



भारतीय आयुर्विज्ञान अनुसंधान परिषद  
INDIAN COUNCIL OF MEDICAL RESEARCH

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Phone No. 0172-2755561

**NOTICE**  
**(ICMR-JRF-2020)**

Dated 17.12.2020

**REGARDING ANSWER KEY FOR ICMR-JRF EXAM.HELD ON 04.12.2020**

This is for the information of all the candidates who appeared in ICMR-JRF-2020 examination conducted by the PGIMER, Chandigarh on 04.12.2020 at various centres across the country. Question Paper and answer Key is uploaded on the website for the information of the applicants. If a candidate finds any objections/ doubts regarding the answer key of the question paper, he/she may communicate the same to Sr. Administrative Officer, Academic Section, PGIMER, Chandigarh via e-mail i.e. [anand.rajneesh@pgimer.edu.in](mailto:anand.rajneesh@pgimer.edu.in) in following format:-

Roll No.	Name, address, e.mail Mobile No. of the candidate.	Stream	Question Number & section	Question issue and description	Fee detail (attach Screen shot /transaction ID of the transfer of amount )

Please note that for raising objections/doubts a fee of Rs.500/- per question is payable, if the objection/doubt is found valid/justified then the fee (@Rs.500/- per valid objection/question) will be refunded. For objection/doubt found invalid the fee will be forfeited.

The objections/doubts can be sent/submitted till December,20, 2020 upto 09.00 P.M. No objection/doubt raised beyond this time limit will be entertained.

Fee may be paid through online/RTGS in the account details as under:-

Account Name : Director, PGI Pvt. Grant Account  
Account Number : 1041-3583830  
IFSC code : SBIN0001524  
Bank Name : State Bank of India, Medical Institute (MI) Branch Sector-12, Chandigarh.

A proof of payment of fee i.e. screenshot of successful transaction/RTGS number must be enclosed with the objection, failing objection will not be considered. Objections/doubts received within above prescribed period will be placed before the committee of the experts for their consideration. If these objections/doubts found valid then the decision/remedial action will be uploaded on the official websites of both the Institutes i.e. [pgimer.edu.in](http://pgimer.edu.in) & [icmr.nic.in](http://icmr.nic.in) for the information to all concerned. No separate communication will be issued to any individual. Decision of the Committee of Experts will be final in this regard.

Sd/-  
Co-ordinator  
ICMR-JRF Exam.

# Postgraduate Institute of Medical Education and Research PGIMER, Chandigarh

## Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

<b>Question Paper Name :</b>	Life sciences
<b>Subject Name :</b>	Life Science B
<b>Creation Date :</b>	2020-12-04 18:25:32
<b>Duration :</b>	120
<b>Number of Questions :</b>	150
<b>Total Marks :</b>	125
<b>Display Marks:</b>	Yes
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console? :</b>	No

## Life sciences

Group Number :	1
Group Id :	986068341
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	125
Is this Group for Examiner? :	No

## Aptitude

Section Id :	986068517
Section Number :	1
Section type :	Online
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	986068590
Question Shuffling Allowed :	Yes

**Question Number : 1 Is Question Mandatory : No Option Orientation : Vertical**

Mammography is used in the screening of:

**Options :**

- ✘ Carcinoma stomach
- ✔ Breast cancer

3. ✘ Lung carcinoma
4. ✘ Thyroid carcinoma

**Question Number : 2 Is Question Mandatory : No Option Orientation : Vertical**

Vomit centre is located in

**Options :**

1. ✔ Medulla oblongata
2. ✘ Pons
3. ✘ Cerebellum
4. ✘ Spinal cord

**Question Number : 3 Is Question Mandatory : No Option Orientation : Vertical**

Thanatology deals with:

**Options :**

1. ✘ Metallic poison
2. ✘ Drug abuse
3. ✘ Bones
4. ✔ Death

**Question Number : 4 Is Question Mandatory : No Option Orientation : Vertical**

Red data book is a Russian document containing data of:

**Options :**

1. ✘ All plant species
2. ✘ All bird species
3. ✘ Economically important species
4. ✔ Endangered species

**Question Number : 5 Is Question Mandatory : No Option Orientation : Vertical**

We use which element to galvanize materials to prevent them from rusting?

**Options :**

1. ✓ Zinc
2. ✗ Titanium
3. ✗ Boron
4. ✗ Manganese

**Question Number : 6 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following carries deoxygenated blood?

**Options :**

1. ✗ Carotid artery
2. ✓ Pulmonary artery
3. ✗ Pulmonary vein
4. ✗ Aorta

**Question Number : 7 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following halogen is a liquid at room temperature?

**Options :**

1. ✓ Bromine
2. ✗ Chlorine
3. ✗ Iodine
4. ✗ Fluorine

**Question Number : 8 Is Question Mandatory : No Option Orientation : Vertical**

Common TV remote controls send signals using:

**Options :**

1. ✗ LASER
2. ✓ Infrared rays
3. ✗ Radiowaves
4. ✗ Gamma rays

**Question Number : 9 Is Question Mandatory : No Option Orientation : Vertical**

Glass is a:

**Options :**

1. ✓ Super-cooled liquid
2. ✗ Polymeric mixture
3. ✗ Micro-crystalline solid
4. ✗ Gel

**Question Number : 10 Is Question Mandatory : No Option Orientation : Vertical**

A radioactive element gets spilled over the floor of a room. Its half-life is 30 days. If the initial activity is ten times the permissible value, after how many days will it be safe to enter the room?

