question Id : 19088915225 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The site in the ribosome from which the tRNA donates amino acids to the growing polypeptide chain is the

1. O site
2. P site
3. A site
4. T site

**Options :**

19088960793. 1

19088960794. 2

19088960795. 3

19088960796. 4

**Question Number : 85 Question Id : 19088915226 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The lactose repressor is encoded by

1. Lac Z
2. Lac I
3. Lac Y
4. Lac A

**Options :**

19088960797. 1

19088960798. 2

19088960799. 3

19088960800. 4

**Question Number : 86 Question Id : 19088915227 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** DNA ligase joins the DNA fragments by forming a phosphodiester bond between the phosphate group of 5' carbon of one deoxyribose with the hydroxyl group 3' carbon of another deoxyribose.

**Statement II:** Phage T4 DNA ligase requires ATP as cofactor while *E. coli* DNA ligase is dependent on  $\text{NAD}^+$ .

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

- 19088960801. 1
- 19088960802. 2
- 19088960803. 3
- 19088960804. 4

**Question Number : 87 Question Id : 19088915228 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements, one is labelled as **Assertion A** and the other is labelled as **Reason R**

**Assertion A:** Terminal transferase adds nucleotide to the 3' end of DNA.

**Reason R:** Terminal transferase is useful for homopolymer tailing.

In light of the above statements, choose the *correct* answer from the options given below

1. Both **A** and **R** are true and **R** is the correct explanation of **A**
2. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**
3. **A** is true but **R** is false
4. **A** is false but **R** is true

**Options :**

- 19088960805. 1

19088960806. 2

19088960807. 3

19088960808. 4

**Question Number : 88 Question Id : 19088915229 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Gel electrophoresis is a technique used to separate molecules on the basis of size.

**Statement II:** Nucleic acids are positively charged ions at neutral or basic pH.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960809. 1

19088960810. 2

19088960811. 3

19088960812. 4

**Question Number : 89 Question Id : 19088915230 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Match **List I** with **List II**

<b>List I</b>	<b>List II</b>
<b>Molecule</b>	<b>Function</b>
A. Mut S	I. Resolves Holliday junction
B. Mut L	II. Recognises and binds to mismatches
C. Mut H	III. Enhances endonuclease activity
D. RuvC	IV. Recognises hemimethylated sites

Choose the **correct** answer from the options given below:

1. A - II, B - III, C - IV, D - I
2. A - II, B - III, C - I, D - IV
3. A - IV, B - III, C - II, D - I
4. A - IV, B - II, C - III, D - I

**Options :**

19088960813. 1

19088960814. 2

19088960815. 3

19088960816. 4

**Question Number : 90 Question Id : 19088915231 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The amount of DNA per haploid cell or number of kilobases per haploid cell is called

1. G value
2. T value
3. A value
4. C value

**Options :**

19088960817. 1

19088960818. 2

19088960819. 3

19088960820. 4

**Question Number : 91 Question Id : 19088915232 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The addition of which one of the following components terminates the DNA sequencing chain?

1. dATP
2. ddATP
3. dCTP
4. dGTP

**Options :**

19088960821. 1

19088960822. 2

19088960823. 3

19088960824. 4

**Question Number : 92 Question Id : 19088915233 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The chemistry of pyrosequencing is the basis of which NGS platform?

1. Illumina HiSeq
2. Pacific Biosciences SMRT
3. Illumina MiSeq
4. Roche 454

**Options :**

19088960825. 1

19088960826. 2

19088960827. 3

19088960828. 4

**Question Number : 93 Question Id : 19088915234 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**



The average read length of ABI/SOLiD genome sequencing technology is

1. 35 bp
2. 700 bp
3. 430 bp
4. 200-300 bp

**Options :**

19088960829. 1

19088960830. 2

19088960831. 3

19088960832. 4

**Question Number : 94 Question Id : 19088915235 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Micro RNAs are found in all animals and plants but not fungi.

**Statement II:** Micro RNAs contain 19-25 nucleotides.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960833. 1

19088960834. 2

19088960835. 3

19088960836. 4

**Question Number : 95 Question Id : 19088915236 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The fluorescent dyes Cy3 and Cy5 are used in

1. Radio immuno assay
2. Southern blotting
3. Western Blotting
4. Microarray

**Options :**

19088960837. 1

19088960838. 2

19088960839. 3

19088960840. 4

**Question Number : 96 Question Id : 19088915237 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

GloFish, a transgenic one, belong to which of the following fish?

