

# Samyak

An Institute For Civil Services

## RAS - 23 MAINS TEST SERIES

सिद्धि-II - 006

Time : 3 Hours

Maximum Marks : 200

सामान्य विज्ञान एवं प्रौद्योगिकी  
General Science & Technology

### Paper - II<sup>nd</sup> Unit - II

Name :		MARKS	
Enroll. No.:	Part	Attempted Questions	Marks Obtained
Date of Birth :	Part - A	25	23
Medium : ENGLISH	Part - B	16	40
E-mail :	Part - C	07	33
Exam Date : 10/03/2024	Total		96
Inviligator's Signature :			200
ECN:	RCN: ✓	Hindi: 13 1/2	English: 09


### अनुदेश (Instructions)

- परीक्षा शुरू होने से पहले पुस्तिका को जाँच लें।  
Please check the booklet before commencement of the exam.
- अंक योजना प्रत्येक खंड के प्रारम्भ में दी गई है।  
The marking scheme is given at the start of every section.
- अभ्यर्थियों को उत्तर निर्धारित शब्द सीमा से अधिक नहीं लिखना चाहिए, इसका उल्लंघन करने पर अंक काटे जा सकते हैं।  
Candidates should not write more than the prescribed word limit in answers, violating this may result in deduction of marks.
- अभ्यर्थियों को निर्देशित किया जाता है कि किसी भी प्रश्न का उत्तर प्रश्नोत्तर पुस्तिका में निर्धारित स्थान पर ही लिखें। बॉर्डर लाईन से बाहर प्रत्युत्तर नहीं लिखें। बॉर्डर लाईन के बाहर लिखे गये उत्तर को जाँचा नहीं जायेगा।  
Candidates are directed to write answers only in the prescribed space of booklet. They should not write answer outside the border line. Answer written outside the border line will not be checked.

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Test Series. Helpline & Whatsapp - 9414988860, Email Id - samyakttestseries@gmail.com

	REVIEW PARAMETERS	SCALE			
		Good	Above Average	Average	Below Average
1.	DOES THE ANSWER ADDRESS THE DEMAND OF THE QUESTION?		✓		
a.	Answer Relevancy		✓		
b.	Answer Enrichment points like use of: · Key Terms/ Subject Vocabulary. Use of Commission/ report/ government publication/ judgements, etc.  Association with the Current Affairs and use of examples to explain the concept and idea		✓ ✓ ✓		
2.	HOW WELL IS THE ANSWER PRESENTED?		✓		
a.	Structure - Intro, Body, Conclusion		✓		
b.	Presentation – Using Subheadings/ points/ highlighting/ flowcharts/ diagrams/ maps		✓		
c.	Language & Grammar		✓		
d.	Word limit		✓		

Detailed Comments / Feedback / Suggestions for Improvement  
विस्तृत टिप्पणियाँ/फीडबैक/सुधार के लिए सुझाव :-

1. You are well aware about presentation, & structuring
2. of answer and same has been endorsed
3. throughout the test, plz maintain status quo,
- 4.
5. please focus on paper IV, (on English portion)
6. Time management is good.
7. You have great potential to excel, so,
8. please stay tuned & keep on augmenting
9. on content / content / value addition.
- 10.
11. Best of luck 



Part - A

Note : Answer the following questions in 15 words. Each question carries 2 marks.

नोट : निम्न प्रश्नों के उत्तर 15 शब्दों में दीजिए। प्रत्येक प्रश्न 2 अंक का है।

1. 'ग्लोबल पार्टनरशिप ऑन आर्टिफिशियल इंटेलिजेंस' पर टिप्पणी लिखिए।  
Write note on 'Global Partnership on Artificial Intelligence'.

International ggp formed on June 15, 2020

⑥ The partnership was launched by India and India chaired its 2023 Summit in Delhi. The Delhi Declaration stressed on the development of global frameworks on AI that takes care of research, ethical and social issues.

purpose :- To Guide the responsible development & use of AI while ensuring human centred development & AI

2. 'द्विनिषेचन'-परिभाषित कीजिए।  
Define 'Double fertilization'.

The fertilization by male and female gametes happens twice.

Please search.

more about angiosperms plant for conceptual clarity

(Write above this line only)

3. हाल ही में सुर्खियों में रहा 'आर्कटिक भेड़िया'।  
Recently seen in the news, 'Arctic wolf'.

Female clone named "Maja" by using skin cell of Arctic wolf (female)

It is an organism that is found in whose remains have been found in the Arctic Snow.

(Write above this line only)



4. वायरलेस फिडेलिटी, लाइट फिडेलिटी से किस प्रकार भिन्न है?  
How is wireless fidelity different from light fidelity?

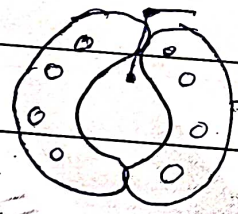
Both are technologies of communication and data transfer.

Wi-fi	Li-fi
1) Transmission through radio waves	1) Transmission through light waves
2) Can occur in day or night	2) Only during light hours
3) Wider range	3) Shorter range
Speed is slow - Can't pass through solid	Relatively faster - Can't pass through solid

(Write above this line only)

5. 'रंजीय वाष्पीकरण' पर टिप्पणी लिखिए।  
Write note on 'Stomatal Transpiration'.

It is the evaporation of water from stomata when plant is in sunlight through the form of water vapour.



It happens in the dew form. So most of transpiration happens with stomata.

(Write above this line only)

6. एन्जाइमों की उत्प्रेरण क्रियाशीलता को प्रभावित करने वाले कारकों के नाम लिखिए।  
Name the factors affecting the catalytic activity of enzymes.

- 1) Reactivity of catalyst with enzyme
- 2) Amount of catalyst introduced

11  
2

Temp, pH  
Concentration of substrate  
Enzyme concentration

(Write above this line only)



7. नाइट्रोजन स्थिरीकरण में सहायक सूक्ष्मजीवों के नाम लिखिए।  
Write the names of microorganisms helpful in nitrogen fixation.

1) Azotobacter

2) Rhizobium

3) Azospirillum

4) Clostridium

phase of the demand & word limit also

(Write above this line only)

8. भारत में सुपर कम्प्यूटर के विकास में संलग्न किन्हीं चार संस्थाओं के नाम लिखिए।  
Write the names of any four organizations involved in the development of supercomputers in India.

1) Department of Science and Technology

2) Council of Scientific and Industrial Research

3) Indian Institutes of Technology

4) Indian Institute of Science, Pune

NAL  
C-DAC  
ANURAG  
SARC  
E-DU  
ERT

(Write above this line only)

9. 'क्वाशिओरकोर रोग' पर टिप्पणी लिखिए।  
Write note on 'Kwashiorkor disease'.