**Options :**

1. ✗ 10 days
2. ✓ 100 days
3. ✗ 300 days
4. ✗ 1000 days

**Question Number : 11 Is Question Mandatory : No Option Orientation : Vertical**

Hydrogen bomb is based on the principle of:

**Options :**

1. ✓ Nuclear fusion
2. ✗ Natural radioactivity
3. ✗ Artificial radioactivity
4. ✗ Nuclear fission

**Question Number : 12 Is Question Mandatory : No Option Orientation : Vertical**

Nylon threads are made of:

**Options :**

1. ✗ Polyester polymer
2. ✓ Polyamide polymer
3. ✗ Polyethylene polymer

4. ✘ Polyvinyl polymer

**Question Number : 13 Is Question Mandatory : No Option Orientation : Vertical**

The pyrimidine bases present in DNA are:

**Options :**

1. ✘ Cytosine and thymidine
2. ✘ Cytidine and thymidine
3. ✔ Cytosine and thymine
4. ✘ Cytosine and thiamine

**Question Number : 14 Is Question Mandatory : No Option Orientation : Vertical**

Cervical cancer is strongly associated with:

**Options :**

1. ✔ Viral infection
2. ✘ Alcohol consumption
3. ✘ Infertility
4. ✘ Obesity

**Question Number : 15 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following element is used as the photoconductive material used in the drum of photocopier machine?

**Options :**

1. ✘ Aluminium
2. ✔ Selenium
3. ✘ Barium
4. ✘ Caesium

**Question Number : 16 Is Question Mandatory : No Option Orientation : Vertical**

The red soil is red in colour because it is:

**Options :**

1. ✘ Rich in humus
2. ✔ Rich in iron compounds
3. ✘ Rich in potash
4. ✘ Derived from volcanic origin

**Question Number : 17 Is Question Mandatory : No Option Orientation : Vertical**

In a single throw of two dices, what is the probability of getting a sum of 8 or 11?

**Options :**

1. ✘  $1/36$
2. ✘  $3/36$
3. ✘  $5/36$
4. ✔  $7/36$

**Question Number : 18 Is Question Mandatory : No Option Orientation : Vertical**

Hypermetropia is:

**Options :**

1. ✘ image of nearby objects is formed in front of retina
2. ✘ Far objects look blurred
3. ✘ Near sightedness
4. ✔ Long sightedness

**Question Number : 19 Is Question Mandatory : No Option Orientation : Vertical**

A railway carriage having a mass of 5000 kg is moving with a speed of 12 m/sec on a curve of 150 m radius. If the track is level (i.e. without super elevation) find the lateral thrust on the outer rail?

**Options :**

1. ✘ 400 N
2. ✘ 3600 N
3. ✔ 4800 N
4. ✘ 5208 N

**Question Number : 20 Is Question Mandatory : No Option Orientation : Vertical**

When light passes from air to glass, its velocity:

**Options :**

1. ✘ Increases
2. ✔ Decreases
3. ✘ Remains same
4. ✘ May or may not change

**Question Number : 21 Is Question Mandatory : No Option Orientation : Vertical**

Golden revolution refers to:

**Options :**

1. ✘ Gold demonetization
2. ✘ Production of oil seeds
3. ✔ Production of horticulture
4. ✘ Production of eggs

**Question Number : 22 Is Question Mandatory : No Option Orientation : Vertical**

Cynophobia is:

**Options :**

1. ✘ Fear of clouds
2. ✔ Fear of dogs
3. ✘ Fear of blue colour
4. ✘ Fear of snow

**Question Number : 23 Is Question Mandatory : No Option Orientation : Vertical**

One kilometre is equal to how many miles?

**Options :**

1. ✘ 0.84
2. ✘ 0.5
3. ✘ 1.6

4. ✓ 0.62

**Question Number : 24 Is Question Mandatory : No Option Orientation : Vertical**

What is the shape of a classical shaving mirror?

**Options :**

1. ✗ Flat
2. ✓ Concave
3. ✗ Planoconcave
4. ✗ Convex

**Question Number : 25 Is Question Mandatory : No Option Orientation : Vertical**

Supernova is:

**Options :**

1. ✗ A black hole
2. ✓ An explosion of a star
3. ✗ A comet
4. ✗ An asteroid

**Question Number : 26 Is Question Mandatory : No Option Orientation : Vertical**

The deepest oceanic trench is located in which ocean?

**Options :**

1. ✓ Pacific ocean
2. ✗ Atlantic ocean
3. ✗ Indian ocean
4. ✗ Arctic ocean

**Question Number : 27 Is Question Mandatory : No Option Orientation : Vertical**

The umbilical cord contains:

**Options :**

1. ✗ Two veins and one artery

- ✘ Two arteries and two veins
- ✔ Two arteries and one vein
- ✘ One artery and one vein

**Question Number : 28 Is Question Mandatory : No Option Orientation : Vertical**

Ocean tides are created because of:

**Options :**

- ✔ Gravitational pull of moon
- ✘ Gravitational pull of earth
- ✘ Rotation of earth
- ✘ Gravitational pull of sun

**Question Number : 29 Is Question Mandatory : No Option Orientation : Vertical**

Red light is used for signals because it has:

**Options :**

- ✘ High frequency
- ✔ Long wavelength
- ✘ High intensity
- ✘ Low refraction

**Question Number : 30 Is Question Mandatory : No Option Orientation : Vertical**

The sum of the digits of a two-digit number is 7. The number obtained by interchanging the digits exceeds the original number by 27. Find the original number:

**Options :**

- ✘ 34
- ✔ 25
- ✘ 43
- ✘ 52

**Question Number : 31 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is true regarding bright red colour of sun during sunset and sunrise?