1. Medaka
2. Zebrafish
3. Guppy
4. Sword tail

**Options :**

19088960841. 1

19088960842. 2

19088960843. 3

19088960844. 4

**Question Number : 97 Question Id : 19088915238 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A polyploid formed by hybridisation between two different species is

1. Autopolyploid
2. Allopolyploid
3. Aneuploid
4. Triploid

**Options :**

19088960845. 1

19088960846. 2

19088960847. 3

19088960848. 4

**Question Number : 98 Question Id : 19088915239 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The region within mitochondrial DNA in which a short stretch of RNA is paired with one strand of DNA displacing the original partner DNA strand in this region, is called

1. C loop
2. Cyto C region
3. D loop
4. DNA looping

**Options :**

19088960849. 1

19088960850. 2

19088960851. 3

19088960852. 4

**Question Number : 99 Question Id : 19088915240 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

A mutation in which a gene is overexpressed or inappropriately expressed is called

1. Forward mutation
2. Reverse mutation
3. Gain of function mutation
4. Frame shift mutation

**Options :**

19088960853. 1

19088960854. 2

19088960855. 3

19088960856. 4

**Question Number : 100 Question Id : 19088915241 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Similar genes that arose from duplication of an ancestral gene in one or both lineages prior to an evolutionary split are called orthologs.

**Statement II:** Two genes in separated species that are derived from a common ancestor without gene duplication are called paralogs.

In light of the above statements, choose the *most appropriate* answer from the options given below

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

19088960857. 1

19088960858. 2

19088960859. 3

19088960860. 4

**Question Number : 101 Question Id : 19088915242 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which one of the following is NOT a Type II marker?

1. RAPD
2. Allozymes
3. AFLP
4. Microsatellite

**Options :**

19088960861. 1

19088960862. 2

19088960863. 3

19088960864. 4

**Question Number : 102 Question Id : 19088915243 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The dmy (dmrt1bY) is the sex determining master gene identified in which fish?

1. Zebrafish
2. Medaka
3. Tilapia
4. Poeciliid

**Options :**

19088960865. 1

19088960866. 2

19088960867. 3

19088960868. 4

**Question Number : 103 Question Id : 19088915244 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Who among the following is known as father of Bioinformatics?

1. Margaret Dayhoff
2. Bill Pearson
3. Richard Durbin
4. Michael Dunn

**Options :**

19088960869. 1

19088960870. 2

19088960871. 3

19088960872. 4

**Question Number : 104 Question Id : 19088915245 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The alignment of two sequences is NOT performed using

1. Dot matrix analysis
2. The dynamic programming algorithm
3. Word/k-tuple methods (BLAST & FASTA)
4. Clustal W

**Options :**

19088960873. 1

19088960874. 2

19088960875. 3

19088960876. 4

**Question Number : 105 Question Id : 19088915246 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements, one is labelled as **Assertion A** and the other is labelled as **Reason R**

**Assertion A:** Maximum parsimony method is referred to as the minimum evolution method.

**Reason R:** This method predicts the evolutionary tree that minimises the number of steps required to generate the observed variation in the sequence.

In light of the above statements, choose the *correct* answer from the options given below

1. Both **A** and **R** are true and **R** is the correct explanation of **A**
2. Both **A** and **R** are true but **R** is NOT the correct explanation of **A**
3. **A** is true but **R** is false
4. **A** is false but **R** is true

**Options :**

19088960877. 1

19088960878. 2

19088960879. 3

19088960880. 4

**Question Number : 106 Question Id : 19088915247 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Match **List I** with **List II**

List I	List II
Query Sequence	Program
A. Protein	I. BLASTX
B. Nucleic Acid	II. BLASTN
C. Translated Nucleic Acid	III. TBLASTN

Choose the **correct** answer from the options given below:

1. A - III, B - II, C - I
2. A - III, B - I, C - II
3. A - II, B - III, C - I
4. A - I, B - II, C - III

**Options :**

19088960881. 1

19088960882. 2

19088960883. 3

19088960884. 4

**Question Number : 107 Question Id : 19088915248 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The term used to describe a conserved amino acid sequence pattern in a family of proteins is

1. Class
2. Core
3. Active site
4. Blocks

**Options :**

19088960885. 1

19088960886. 2

19088960887. 3

19088960888. 4

**Question Number : 108 Question Id : 19088915249 Question Type : MCQ Option Shuffling : No  
Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which one of the following is NOT a protein structure classification database?