It is a protein-deficiency disease when human <sup>especially in child</sup>

reduces his appetite and ~~face~~ malnutrition.

Stomach comes out, eyes bulge out, and there is improper growth of hands and legs

(Write above this line only)



10. अग्र चवर्णक दाँत व रदनक दाँतों में दो अन्तर उल्लेखित कीजिए।  
Mention two differences between premolar teeth and canine teeth.

### Premolar Teeth

### Canine

1) Used for chewing and mashing of food

1) Used for cutting of hard food items like meat

2) Total - 8

Total - 4

emerges at the age of 10-11 yrs

at 16-20 months

(Write above this line only)

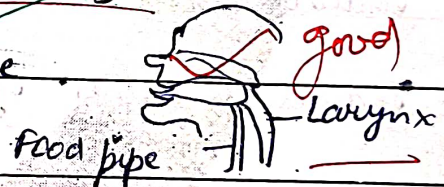
11. लार्यन्क्स अथवा स्वरयंत्र  
Larynx

— made up of - raw type of cartilage.  
Sp. - structure rose box

It lies at the posterior of the mouth. It is divided into 3 types and helps in the production of sounds.

- 1) Nasopharynx - opening into nasal passage  
2) Oropharynx - opening into food pipe

It opens into wind pipe Pharynx.



(Write above this line only)

2. खाद्य विकिरण के जोखिम या सीमाएँ लिखिए।

Write the risks or limitations of food irradiation.

- 1) Exposed to harmful radiation

loss of nutrients

May cause cancers. *effort, not a limitation*

Changes taste as compared to natural food products

+ Can activate allergens  
evidence harmful by products

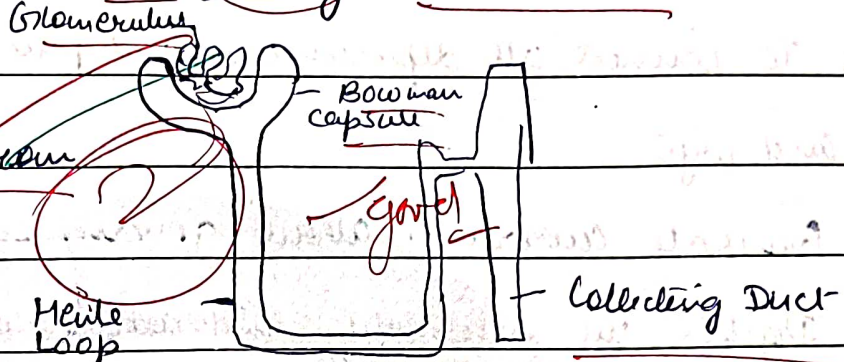
(Write above this line only)



13. 'बोमेन सम्पुट' पर टिप्पणी लिखिए।  
Write note on 'Bowman's Capsule'.

It is a cup like structure in nephron cells of kidney that holds the glomerulus cells.

It helps in filtration from glomerular cells.



(Write above this line only)

14. अंतरिक्ष वहनीयता  
Space sustainability

→ Space resources are used without harming the environment or future generation

The concept is based on the principle that space must be equally accessible to all and we must transfer it in the same condition to our future generation as we have received it.

Eg: Reducing Kessler Syndrome

(Write above this line only)

15. यौगिक व मिश्रण में कोई दो अन्तर उल्लेखित कीजिए।  
Mention any two differences between compound and mixture.

Compound

Mixture

1) Formed by combination of 2 elements

2) Eg:  $H_2O$ ,  $NaOH$

• Element react to form new compound.

1) Formed by combining different compounds

2) Eg: Milk, Sugar solution

• do not form new compound

• variable

(Write above this line only)

• mixture is non variable  
- new substance show different properties  
• Show properties of parent materials



Act as a nodal agency for computerization.  
Implement policies

Est Cyber Security ; IT, Telecom mfg

16. सूचना प्रौद्योगिकी एवं संचार विभाग ( राजस्थान सरकार ) के प्रमुख कार्यों को लिखिए।  
Write the main functions of the Department of Information Technology and Communications (Government of Rajasthan).

- 1) To connect all departments and panchayats with RATSWAN and wifi
- 2) Generate awareness about government programs digitally
- 3) Digitise the accessibility and availability of government services
- 4) Operationalise Digital India Mission

(Write above this line only)

17. 'डटा स्थानीकरण' की अवधारणा को स्पष्ट कीजिए।  
Explain the concept of 'data localisation'.

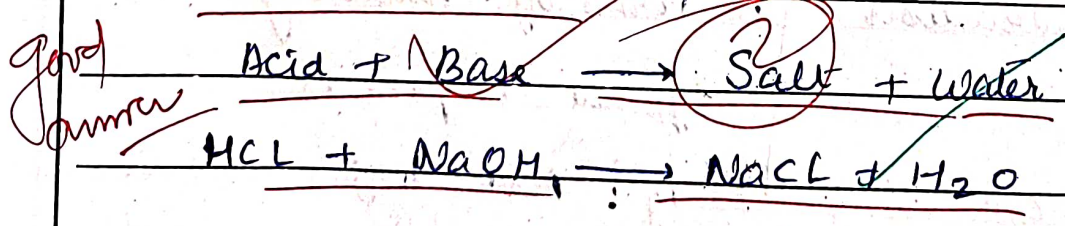
The concept means data of local people of a nation collected <sup>processed & stored</sup> by any foreign entity must be stored in the native nation.

eg: Data of Indians taken by Amazon must be stored in Indian servers.

(Write above this line only)

18. उदासीनीकरण अभिक्रिया  
Neutralization reaction

It is the combination of acid and base to form salt and water.



(Write above this line only)



19. योटा डी-1  
Yotta D-1

(6)

(Write above this line only)

20. चुम्बकीय फ्लक्स  
Magnetic flux

no. of magnetic lines of force passing through a plane placed in magnetic field denoted by  $\Phi$

It is the amount of magnetic lines coming out of a object placed in a magnetic field.

No. of magnetic lines  $\propto$  Magnetic flux.

(Write above this line only)

21. 'डार्क मैटर' पर टिप्पणी लिखिए।  
Write note on 'Dark Matter'.

Mysterious substance that make up most of universe; it is not interacting with light or other form of EM radiation which is not visible

Dark matter is found in space to naked eye. It forms 90% of the universe.

(Write above this line only)



22. वायरस व प्रोटोजोआ जनित किन्हीं चार-चार रोगों के नाम लिखिए।  
Write the names of any four diseases caused by viruses and protozoa.