**Options :**

1. ✘ Sun's surface temperature is high at that time
2. ✔ Light other than red is scattered as rays have to travel longer distance
3. ✘ Red rays are scattered while travelling longer distance
4. ✘ Due to electromagnetic phenomenon at Sun's surface during that time

**Question Number : 32 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is NOT a Kharif crop?

**Options :**

1. ✘ Maize
2. ✔ Mustard
3. ✘ Rice
4. ✘ Sugarcane

**Question Number : 33 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is NOT a SAARC country?

**Options :**

1. ✘ Afghanistan
2. ✘ Pakistan
3. ✘ Nepal
4. ✔ Indonesia

**Question Number : 34 Is Question Mandatory : No Option Orientation : Vertical**

Lunar eclipse occurs when:

**Options :**

1. ✔ Earth comes in between Sun and Moon
2. ✘ Moon comes in between Sun and Earth
3. ✘ Sun comes in between Earth and Moon
4. ✘ Mars comes in between Sun and Earth

**Question Number : 35 Is Question Mandatory : No Option Orientation : Vertical**

Headquarters of United Nations (UNO) are in:

**Options :**

1. ✘ Geneva
2. ✔ New York
3. ✘ Sydney
4. ✘ Washington

**Question Number : 36 Is Question Mandatory : No Option Orientation : Vertical**

WHO declared COVID-19 as a Pandemic on:

**Options :**

1. ✘ 1<sup>st</sup> January, 2020
2. ✘ 1<sup>st</sup> December, 2019
3. ✘ 30<sup>th</sup> January, 2020
4. ✔ 11<sup>th</sup> March, 2020

**Question Number : 37 Is Question Mandatory : No Option Orientation : Vertical**

The most abundant element in the universe is:

**Options :**

1. ✘ Oxygen
2. ✔ Hydrogen
3. ✘ Carbon Dioxide
4. ✘ Silicon

**Question Number : 38 Is Question Mandatory : No Option Orientation : Vertical**

The Theory of Motivation by Maslow is based on:

**Options :**

1. ✘ Theories X and Y
2. ✘ Two factor Theory

3. ✓ Hierarchy of Needs

4. ✗ Motivator- Hygiene Theory

**Question Number : 39 Is Question Mandatory : No Option Orientation : Vertical**

Similarity index is useful for assessing:

**Options :**

1. ✗ Novelty

2. ✗ Conciseness

3. ✗ Correctness of translation

4. ✓ Plagiarism

**Question Number : 40 Is Question Mandatory : No Option Orientation : Vertical**

Emmanuelle Charpentier and Jennifer A. Doudna have been awarded the Nobel Prize in Chemistry in 2020 for their work on:

**Options :**

1. ✗ Development of lithium ion batteries

2. ✗ Phage display of peptides and antibodies

3. ✓ CRISPR/Cas9 genetic scissors

4. ✗ Discovery of hepatitis C virus

**Question Number : 41 Is Question Mandatory : No Option Orientation : Vertical**

A scientist is weighing each of 30 fishes. Their mean weight worked out is 30 gm and a standard deviation of 2 gm. Later, it was found that the measuring scale was misaligned and always under reported every fish weight by 2 gm. The correct mean and standard deviation (in gm) of fishes are respectively:

**Options :**

1. ✗ 28, 2

2. ✗ 28, 4

3. ✓ 32, 2

4. ✗ 32, 4

**Question Number : 42 Is Question Mandatory : No Option Orientation : Vertical**

The mean, median, mode of a data set are 135, 133 and 130, respectively. The distribution of the data set is:

**Options :**

1. ✘ Symmetrical
2. ✘ Negatively skewed
3. ✔ Positively skewed
4. ✘ Normal

**Question Number : 43 Is Question Mandatory : No Option Orientation : Vertical**

Specificity of a test:

**Options :**

1. ✘ Is the same as the true positive rate
2. ✘ Is the same as the false positive rate
3. ✘ Is the ability of a test to correctly identify patients with the disease
4. ✔ Is the ability of a test to correctly identify patients without the disease

**Question Number : 44 Is Question Mandatory : No Option Orientation : Vertical**

What type of bias is reduced by randomisation?

**Options :**

1. ✘ Ascertainment Bias
2. ✔ Selection bias
3. ✘ Publication bias
4. ✘ Bias in handling dropout

**Question Number : 45 Is Question Mandatory : No Option Orientation : Vertical**

Non-parametric data is best represented by:

**Options :**

1. ✘ Mean and Standard deviation

2. ✓ Median and Interquartile range

3. ✗ Mode and interquartile

4. ✗ Median and standard deviatio

**Question Number : 46 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is a method of integrating the findings of prior research studies using statistical procedures?

**Options :**

1. ✓ Meta-analysis

2. ✗ Secondary analysis

3. ✗ Content analysis

4. ✗ Grounded theory

**Question Number : 47 Is Question Mandatory : No Option Orientation : Vertical**

The reporting of results is preferred to report with confidence intervals (CIs) as compared to p-value because:

**Options :**

1. ✗ CIs are easy to interpret as compared to the p-value

2. ✓ The CIs provide significance and variability of the estimate

3. ✗ CIs are more accurate for studies with a large sample size

4. ✗ CIs are easy to calculate as compared to the p-values

**Question Number : 48 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following mean is not used to report measure of central tendency?

**Options :**

1. ✗ Arithmetic mean

2. ✗ Geometric mean

3. ✓ Relative mean

4. ✗ Harmonic mean

**Question Number : 49 Is Question Mandatory : No Option Orientation : Vertical**

What is the best way to minimize the chances of a type-I error in a diagnostics test?

**Options :**

1. ✘ Improving the sensitivity of the test
2. ✔ Improving the specificity of the test
3. ✘ Reducing the prevalence of the disease
4. ✘ Reducing the incidence of the disease

**Question Number : 50 Is Question Mandatory : No Option Orientation : Vertical**

What does the term 'longitudinal study design' mean?

**Options :**

1. ✘ A study completed far away from where the researcher lives.
2. ✘ A study which is very long to read.
3. ✘ A study with two long arms.
4. ✔ A study completed over a distinct period of time to map changes.