1. SCOP
2. CATH
3. FSSP
4. SPDBV

**Options :**

19088960889. 1

19088960890. 2

19088960891. 3



19088960892. 4

**Question Number : 109 Question Id : 19088915250 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Which one of the following is NOT used for predicting the structural features of a query sequence?

1. Modeller
2. Swiss Model
3. What If
4. GENESCAN

**Options :**

19088960893. 1

19088960894. 2

19088960895. 3

19088960896. 4

**Question Number : 110 Question Id : 19088915251 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The fish that has a multifactorial sex determination system with three sex chromosomes (X, Y, W) is

1. Guppy
2. Platyfish
3. Tilapia
4. Zebrafish

**Options :**

19088960897. 1

19088960898. 2

19088960899. 3

19088960900. 4

**Question Number : 111 Question Id : 19088915252 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** CRISPR are derived from DNA fragments of bacteriophages that had previously infected the prokaryotes.

**Statement II:** CRISPR are found in approximately, 90 percent of sequenced bacterial genomes and nearly, 10 percent of sequenced archae.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960901. 1

19088960902. 2

19088960903. 3

19088960904. 4

**Question Number : 112 Question Id : 19088915253 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The hybridoma consists of

1. Fusion of B memory cells with myeloma cells
2. Fusion of B cells with myeloma cells
3. Fusion of T helper cells with myeloma cells
4. Fusion of T cells with myeloma cells

**Options :**

19088960905. 1

19088960906. 2

19088960907. 3

19088960908. 4

**Question Number : 113 Question Id : 19088915254 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Embryonic stem cells are derived from which region of the blastocyst?

1. Mesoderm
2. Inner cell mass
3. Blastocoel
4. Ectoderm

**Options :**

19088960909. 1

19088960910. 2

19088960911. 3

19088960912. 4

**Question Number : 114 Question Id : 19088915255 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Aqu Advantage salmon is a genetically engineered Atlantic salmon developed by Aqua Bounty Technologies.

**Statement II:** Aqu Advantage salmon is not yet approved for human consumption in United States and Canada.

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960913. 1

19088960914. 2

19088960915. 3

19088960916. 4

**Question Number : 115 Question Id : 19088915256 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The study of genetic material recovered directly from environmental samples is called

1. Transcriptomics
2. Functional genomics
3. Metagenomics
4. Metabolomics

**Options :**

19088960917. 1

19088960918. 2

19088960919. 3

19088960920. 4

**Question Number : 116 Question Id : 19088915257 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The appraisal of proposals to release genetically engineered organisms and products into the environment, including experimental field trails is done by

1. Recombinant DNA Advisory Committee (RDAC)
2. Institutional Biosafety Committee (IBSC)
3. Review Committee on Genetic Manipulation (RCGM)
4. Genetic Engineering Approval Committee (GEAC)

**Options :**

19088960921. 1

19088960922. 2

19088960923. 3

19088960924. 4

**Question Number : 117 Question Id : 19088915258 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The restriction enzyme that cleaves DNA palindromic sequence AAGCTT is

1. Eco R1
2. Hind III
3. Bcg I
4. Fok I

**Options :**

19088960925. 1

19088960926. 2

19088960927. 3

19088960928. 4

**Question Number : 118 Question Id : 19088915259 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Given below are two statements

**Statement I:** Supercoiling occurs only in closed DNA with no free ends.

**Statement II:** A closed DNA molecule has a linking number (L), which is the sum of twist (T) and writhe (W)

In light of the above statements, choose the *correct* answer from the options given below

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

**Options :**

19088960929. 1

19088960930. 2

19088960931. 3

19088960932. 4

**Question Number : 119 Question Id : 19088915260 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Match List I with List II

List I	List II
Restriction System	Feature
A. Type II RE	I. The cleavage site can be up to 1000 bp away from the recognition site
B. Type I RE	II. The recognition site and the cleavage site are the same
C. Type III RE	III. The cleavage site can be up to 20-30 bp away from the recognition site

Choose the correct answer from the options given below:

1. A - II, B - I, C -III ,
2. A - I, B -II , C - III
3. A -II , B -III , C -I
4. A -III , B - I, C -II

**Options :**

19088960933. 1

19088960934. 2

19088960935. 3

19088960936. 4

**Question Number : 120 Question Id : 19088915261 Question Type : MCQ Option Shuffling : No**

**Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The process that involves the transfer of DNA from a gel to a membrane, followed by detection of specific sequences by hybridization with a labelled probe is

1. Northern Blotting
2. Southern Blotting
3. Western Blotting
4. Eastern Blotting

**Options :**

19088960937. 1

19088960938. 2

19088960939. 3

19088960940. 4