<u>Virus</u>	<u>Protozoa</u>
1) AIDS ✓	1) Elephantiasis ✓
2) Common flu ✓	2) Malaria ✓
3) Covid-19 ✓	3) Tuberculosis ✓ <i>Bacterial</i>
4) Polio ✓	4) Filariasis ✓

(Write above this line only)

*p. Dysentery, Kala-Ajen*

23. पलायन वेग  
Escape velocity

The velocity required by an object to escape the gravitational field of any planet.

Earth  $v_e = 11.2 \text{ km/s}$

$$v_e = \sqrt{\frac{2Gm}{R}}$$

(Write above this line only)

24. क्लासिकल कम्प्यूटर व क्वांटम कम्प्यूटर में मूलभूत अन्तर लिखिए।  
Write the fundamental differences between classical computer and quantum computer.

<u>Classical Computers</u>	<u>Quantum Computers</u>
1) Follow laws of classical physics	1) Follow laws of quantum physics
2) Slower	2) Faster
3) Values in digital and analog form	3) Values based on qubits

(Write above this line only)

process on binary system. on qubit.

• Bit work independently

• Qubits work simultaneously



25. कैश मेमोरी  
Cache memory

*please read more about for conceptual clarity*

The temporary memory occupied by cache cookies is cache memory. It is of no use and slows down the computer by taking unnecessary space. Hence, it must be deleted from time to time.

(Write above this line only)

**Part - B**

Note: Answer the following questions in 50 words. Each question carries 5 marks.

नोट : निम्न प्रश्नों के उत्तर 50 शब्दों में दीजिए। प्रत्येक प्रश्न 5 अंक का है।

1. तम्बाकू में पाए जाने वाले एल्केलॉइड का नाम बताइये व तम्बाकू सेवन से मानव स्वास्थ्य पर पड़ने वाले दुष्प्रभावों को लिखिए।

Name the alkaloids found in tobacco and write the ill effects of tobacco consumption on human health.

Tobacco contains alkaloids like nicotine (98%),

nicotinesamine etc

**Addictive**

Tobacco addictive

Smoker and one is not able to stop its consumption

Poisoning for liver

Emphysema - damage of alveolar walls of lungs

Dried and black lips

All effects of Tobacco on Human Health

Increases CO<sub>2</sub> content in blood and reduces O<sub>2</sub> for ATP production

As Carcinogen

Cancer of mouth (Gulka) and lungs (inhalng cigarette)

Hair loss in cancer therapies and immunity is weakened

afect development of foetus

**Way Forward** : Institutionalising Rehabilitative centers

Reduce peer-pressure in schools and colleges



2. हाल ही में सुर्खियों में रही मेटावर्स की अवधारणा को स्पष्ट करते हुए इसके अनुप्रयोगों को लिखिए।  
Explain the concept of Metaverse which was in the news recently and write its applications.

Metaverse is a digital or virtual world where people can interact with each other and digital objects in a shared online space. It provides immersive multi-user experience.

Applications: 1) Use of Augmented and Virtual Reality

2) Gaming: Enhanced graphics in 3D mode and stores

3) Retail: People can put on clothes, virtually

4) Education: Study reproductive, excretory, circulatory systems in 3D models

5) Tourism: 360° virtual tours of monuments and museums

6) Healthcare: Telemedicine and teleconsultations with doctor.

(Write above this line only)

3. 'परासरण' को परिभाषित करते हुए परासरण का महत्व बताइये।  
Define 'osmosis' and explain the importance of osmosis.

Osmosis is the process of movement of water and liquids from region of high concentration to region of low concentration through semi-permeable barrier.

Importance of Osmosis:

1) Plants: Stomatal openings and closings and regulated by movement of water in guard cells

Guard cell  
Stomata pore

2) Animals: Transport and filtration of

vitamins, minerals, nutrients in nephron in kidneys.

3) Industrial: Filtration of impurities from solution

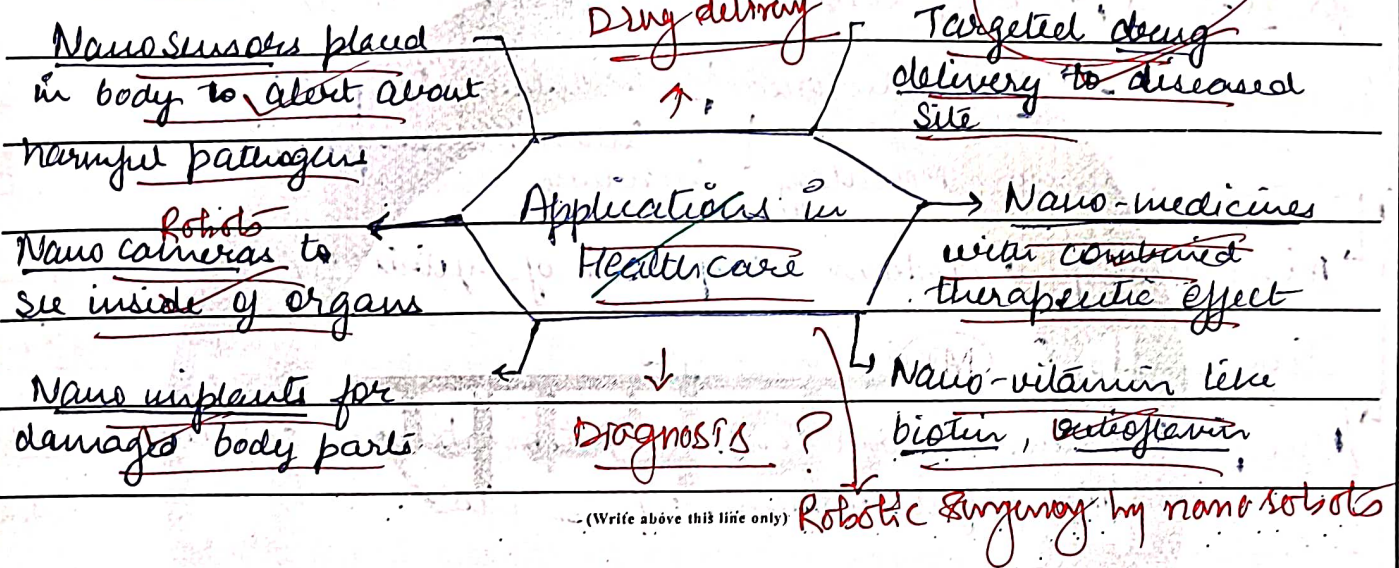
4) Domestic: Water purification by reverse osmosis

(Write above this line only)



4. नैनो तकनीक अवधारणा को स्पष्ट करते हुए स्वास्थ्य के क्षेत्र में इस तकनीक के अनुप्रयोगों को लिखिए।  
Explaining the concept of nanotechnology, write the applications of this technology in the field of healthcare.