## Life sciences

<b>Section Id :</b>	986068518
<b>Section Number :</b>	2
<b>Section type :</b>	Online
<b>Number of Questions :</b>	100
<b>Number of Questions to be attempted :</b>	75
<b>Section Marks :</b>	75
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	986068591
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 51 Is Question Mandatory : No Option Orientation : Vertical**

Coronaviruses are which kind of viruses?

**Options :**

1. ✘ dsDNA viruses
2. ✘ ssDNA viruses
3. ✘ dsRNA viruses
4. ✔ ssRNA viruses

**Question Number : 52 Is Question Mandatory : No Option Orientation : Vertical**

Cold sterilization uses which of the following rays:

**Options :**

1. ✔ Gamma rays
2. ✘ X-rays
3. ✘ Infrared rays
4. ✘ Autoclave

**Question Number : 53 Is Question Mandatory : No Option Orientation : Vertical**

The causative agent of Kala-azar is:

**Options :**

1. ✔ Leishmania
2. ✘ Trypanosoma
3. ✘ Ascaris
4. ✘ Crytosporidium

**Question Number : 54 Is Question Mandatory : No Option Orientation : Vertical**

*Salmonella typhi* is causative organism of:

**Options :**

1. ✘ Malta fever
2. ✘ Black fever
3. ✘ Dengue fever

4. ✓ Enteric fever

**Question Number : 55 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is a drug used to lower cholesterol levels in blood?

**Options :**

1. ✗ Amlodipine

2. ✗ Angiotensin

3. ✗ Adrenaline

4. ✓ Atorvastatin

**Question Number : 56 Is Question Mandatory : No Option Orientation : Vertical**

Acid fast staining can be used to demonstrate all of the following, EXCEPT:

**Options :**

1. ✗ Atypical mycobacteria

2. ✗ Cryptosporidium

3. ✓ Cryptococcus

4. ✗ Cyclospora

**Question Number : 57 Is Question Mandatory : No Option Orientation : Vertical**

Omeprazole is a drug often used to treat which of the following?

**Options :**

1. ✗ Protein deficiency

2. ✗ Pellagra

3. ✓ Peptic ulcer

4. ✗ Migraine

**Question Number : 58 Is Question Mandatory : No Option Orientation : Vertical**

Atropine is useful in poisoning due to:

**Options :**

1. ✗ Paraquat

2. ✘ Cyanide
3. ✘ Acetaminophen
4. ✔ Organophosphates

**Question Number : 59 Is Question Mandatory : No Option Orientation : Vertical**

Both the affinity of a drug for its receptor and its intrinsic activity are determined by its:

**Options :**

1. ✔ Chemical structure
2. ✘ Dissociation constant
3. ✘ Allosteric antagonism
4. ✘ Stereoisomeric properties

**Question Number : 60 Is Question Mandatory : No Option Orientation : Vertical**

The study of the biochemical, cellular, and physiological effects of drugs and their mechanisms of action is known as:

**Options :**

1. ✘ Pharmacokinetics
2. ✘ Pharmacometrics
3. ✔ Pharmacodynamics
4. ✘ Pharmacology

**Question Number : 61 Is Question Mandatory : No Option Orientation : Vertical**

A 36-year-old male, a known case of bronchial asthma has a tidal volume of 300 mL, dead space volume of 200 mL and respiratory rate of 20 breaths per minute. What would be the value of pulmonary ventilation in this patient?

**Options :**

1. ✘ 2 L
2. ✘ 4 L
3. ✘ 5 L
4. ✔ 6 L

**Question Number : 62 Is Question Mandatory : No Option Orientation : Vertical**

Cardiac muscle cannot be tetanized because of which of the following reason?

**Options :**

1. ✘ Sodium ion channel
2. ✔ Long absolute refractory period
3. ✘ Pacemaker activity
4. ✘ Presence of intercalated disc

**Question Number : 63 Is Question Mandatory : No Option Orientation : Vertical**

An action potential in a nerve:

**Options :**

1. ✘ is terminated by influx of  $\text{Na}^+$  excessive receptors
2. ✔ is terminated by efflux of  $\text{K}^+$
3. ✘ is initiated by efflux of  $\text{Na}^+$
4. ✘ is initiated by influx of  $\text{K}^+$

**Question Number : 64 Is Question Mandatory : No Option Orientation : Vertical**

Arneth count is used to count:

**Options :**

1. ✘ Dots in reticulocytes
2. ✘ Micronuclei
3. ✘ lobes of eosinophils
4. ✔ lobes of neutrophils

**Question Number : 65 Is Question Mandatory : No Option Orientation : Vertical**

Emulsification of fats is carried out by:

**Options :**

1. ✘ Bile pigments
2. ✔ Bile salts

3. ✘ HCI
4. ✘ Pancreatic juice.

**Question Number : 66 Is Question Mandatory : No Option Orientation : Vertical**

Line probe assay (LiPA) is based on:

**Options :**

1. ✔ Reverse hybridization technology
2. ✘ Hybridization technique
3. ✘ Amplification technique
4. ✘ Cell sorting

**Question Number : 67 Is Question Mandatory : No Option Orientation : Vertical**

Western blotting is the technique used for identification of:

**Options :**

1. ✘ DNA
2. ✘ RNA
3. ✔ Protein
4. ✘ Carbohydrate

**Question Number : 68 Is Question Mandatory : No Option Orientation : Vertical**

Weakness of hydrogen bonding between bases in sticky ends are stabilized by a process called as:

**Options :**

1. ✘ Reannealing
2. ✔ Ligation
3. ✘ Base-pairing
4. ✘ Annealing

**Question Number : 69 Is Question Mandatory : No Option Orientation : Vertical**

SSP-PCR is:

**Options :**

1. ✘ Single strand primer-polymerase chain reaction
2. ✘ Single strand probe-polymerase chain reaction
3. ✔ Sequence specific primer-polymerase chain reaction
4. ✘ Sequence specific probe-polymerase chain reaction

**Question Number : 70 Is Question Mandatory : No Option Orientation : Vertical**

The coding sequences of a gene are called:

**Options :**

1. ✘ Introns
2. ✔ Exons
3. ✘ Interferons
4. ✘ transposons

**Question Number : 71 Is Question Mandatory : No Option Orientation : Vertical**

Okazaki fragments are formed on:

**Options :**

1. ✘ Leading strand
2. ✔ Lagging strand
3. ✘ Parental strand
4. ✘ Not formed during DNA replication

**Question Number : 72 Is Question Mandatory : No Option Orientation : Vertical**

What is central dogma?