*Inspired by Richard Feynman*  
*Proposed by RASO Tanoguchi*  
Nanotechnology is an advanced technology using behaviour of nanoparticles at the size of  $10^9$  m. Nano-particles are created using top-down cutting or bottom-up slicing method.



5. पादपों के लिए आवश्यक वृहत् व सूक्ष्म पोषक तत्वों में मूलभूत अन्तर लिखिए।  
Write the basic difference between macro and micro nutrients required by plants.

Both macro and micro nutrients are essential for the growth, repair and healthy functioning of plants.

Macro Nutrients	Micro-Nutrients
1) Required in large quantities	1) Required in minor quantities
2) Structural and functional importance for plants	2) Act as catalysts and enzymes in various plant processes.
3) Occur in soil abundantly	3) Maybe missing in soil
4) Eg: Calcium, Nitrogen, Magnesium, Carbon, Lead	4) Eg: Selenium, Zinc, Boron

Total 9 or number

(Write above this line only)

8 or number

Called primary nutrients

Secondary nutrients



6. हाल ही में सुर्खियों में रहा 'राष्ट्रीय क्वांटम मिशन' पर प्रकाश डालिए।  
Throw light on 'National Quantum Mission' which was in the news recently.

Quantum technology is based on the principles of quantum

mechanics based on superposition and entanglement. The

Mission is launched by Department of Science and Technology

for 2023-31, making India the 7<sup>th</sup> nation to do so.

Features of Mission: 14 thematic areas - Quantum Computing, Quantum Metrology, Quantum Materials, Quantum Computation

Aim: Develop quantum computers of qubits 50-100 in

5 yrs and 50-2000 in 8 yrs *Emergency R & D - create instant ecosystem - accelerate quantum led eco growth*

Focus - Quantum secured communication between satellites  
Quantum Key distribution between cities. (Write above this line only)

7. भारतीय अंतरिक्ष अनुसंधान संगठन द्वारा जारी 'भारतीय अंतरिक्ष नीति-2023' के उद्देश्यों को लिखिए।  
Write the objectives of 'Indian Space Policy-2023' issued by the Indian Space Research Organisation.

Indian Space Policy 2023 was launched in July 2023 by Department

Objectives of Policy: - 1) To make India leading power in

space based programmes and applications

2) Foster scientific temper regarding space technology among  
students in school, UG and PG levels

3) Use space technology for development of socio-economically  
weaker sections of society

4) Conduct meteorological, observational activities

5) Enhance and broad base space based research

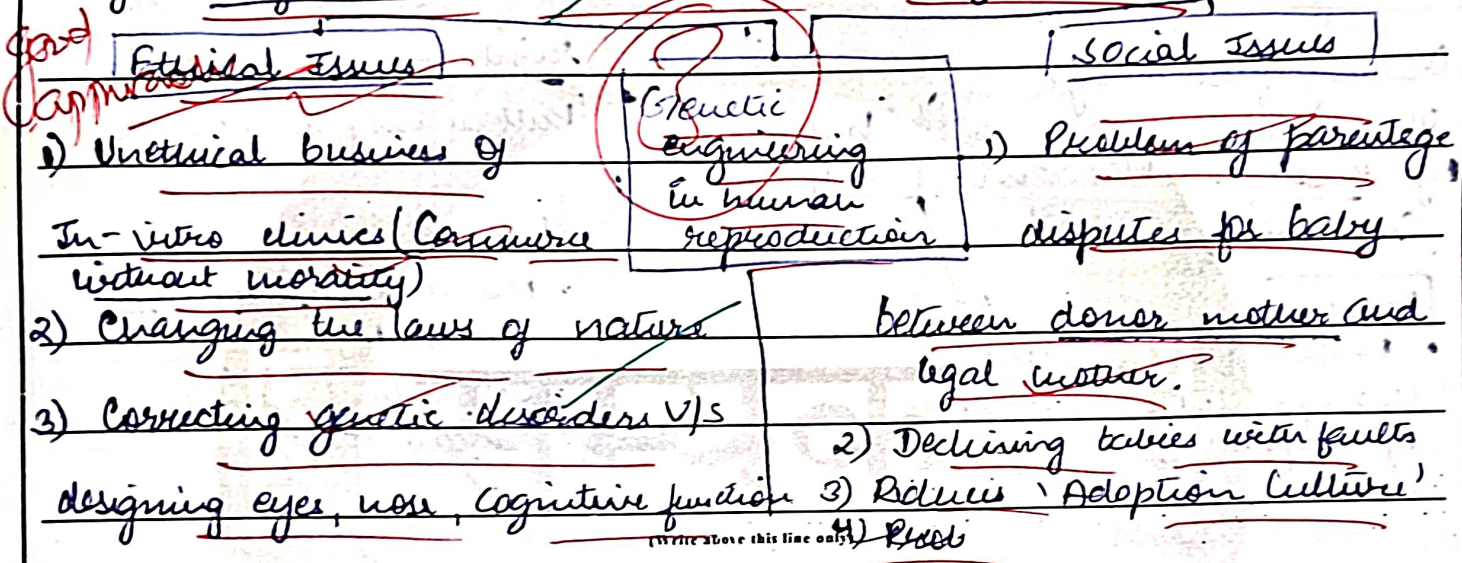
6) Create a stable & permissive regulatory framework  
7) promote space as a growth driver



8. "आनुवांशिकी अभियांत्रिकी ने मानव प्रजनन के सन्दर्भ में नैतिक व सामाजिक मुद्दों को जन्म दिया है।" उक्त कथन के पक्ष में अपना मत प्रदान करें।  
 "Genetic engineering has given rise to ethical and social issues in the context of human reproduction."  
 Provide your opinion in favor of the above statement.

Genetic engineering is the technique of altering genes using CRISPR-CAS 9 technique and adding genes with desired characters.

Eg: Designer babies, BT-cotton, Transgenic crops.



9. रक्त में पाई जाने वाली रक्त कोशिकाओं के नाम लिखते हुए उन पर संक्षिप्त टिप्पणी लिखिए।  
 Write the names of blood cells found in blood and write short note on them.

Blood is formed of plasma (55%) and some cells like :-

Blood Cells		
Red Blood Cells (RBC)	White Blood Cells	Platelets
<ul style="list-style-type: none"> <li>Red in colour due to iron rich pigment called haemoglobin.</li> </ul>	<ul style="list-style-type: none"> <li>Colorless because no pigment.</li> </ul>	<ul style="list-style-type: none"> <li>They are used when body gets some injury.</li> </ul>
<ul style="list-style-type: none"> <li>Concave in shape.</li> <li>Without nucleus.</li> </ul>	<ul style="list-style-type: none"> <li>Lesser in number than RBC.</li> </ul>	<ul style="list-style-type: none"> <li>Fibrinogen proteins helps to form blood clots at injured site.</li> </ul>
<ul style="list-style-type: none"> <li>Carries oxygen and CO<sub>2</sub> between heart, lungs and various organs.</li> </ul>	<ul style="list-style-type: none"> <li>Used in body's defense mechanism through B and T lymphocytes.</li> </ul>	

please specify life span. SAMYAK IAS | RAS - JAIPUR - 9875170111



10. डीपफेक की अवधारणा को स्पष्ट करते हुए इसके कारण उत्पन्न होने वाली चुनौतियों को लिखिए।  
 Explaining the concept of deepfake, write the challenges arising due to it.

Deepfake is technology of creating false images, videos, audios of someone using Artificial Intelligence such that it is difficult

to differentiate reality from fake.

Social <sup>amusement</sup> <sup>father & SC card</sup>  
 • Creating false image of a person  
 Eg. Rashmika Mandana controversy

Challenges of Deepfake

Political  
 • Against fundamental right to privacy u/AI9  
 (Puttaswamy judgement)

Ethical

• AI as a double edged sword technology  
 • Identity theft of individuals

Issues

• Fosters fake news  
 • Changes election narratives  
 Eg. deepfake of Modi

(Write above this line only)

11. विद्युत प्रतिरोध को परिभाषित करते हुए प्रतिरोधों के संयोजन पर प्रकाश डालिए।  
 Define electrical resistance and throw light on the combination of resistances.

Electrical Resistance is represented by the unit of ohm ( $\Omega$ ).  
 It is the power of objects to resist the flow of electric current.

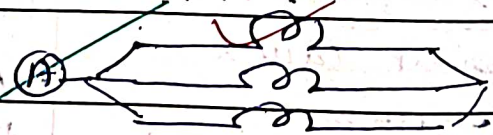
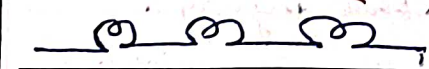
Series

Parallel

1) Objects are connected in the same line

Combinations of Resistances

1) Objects are connected in parallel lines



2) Same amount of current flow in all objects  
 $R_2, R_1, R_4, R_3$

2) Different amount of current flows

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

3) Voltage differs for each object

3) Voltage remains same across each line

(Write above this line only)



12. स्वतः उत्प्रेरक को सोदाहरण परिभाषित करें तथा उत्प्रेरकों के सामान्य गुणों/विशेषताओं को लिखिए।  
Define autocatalyst with example and write the general properties/characteristics of catalysts.

Autocatalyst are substances that makes the reaction faster on their own.

Characteristics of catalysts:

- 1) They are added to show effect in small quantities
- 2) Speeds up chemical reactions.
- 3) Organic or inorganic elements

phone full the demand of wood board

(Write above this line only)

13. कार्बन के क्रिस्टलीय अपरूपों का नाम लिखते हुए उनके अनुप्रयोगों को लिखिए।  
Name the crystalline allotropes of carbon and write their applications.

Allotropes of carbon show different physical properties as per the arrangement of carbon atoms.

Crystalline Allotropes of Carbon

Diamond

Buckminsterfullerene Graphite

- |                            |                            |
|----------------------------|----------------------------|
| 1) Hardest substance known | 1) Football like structure |
| 2) In jewellery making     | 2) with C-60 configuration |
| 3) Glass cutting industry  | 3) Used in nanotechnology  |
|                            | 3) High in strength        |

phone full diamond of wood board explanation

(Write above this line only)



14. निम्न पर टिप्पणी लिखिए। Write comment on the following.

1. वनस्पति कीटनाशक/Vegetable insecticide
2. कृत्रिम मधुरक/Artificial Sweeteners

1) Vegetable insecticides are substances used to kill insects on plants and crops. They can be genetically modified to kill specific insects of a crop.

Eg: DDT, Endosulfan

2) Artificial sweeteners are products giving sweet taste to eateries and are produced chemically like natural sugars.

Eg Sacharin (500 times more sweet)

↳ Alitame, Stevia

(Write above this line only)

15. 'भारत 6जी मिशन' के उद्देश्य लिखते हुए इसके समक्ष आने वाली चुनौतियों को लिखिए।

While writing the objectives of 'India 6G Mission', write the challenges facing it.

India 6G Mission <sup>(2023-30)</sup> aims to make India a global supplier of Intellectual property products, provide faster telecom solutions and incentivise research in competitive sectors for 6G deployment.

Challenges facing 6G Mission:

1) Infrastructural: Required no. of telecom towers, optical fibre connectivity to 2.25 lakh gram panchayats not achieved.

2) Governance: Spectrum allocation of 6G in transparent manner.

3) Regional inequality: in 6G deployment to only few urban centres.

4) Economic: High cost for advanced technology while India's priority is food security.

(Write above this line only)



16. गगनयान मिशन से भारत को होने वाले सम्भावित लाभों को लिखते हुए इसके समक्ष आने वाली चुनौतियाँ बताइये।  
While writing down the possible benefits to India from the Gaganyaan Mission, tell the challenges faced by it.

Gaganyaan Mission is India's 1<sup>st</sup> human space flight mission  
to be launched by 2024 in GEO orbit through GSLV MK III

Benefits

new extended to 2025

Challenges

- 1) International: India enters a premium league of nations with space prowess
- 2) Research on human physiology in space environment
- 3) Foster space based tourism
- 4) Makes India superpower

- 1) Survival of humans in challenging gravity-less space environment
- 2) Technical difficulties of mission in re-entry of astronauts
- 3) High cost of mission
- 4) Less time in space for research

(Write above this line only)





**Part - C**

Note : Answer the following questions in 100 words. Each question carries 10 marks.

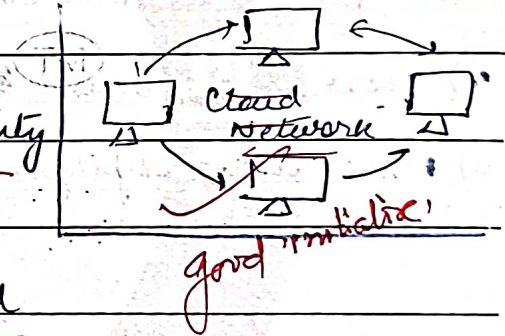
नोट : निम्न प्रश्नों के उत्तर 100 शब्दों में दीजिए। प्रत्येक प्रश्न 10 अंक का है।

1. क्लाउड कम्प्यूटिंग की अवधारणा को स्पष्ट करते हुए इसकी प्रमुख विशेषताओं को बताइये तथा क्लाउड कम्प्यूटिंग के सकारात्मक व नकारात्मक पक्षों को भी उल्लेखित कीजिए।  
Explain the concept of Cloud Computing and explain its main characteristics and also mention the positive and negative aspects of Cloud Computing.