**Options :**

1. ✘ Flow of genetic information from DNA to protein to RNA
2. ✔ Flow of genetic information from DNA to RNA to protein
3. ✘ Flow of genetic information from RNA to DNA to protein
4. ✘ Flow of genetic information from RNA to protein to DNA

**Question Number : 73 Is Question Mandatory : No Option Orientation : Vertical**

In gene cloning, the term vector refers to:

**Options :**

1. ✘ The sticky ends of a DNA fragment
2. ✔ A plasmid used to transfer DNA into a living cell
3. ✘ The enzyme that cuts DNA at specific sites
4. ✘ A DNA probe used to identify a particular gene

**Question Number : 74 Is Question Mandatory : No Option Orientation : Vertical**

All of the following codons terminate protein biosynthesis EXCEPT:

**Options :**

1. ✘ UAA
2. ✘ UAG
3. ✘ UGA
4. ✔ UUA

**Question Number : 75 Is Question Mandatory : No Option Orientation : Vertical**

In normal form, DNA helix is?

**Options :**

1. ✔ Double strand, Right-handed structure
2. ✘ Double strand, Left-handed structure
3. ✘ Double strand, Straight structure
4. ✘ Double strand, Zig-zag structure

**Question Number : 76 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is the name of the human genetic disorder resulting from defects in nucleotide excision repair?

**Options :**

1. ✘ Hereditary nonpolyposis colorectal cancer (HNPCC)
2. ✔ Xeroderma pigmentosum (XP)
3. ✘ Lynch syndrome

#### 4. ✖ Diabetes

#### Question Number : 77 Is Question Mandatory : No Option Orientation : Vertical

What is the typical pattern for euchromatin in G banding?

Options :

1. ✔ Lightly stained due to GC rich content
2. ✖ Lightly stained due to AT rich content
3. ✖ Darkly stained due to GC rich content
4. ✖ Darkly stained due to AT rich content

#### Question Number : 78 Is Question Mandatory : No Option Orientation : Vertical

Coupling and repulsion are two aspects of a single phenomenon called:

Options :

1. ✖ Crossing over
2. ✖ Mutation
3. ✔ Linkage
4. ✖ Recombination

#### Question Number : 79 Is Question Mandatory : No Option Orientation : Vertical

A cow with red coat is crossed with a bull having white coat. Their offspring produced in F1 generation showed roan coat. This effect is produced due to juxtaposition of small patches of red and white colour. What can be assumed about the gene controlling coat colour in cattle?

Options :

1. ✖ The alleles of gene controlling coat colour show a perfect dominant recessive relationship
2. ✖ The alleles of gene controlling coat colour are incompletely dominant
3. ✔ The alleles of gene controlling coat colour are co-dominant
4. ✖ The alleles of gene controlling coat colour show epistasis

#### Question Number : 80 Is Question Mandatory : No Option Orientation : Vertical

Three copies of chromosome 21 means that a person has:

**Options :**

1. ✘ Patau syndrome
2. ✘ Klinefelter syndrome
3. ✔ Down syndrome
4. ✘ Edwards syndrome

**Question Number : 81 Is Question Mandatory : No Option Orientation : Vertical**

In four o'clock plants, the gene for red flower colour (R) is incompletely dominant over the gene for white flower colour (r), hence the plants heterozygous for flower colour (Rr) have pink flowers. What will be the ratio of off-springs in a cross between red flowers and pink flowers?

**Options :**

1. ✘ 75% red flowers, 25% pink flowers
2. ✘ All red flowers
3. ✔ 50% red flowers, 50% pink flowers
4. ✘ Red: pink: white :: 1: 2: 1

**Question Number : 82 Is Question Mandatory : No Option Orientation : Vertical**

The characters which appear in the first filial generation are called:

**Options :**

1. ✘ Recessive characters
2. ✔ Dominant characters
3. ✘ Holandric characters
4. ✘ Lethal characters

**Question Number : 83 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following characters was not chosen by Mendel?

**Options :**

1. ✘ Pod shape
2. ✘ Pod colour
3. ✘ Location of flower

4. ✓ Location of pod

**Question Number : 84 Is Question Mandatory : No Option Orientation : Vertical**

A complete set of chromosomes, which is inherited as a unit from one parent is called as:

**Options :**

1. ✗ Gamete
2. ✗ Genotype
3. ✗ Gene
4. ✓ Genome

**Question Number : 85 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is NOT an example of recessive autosomal disease?

**Options :**

1. ✓ Haemophilia
2. ✗ Cystic fibrosis
3. ✗ Phenylketonuria
4. ✗ Sickle cell anaemia

**Question Number : 86 Is Question Mandatory : No Option Orientation : Vertical**

The function of the centrosome is:

**Options :**

1. ✓ Formation of spindle fibres
2. ✗ Osmoregulation
3. ✗ Secretion
4. ✗ Protein synthesis

**Question Number : 87 Is Question Mandatory : No Option Orientation : Vertical**

Insulin & Glucagon are the hormones secreted by:

**Options :**

1. ✗ Pituitary gland

2. ✘ Adrenal gland
3. ✔ Pancreas
4. ✘ Thyroid gland

**Question Number : 88 Is Question Mandatory : No Option Orientation : Vertical**

Sweat is secreted by:

**Options :**

1. ✘ Endocrine glands
2. ✔ Eccrine glands
3. ✘ Holocrine glands
4. ✘ Mucous glands

**Question Number : 89 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is known as the pacemaker of heart?

**Options :**

1. ✘ AV node
2. ✘ Purkinje fibers
3. ✘ AV bundle
4. ✔ SA node

**Question Number : 90 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following connective tissue often serves as a support framework for epithelium?