Cloud Computing is a technique of computer related services that are available on a common platform for users. Eg: SaaS, PaaS where software developers can access various software on cloud.

Characteristics :- Sharing of resources (Software, hardware)

- 2) Interlinked network of computers
- 3) Common pool of resources for community benefit
- 4) Economics of scale of IT operations



Good  
supplement  
with  
diminishing  
of  
diminution

- 5) Public good in the virtual world
- 6) Need of internet connection to access cloud

Positive Aspects

Negative Aspects

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1) Economical as cost of storage and maintenance reduces.</li> <li>2) Various types of services like SaaS, PaaS, IaaS for software, platform and infrastructure</li> <li>3) Data storage requirement decrease</li> </ol> | <ol style="list-style-type: none"> <li>1) Problem in cloud can halt operations of all other computers</li> <li>2) Cyber security breaches through hacking cloud network</li> <li>3) Sensitive data can't be shared publicly</li> </ol> |
|---|--|

Hence, cloud computing will help in 4<sup>th</sup> industrial revolution with its revolutionary mechanism. (Write above this line only)



2. मानव नेत्र के प्रमुख दोषों पर सविस्तर लेख लिखिए।  
Write a detailed article on the major defects of the human eye.

Human eye is an organ of 2 pairs of eye that provides the ability of vision to organisms.

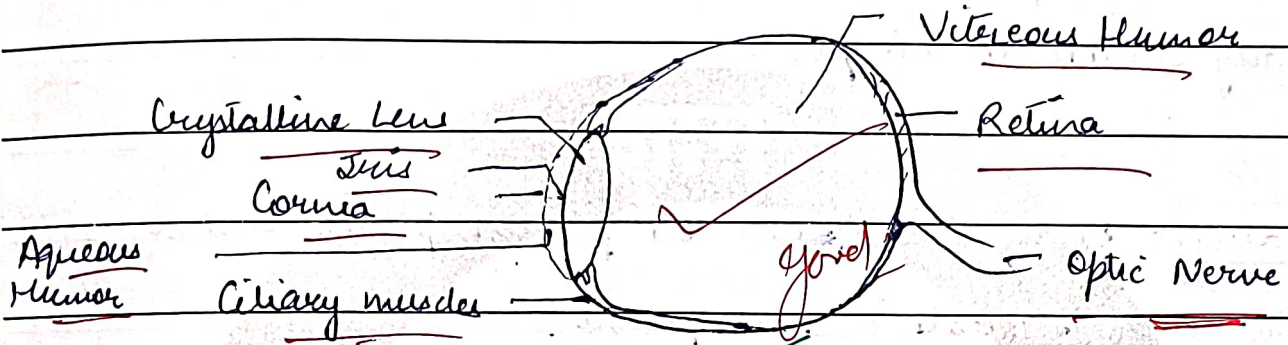


Figure: Human Eye

### Defects of Human Eye

I) Myopia (Short sightedness): Person can see short objects easily but can't see far-off places. Hence, he uses concave lens as image is formed in front of the retina.

II) Hypermetropia (Far sightedness): One can see ~~nearby~~ <sup>far-off</sup> objects but difficulty in watching nearby things because image is formed behind the retina. Hence, he uses convex lens to correct it.

III) Cataract: With age, the <sup>lens</sup> ~~iris~~ gets hardened and damaged.

It is corrected with lens surgery or change of lens. It is most common in diabetic patients.

IV) Presbyopia: It has symptoms of hypermetropia but occurs in old age.

V) Colour-blindness: ~~Red and Green~~ Rods and Cones cells in Retina gets damaged and person is not able to <sup>differentiate</sup> ~~see~~ between colours.

VI) Night-blindness: Deficiency of Vitamin A leads to unclear vision at night.

(Write above this line only)

plan include - Xerophthalmia, conjunctivitis, Astigmatism.

Conclusion ?



Cutting  
Layering  
Grafting

3. पौधों के उत्पादन के लिए प्रयुक्त 'कृत्रिम वनस्पतिक प्रवर्धन' की विधियों पर टिप्पणी लिखिए।  
Write note on the methods of 'artificial vegetative propagation' used for the production of plants.


Artificial vegetative propagation is an asexual mode of reproduction in plants where the offspring is genetically and physically similar to his parent.


Methods of Vegetative Propagation

I | Budding: Buds arise from the parent plant and it can be used to create a new plant.

Phono  
mance  
of  
moss  
thead  
of  
explan  
you  
subhead  
under

Eg: Rhizomes in Ginger, Buds, Cactus  


II | By roots: The plant that has to be propagated, its roots are buried in soil. Eg: Lily (onion-like root bulb), Carrot  


By leaves: Some plants like Spirogyra have leaf nodules on the edges of its leaves that can be used to grow the plant.  


III | By stem: This method of vegetative propagation uses the stem of a plant. Multiple branches and leaves are cut off to reduce the burden of photosynthesis on baby plant. Later it is dipped in nutrient solution or in soil to initiate faster root growth.

Hence, vegetative propagation is a low cost way of reproducing parent plant and takes lesser time as compared to plant growth by seeds.

(Write above this line only)



4. निम्न पर टिप्पणी लिखिए/Write comment on the following.
1. एनालॉग सिग्नल व डिजिटल सिग्नल में अंतर/Difference between analog signal and digital signal
  2. कृत्रिम बुद्धिमत्ता के खतरें या सीमाएँ/Dangers or limitations of artificial intelligence