**Options :**

1. ✔ Areolar tissue
2. ✘ Adipose tissue
3. ✘ Dense regular connective tissue
4. ✘ Dense irregular connective tissue

**Question Number : 91 Is Question Mandatory : No Option Orientation : Vertical**

A device in which large volume of living cells are cultured to get a specific product is called:

**Options :**

1. ✘ Thermocycler
2. ✘ Agitator
3. ✔ Bioreactor
4. ✘ Assimilator

**Question Number : 92 Is Question Mandatory : No Option Orientation : Vertical**

The sticky ends of a fragmented DNA molecule are made of:

**Options :**

1. ✘ Calcium salts
2. ✘ Endonuclease enzyme
3. ✔ Unpaired bases
4. ✘ Methyl groups

**Question Number : 93 Is Question Mandatory : No Option Orientation : Vertical**

Golden rice is yellow in colour due to the presence of:

**Options :**

1. ✘ Riboflavins
2. ✔ Beta-carotene
3. ✘ Vitamin B1
4. ✘ Complex genetic material

**Question Number : 94 Is Question Mandatory : No Option Orientation : Vertical**

Consider a 16-year-old person whose father (heterozygous) was stricken with Huntington's disease at age 39. Huntington's disease is an autosomal dominant disorder. What is the probability that the 16-year-old will also have this disease?

**Options :**

1. ✘ 25%
2. ✔ 50%
3. ✘ 75%

4. ✖ 100%

**Question Number : 95 Is Question Mandatory : No Option Orientation : Vertical**

In most species, mitochondrial DNA is passed down from:

**Options :**

1. ✖ Father
2. ✔ Mother
3. ✖ DNA
4. ✖ Both mother and father

**Question Number : 96 Is Question Mandatory : No Option Orientation : Vertical**

Insulin is produced by genetic engineering using:

**Options :**

1. ✖ *Saccharomyces*
2. ✔ *Escherichia coli*
3. ✖ *Rhizobium*
4. ✖ *Mycobacterium tuberculosis*

**Question Number : 97 Is Question Mandatory : No Option Orientation : Vertical**

The mRNA codon of valine is:

**Options :**

1. ✖ UGG
2. ✔ GUG
3. ✖ CCA
4. ✖ TTG

**Question Number : 98 Is Question Mandatory : No Option Orientation : Vertical**

Microinjection is a method used to:

**Options :**

1. ✖ Produce sticky ends of DNA

- ✘ Provide protection against pathogen
- ✘ Purify the DNA
- ✔ Inject recombinant DNA into the nucleus of an animal cell

**Question Number : 99 Is Question Mandatory : No Option Orientation : Vertical**

In recombinant DNA technology, the term vector refers to:

**Options :**

- ✘ The enzyme that cuts DNA into restriction fragments
- ✘ The sticky end of a DNA fragment
- ✔ A plasmid used to transfer DNA into a living cell
- ✘ A DNA fragment which carries only ori gene

**Question Number : 100 Is Question Mandatory : No Option Orientation : Vertical**

The term "Molecular scissors" refers to:

**Options :**

- ✘ Recombinant DNA
- ✔ Restriction enzymes
- ✘ Taq polymerase
- ✘ Palindromic nucleotide sequences

**Question Number : 101 Is Question Mandatory : No Option Orientation : Vertical**

Coenzyme A is a derivative of:

**Options :**

- ✘ Thiamine
- ✘ Riboflavin
- ✔ Panthothenate
- ✘ Niacin

**Question Number : 102 Is Question Mandatory : No Option Orientation : Vertical**

Molisch test is the test for:

**Options :**

1. ✓ Carbohydrates
2. ✗ Fats
3. ✗ Oils
4. ✗ Proteins

**Question Number : 103 Is Question Mandatory : No Option Orientation : Vertical**

The proteinaceous molecule that joins a non-protein prosthetic group to form a functional enzyme, is called:

**Options :**

1. ✓ Apoenzyme
2. ✗ Co-factor
3. ✗ Isoenzyme
4. ✗ Holoenzyme

**Question Number : 104 Is Question Mandatory : No Option Orientation : Vertical**

Adult human haemoglobin consists of:

**Options :**

1. ✗ Two subunits ( $\alpha$ ,  $\alpha$ )
2. ✗ Two subunits ( $\beta$ ,  $\beta$ )
3. ✓ Four subunits ( $2\alpha$ ,  $2\beta$ )
4. ✗ Four subunits ( $2\alpha$ ,  $2\gamma$ )

**Question Number : 105 Is Question Mandatory : No Option Orientation : Vertical**

Erythrocytes have this antioxidant which protects the integrity of the cell membrane from oxidative damage:

**Options :**

1. ✗ Ascorbic acid
2. ✗ Vitamin E
3. ✗ Hemoglobin

4. ✓ Glutathione

**Question Number : 106 Is Question Mandatory : No Option Orientation : Vertical**

Alpha- oxidation of fatty acids takes place in:

**Options :**

1. ✗ Golgi bodies
2. ✗ Mitochondria
3. ✓ Peroxisomes
4. ✗ Endoplasmic reticulum

**Question Number : 107 Is Question Mandatory : No Option Orientation : Vertical**

Lens protein is an example of:

**Options :**

1. ✗ Cross reacting foreign antigen
2. ✓ Sequestrated antigen
3. ✗ Molecular mimicry
4. ✗ Forbidden clone

**Question Number : 108 Is Question Mandatory : No Option Orientation : Vertical**

The process of killing all microorganisms along with their spores is:

**Options :**

1. ✗ Disinfection
2. ✓ Sterilization
3. ✗ Antisepsis
4. ✗ Sanitization

**Question Number : 109 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following hormone is secreted by alpha cells of pancreas?

**Options :**

1. ✗ Progesterone

2. ✘ Insulin
3. ✘ Calcitonin
4. ✔ Glucagon

**Question Number : 110 Is Question Mandatory : No Option Orientation : Vertical**

The breast milk secreted up to 2 weeks after delivery is called:

**Options :**

1. ✘ Mature milk
2. ✘ Hind milk
3. ✔ Transitional milk
4. ✘ Fore milk

**Question Number : 111 Is Question Mandatory : No Option Orientation : Vertical**

Device used to prevent tension on suture line after repair of cleft lip is:

**Options :**

1. ✘ Yogan's bow
2. ✘ Lamb's nipple
3. ✔ Logaan's bow
4. ✘ Neck collar

**Question Number : 112 Is Question Mandatory : No Option Orientation : Vertical**

Mittelschmerz pain is associated with:

**Options :**

1. ✘ Menstruation
2. ✔ Ovulation
3. ✘ Appendicitis
4. ✘ Dyspareunia

**Question Number : 113 Is Question Mandatory : No Option Orientation : Vertical**

DNA Sequencing 'depth' is also known by another term:

**Options :**

1. ✘ Amount
2. ✔ Coverage
3. ✘ Trend
4. ✘ Consensus

**Question Number : 114 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is a nucleotide sequence data base?

**Options :**

1. ✔ EMBL
2. ✘ SWISS PROT
3. ✘ PROSITE
4. ✘ TREMBL

**Question Number : 115 Is Question Mandatory : No Option Orientation : Vertical**

Frame shift mutation results from:

**Options :**

1. ✘ Substitution of at least three bases
2. ✔ Deletion of single base
3. ✘ Addition of a codon
4. ✘ Deletion of a codon

**Question Number : 116 Is Question Mandatory : No Option Orientation : Vertical**

BLAST uses a\_\_\_\_\_to find matching words, whereas FASTA identifies identical matching words using the\_\_\_\_\_.

**Options :**

1. ✔ Substitution matrix, Hashing procedure
2. ✘ Substitution matrix, Blocks
3. ✘ Hashing procedure, Substitution matrix
4. ✘ Ktups, Substitution matrix

**Question Number : 117 Is Question Mandatory : No Option Orientation : Vertical**

In hybridoma technology, B cells are fused with:

**Options :**

1. ✘ T cells
2. ✔ Myeloma cells
3. ✘ NK cells
4. ✘ Macrophages

**Question Number : 118 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is also called "suicide enzyme"?

**Options :**

1. ✘ DNA glycosylase
2. ✘ DNA photolyase
3. ✔ O<sup>6</sup> alkyl guanine transferase (ada)
4. ✘ Exonuclease

**Question Number : 119 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is not used as a vector in molecular cloning?

**Options :**

1. ✘ Plasmid
2. ✘ Cosmid
3. ✔ Hapten
4. ✘ Bacterial artificial chromosome

**Question Number : 120 Is Question Mandatory : No Option Orientation : Vertical**

An object that cannot be superimposed on its mirror image is known as:

**Options :**

1. ✔ chiral
2. ✘ achiral

3. ✘ Amphichiral

4. ✘ non-chiral

**Question Number : 121 Is Question Mandatory : No Option Orientation : Vertical**

RNAs that catalyse biological reactions such as self-splicing introns, are known as

**Options :**

1. ✔ ribozymes

2. ✘ micro RNAs

3. ✘ Spliceozymes

4. ✘ small nucleolar RNAs

**Question Number : 122 Is Question Mandatory : No Option Orientation : Vertical**

In SDS-PAGE the movement of proteins is from:

**Options :**

1. ✔ Cathode to anode

2. ✘ Anode to cathode

3. ✘ Neutral to anode

4. ✘ Neutral to cathode

**Question Number : 123 Is Question Mandatory : No Option Orientation : Vertical**

Which one of the following is an example of artificial passive immunization?

**Options :**

1. ✘ In utero infection

2. ✘ Injection of adjuvant alone

3. ✘ Transplacental passage of antibody

4. ✔ Injection of pooled human gamma globulin

**Question Number : 124 Is Question Mandatory : No Option Orientation : Vertical**

Phagocytosis enhanced by coating the surface of antigen is called:

**Options :**

1. ✓ Oponization
2. ✗ Chemotaxis
3. ✗ Decoding
4. ✗ Complement fixation

**Question Number : 125 Is Question Mandatory : No Option Orientation : Vertical**

The following constitutes approximately 75% of total immunoglobulins in humans:

**Options :**

1. ✓ IgG
2. ✗ IgM
3. ✗ IgE
4. ✗ IgA

**Question Number : 126 Is Question Mandatory : No Option Orientation : Vertical**

Granulomatous inflammation is an example of which type of hypersensitivity?

**Options :**

1. ✗ Type I
2. ✗ Type II
3. ✗ Type III
4. ✓ Type IV

**Question Number : 127 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is not an intracellular TLR (toll like receptor)?

**Options :**

1. ✓ TLR 2
2. ✗ TLR 3
3. ✗ TLR 7
4. ✗ TLR 9

**Question Number : 128 Is Question Mandatory : No Option Orientation : Vertical**

All are secondary lymphoid organs, Except:

**Options :**

1. ✘ Spleen
2. ✘ Lymph nodes
3. ✔ Thymus
4. ✘ Mucosal associated lymphoid tissue

**Question Number : 129 Is Question Mandatory : No Option Orientation : Vertical**

A molecule that reacts with specific antibody but is not immunogenic by itself is called:

**Options :**

1. ✘ Carrier
2. ✘ Antigen
3. ✔ Hapten
4. ✘ Immunogen

**Question Number : 130 Is Question Mandatory : No Option Orientation : Vertical**

Which class of antibody usually provides defence against helminthic infections?