I. Both analog and digital signals are mechanism to transfer data and information from one electronic device to another.

Analog Signals

Digital Signals

1) They occur in the form of waves



1) They have fixed wave



2) Values may differ at each point

2) It takes only 0, 1 values

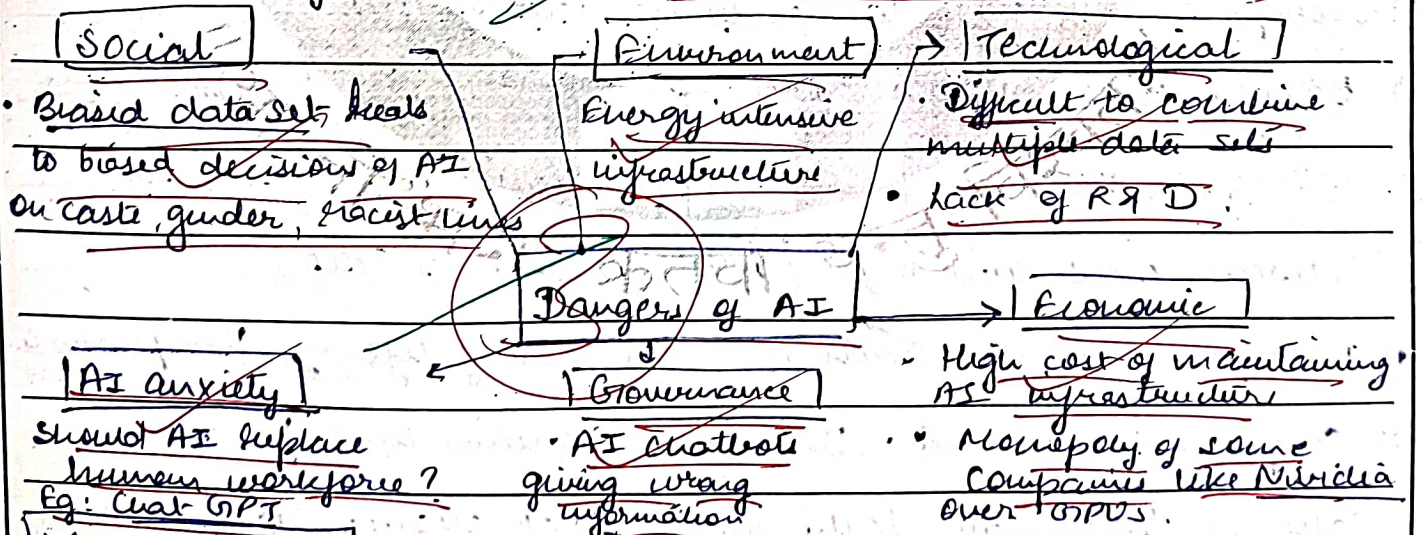
3) Preliminary Technology

3) Modern and latest technology

4) Satellite signals

4) TV remotes, Digital thermometer

II. Artificial intelligence is the mimicking of human intelligence and his ability to reason, analyse etc by computers.



Way Forward : i) Implementation of ASIOMILAR principle and

2) Skilling of emp workforce to reap demographic dividend

(Write above this line only)

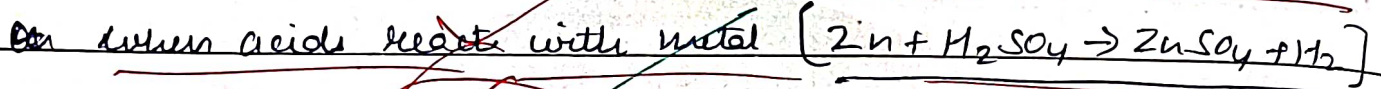


5. दैनिक जीवन में अम्ल, क्षार व लवण की उपयोगिता पर लेख लिखिए।

Write article on the utility of acid, base and salt in daily life.

I. Acid: Acids are substances that taste sour and change blue litmus to red, with pH value less than 7.

Utility - 1) Production of  $H_2$  gas for National Hydrogen Mission



2) Human Physiology: HCl production in stomach because pepsin functions in acidic environment

3) Metallurgy: Aqua Regia ( $HCl:HNO_3$ ) dissolves gold, silver, platinum.

II. Base: Base are substances that taste bitter and change red litmus to blue, with pH value more than 7.

Utility - 1) Humans: Acidity in stomach is reduced by basic nature of milk of magnesia.

2) Blood of human is basic in character

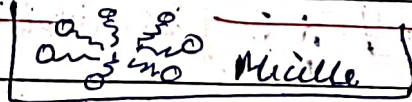
3) Toothpaste have base to counteract acid of teeth

4) Baking soda helps to create  $CO_2$  gas and creates fluffy cakes

III. Salt - They are formed by neutralization reaction between acid and base  $(Acid + Base \rightarrow Salt)$

1) Food preservative: Salts increases shelf life of food products

2) Soaps and detergents: These are sodium and potassium salts of long chain fatty acids that cleanse dirty clothes through micelle formation



3) Creates acidic and basic buffer solutions

(Write above this line only)



6. निम्न बिन्दुओं पर संक्षिप्त टिप्पणी लिखिए/Write short notes on the following.
1. श्वसन व किण्वन की प्रक्रिया में मूलभूत अन्तर लिखिए/Write the basic differences between the processes of respiration and fermentation.
  2. सोनिक बूम/Sonic Boom

Respiration

1) It is the process of inhaling  $O_2$  and exhaling out  $CO_2$  in humans.

2) Use of Oxygen

3) Occurs in human bodies

Fermentation

1) It is the process of fermenting <sup>ferments</sup> ~~starch~~ to produce alcohol.

2) Absence of Oxygen

3) Occurs in controlled environment like distilleries.

It occurs when velocity of an object in a liquid or gas exceeds the speed of sound.

→ caused by - Mach

Sonic Boom: It is the use of sound waves for various purposes like -

1) Doppler effect: voice gets louder as distance between observer and observed gets reduced.

2) Ultrasonic cleaning: Dirt particles are wiped off by sound waves in dish washers.

3) Communication: Used by submarines to detect underwater objects in sea  
Used by aquatic animals like dolphins for communication

4) Recreation: Used in loud speakers for bass effect



7. निम्न बिन्दुओं पर संक्षिप्त टिप्पणी लिखिए/Write short notes on the following.

1. प्रोजेक्ट-75/Project-75
2. रोबोट के घटक/Components of Robot
3. लैग्रेंज पॉइंट/Lagrange point

I Project 75: It is a project of <sup>Indian</sup> Navy to build

6 naval missile and torpedo submarines started in 2007  
 INS Kalvari, Khanderi, Karay, Vela, Vagsuik, <sup>Vagrin</sup>

2) Agencies involved - Mazagon Dock Ltd. and Garden

Reach Shipyard (Kolkata)

3) Under Strategic Partnership Model to boost indigenous manufacturing under 'Make in India' program.

4) Ensure self-reliance in defence sector.

II Components of Robot: Robots are machines that ease human functioning and humanoid robots mimic human actions.