**Options :**

1. ✘ IgA
2. ✘ IgG
3. ✔ IgE
4. ✘ IgM

**Question Number : 131 Is Question Mandatory : No Option Orientation : Vertical**

Ladybird beetle is used as biological control for:

**Options :**

1. ✘ Mosquitoes
2. ✔ Aphids
3. ✘ Sparrows
4. ✘ Cockroaches

**Question Number : 132 Is Question Mandatory : No Option Orientation : Vertical**

The vertebrae of birds are characteristically:

**Options :**

1. ✘ Acoelous
2. ✔ Heterocoelous
3. ✘ Opisthocoelus
4. ✘ Amphicoelous

**Question Number : 133 Is Question Mandatory : No Option Orientation : Vertical**

The study of molluscs is called:

**Options :**

1. ✘ Osteology
2. ✘ Neurology
3. ✘ Conchology
4. ✔ Malacology

**Question Number : 134 Is Question Mandatory : No Option Orientation : Vertical**

Proboscis glands are the excretory organ of:

**Options :**

1. ✔ Hemichordate
2. ✘ Urochordata
3. ✘ Cephalochordate
4. ✘ Chordata

**Question Number : 135 Is Question Mandatory : No Option Orientation : Vertical**

In camel, the hump is mainly made up of which tissue?

**Options :**

1. ✔ Adipose tissue
2. ✘ Areolar tissue

3. ✘ Muscular

4. ✘ Skeletal

**Question Number : 136 Is Question Mandatory : No Option Orientation : Vertical**

Maximum ozone layer is found in which layer of atmosphere?

**Options :**

1. ✘ Troposphere

2. ✔ Stratosphere

3. ✘ Mesosphere

4. ✘ Thermosphere

**Question Number : 137 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is a free-living nitrogen fixing bacterium?

**Options :**

1. ✔ *Clostridium*

2. ✘ *Nitrosomonas*

3. ✘ *Rhizobium*

4. ✘ *Nitrobacter*

**Question Number : 138 Is Question Mandatory : No Option Orientation : Vertical**

Turbidity in water is measured with:

**Options :**

1. ✘ Spectrophotometer

2. ✔ Nephelometer

3. ✘ Colorimeter

4. ✘ pH meter

**Question Number : 139 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following relates to 'sustainable development'?

**Options :**

1. ✓ Brundtland commission Report
2. ✗ Montreal Protocol
3. ✗ Paris Agreement
4. ✗ Kyoto Protocol

**Question Number : 140 Is Question Mandatory : No Option Orientation : Vertical**

Which environmental problem is the result of chemical reactions in the atmosphere that involves sulphur dioxide?

**Options :**

1. ✗ Melting of glaciers
2. ✗ Deforestation
3. ✓ Acid Rain
4. ✗ Global Warming

**Question Number : 141 Is Question Mandatory : No Option Orientation : Vertical**

Bicollateral vascular bundles are found in:

**Options :**

1. ✓ Cucurbitaceae
2. ✗ Fabaceae
3. ✗ Solanaceae
4. ✗ Poaceae

**Question Number : 142 Is Question Mandatory : No Option Orientation : Vertical**

Continuity of cytoplasm from cell to cell is maintained through cytoplasmic connections in plants called:

**Options :**

1. ✗ Endoplasmic reticulum (ER)
2. ✗ Tight junction
3. ✗ Gap junction
4. ✓ Plasmodesmata

**Question Number : 143 Is Question Mandatory : No Option Orientation : Vertical**

The enzyme RuBisCO is involved in which part of photosynthesis:

**Options :**

1. ✘ Light dependent reaction
2. ✘ Z scheme
3. ✔ Calvin cycle
4. ✘ C4 Carbon fixation

**Question Number : 144 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is a chill-tolerant plant:

**Options :**

1. ✘ Coleus
2. ✘ Dieffenbachia
3. ✘ Croton
4. ✔ Arabidopsis

**Question Number : 145 Is Question Mandatory : No Option Orientation : Vertical**

Which tissue conducts food in plants?

**Options :**

1. ✘ Xylem
2. ✔ Phloem
3. ✘ Parenchyma
4. ✘ Sclereids

**Question Number : 146 Is Question Mandatory : No Option Orientation : Vertical**

Silk is harvested from which of the following?

**Options :**

1. ✘ *Chironomus*
2. ✘ *Vespula vulgaris*

3. ✓ *Bombyx mori*

4. ✗ *Drosophila melanogaster*

**Question Number : 147 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following insect can be used for production of formic acid?

**Options :**

1. ✗ Bed bugs

2. ✗ Crickets

3. ✗ Locusts

4. ✓ Red ants

**Question Number : 148 Is Question Mandatory : No Option Orientation : Vertical**

Which of the following is not a ruminant?

**Options :**

1. ✗ Cow

2. ✗ Goat

3. ✗ Giraffe

4. ✓ Pig

**Question Number : 149 Is Question Mandatory : No Option Orientation : Vertical**

Ranikhet disease is a viral disease of:

**Options :**

1. ✓ Poultry

2. ✗ Bovine

3. ✗ Equine

4. ✗ Ovine

**Question Number : 150 Is Question Mandatory : No Option Orientation : Vertical**

Frogs have the ability to change the colour to hide them from their enemies. This protective coloration is known as:

**Options :**

1. ✘ Aestivation
2. ✘ Concealment
3. ✔ Mimicry
4. ✘ Hibernation