Eg: Vyomitra

Parts: Effectors - where last action will take place

Actuators - Arms and legs

Control system

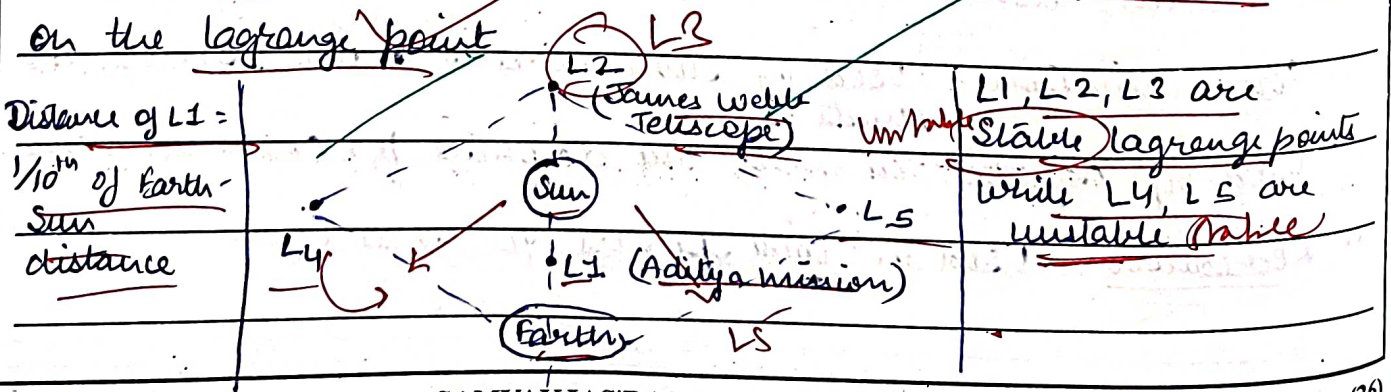
Neural network of programming

Manipulator

Power

Sensors

III Lagrange Point: These are points between two large space bodies/planets where gravitational pull of bodies is equal to centripetal force of the object placed on the Lagrange point





हिन्दी व्याकरण- शब्द शुद्धि-वाक्य शुद्धि व प्रारूप-लेखन निविदा

1. दिए गए शब्दों के शुद्ध रूप लिखिए-

अंक - 5

(i) अनेकों

अनेक

(ii) गरिष्ठ

गारिष्ठ

(iii) दंपती

दंपती

(iv) श्वसूर

श्वसुर

(v) संपत्ति

संपत्ति

2. निम्नांकित वाक्यों को शुद्ध कीजिए-

अंक - 5

(i) हमारे प्रांत के मनुष्य मेहनती हैं।

हमारे प्रांत के लोग मेहनती हैं।

(ii) दंगे में गोलियों की बाढ़ आ गई।

दंगों में गोलियों की बाढ़ आ गई।

(iii) मुझे बहुत पुस्तकों को पढ़ना-पड़ता है।

मुझे बहुत पुस्तकें पढ़नी पड़ती हैं।

(iv) यह पौधा जब प्रधानमंत्री जयपुर आए थे, तब लगाया गया था।

यह पौधा तब लगाया था, जब प्रधानमंत्री जयपुर आए थे।

(v) आजकल जनता के अंदर बहुत असंतोष है।

आजकल जनता के अंदर बहुत आक्रोश है।



3. जिला कलेक्टर जयपुर की ओर से कार्यालयी आवश्यकता हेतु फर्नीचर (मेज/कुर्सी) आपूर्ति हेतु खुली निविदा का प्राप्ति तैयार कीजिए।

अंक- 10

राजस्थान सरकार

कार्यालय जिला कलेक्टर जयपुर, जयपुर (राज.)

पक्र. 2(प)/का.जी.क./विबिदा/2024/113

दिनांक : 10 मार्च, 2024

52

निविदा 2024/84

इस कार्यालय के उपयोग हेतु समस्त निविदाताओं से खुली निविदा आमंत्रित की जाती है जिसका विवरण निम्नानुसार है :-

सी.नं.	वस्तु	संख्या	अनुमानित लागत	क्षीर राशि (रु.)	समय अवधि
1.	मेज	10	1,00,000	20,000	10 दिन
2.	कुर्सी	40	2,00,000	40,000	15 दिन

निविदाताओं अपक्षक उपर्युक्त निविदा का आवेदन निविदा प्रपत्र राशि रु 500 रूपय जमा करा कर कार्यालय समय में दिनांक 12 मार्च से ले सकेंगे।

भरी हुई निविदा समस्त निविदाताओं के समक्ष दिनांक 25 मार्च, 2024 समय 11 बजे से सायं 5 बजे



तक खोली जायेगी।

शर्तें :-

1. किसी भी निवेदा को पूर्ण या आंशिक रूप से स्वीकारने  
पुर्वे अस्वीकारने का अधिकार जिला कलेक्टर, जयपुर का  
होगा।

2. किसी भी ~~किसी~~ विवाद की स्थिति में न्यायिक क्षेत्र  
जयपुर होगा।

3. निवेदा के अन्य नियम विस्तृत हैं।

यह भी लिखना हस्ताक्षर  
होता है (के. ख. का.)

जिला कलेक्टर

जयपुर



**Narration-Direct & Indirect and Elaboration of a given theme**

(A) Identify the error and rewrite the correct form of the following sentences: (Q. No. 1-10)

Marks 10

1. I told him I will go the following week.

~~I told him that I would go the following week.~~

2. He asked her who she would like to invite to dinner that night.

~~He asked her that who she would like to invite to dinner that night.~~

3. My friend bade to me good-bye.

~~My friend bade me good bye!~~

4. She asked where was the hospital.

~~She asked that where the hospital was.~~

5. I asked her whether we should go to the cinema.

~~I asked her whether we should go to the cinema.~~

6. He told me that he cannot help me.

~~He told me that he could not help me.~~

7. The teach said that man was mortal.

~~The teacher said that man is mortal.~~

8. He tells to me that I can help him.

~~He tells me that I could help him.~~

9. The old lady wished that I may live long.

~~The old lady wished that I may live long!~~

10. He said that that all was he had.

~~He said that that was all he had.~~



(B) Elaborate any one of the following themes in approximately 150 Words.

Marks 10

- I. SWEET ARE THE USES OF ADVERSITY
- II. GOD HELPS THOSE WHO HELP THEMSELVES
- III. THE CHILD IS THE FATHER OF THE MAN

### Sweet are the Uses of Adversity

Adversity is a time period of difficult and unpleasant circumstances that one has to face in his lifetime. It brings challenges and pain as human feel helpless in front of these scenarios. For instance, Thomas Alva Edison was failing repeatedly during his experiments to invent electric bulb. Similarly, the whole world including India ~~got~~ slowed down during Covid-19 outbreak. Businesses were shut down, migrants had to leave back to their rural hinterlands, ~~school~~ school and college education were stopped and many adverse situations propped up.

During these times, one must know how to turn these challenges into sweetness. This is because one has said, "Necessity is the mother of all inventions". As a result, we saw Edison inventing the electric bulb through his perseverance. We also saw how education, work system, healthcare



got digitised through zoom calls, Telemedicine etc.

Hence, the moral of the story is one must be

resistant enough to handle difficult challenges

and turn them into sweet opportunities for

growth in life.

Please fulfill the demand of moral

limit

Keep at least 150 words

and half page for

- o Approach is given with example, you can directly give your answer with multiple examples

3/11

11/11

11/11

कतवो यत्तु विश्वासः

विश्वासः