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Q. No.	Total Marks	Obtained Marks
Unit-I-A	10	6.5
Unit-I-B	25	14.5
Unit-I-C	30	12
Unit-II-A	10	6.25
Unit-II-B	20	7.5
Unit-II-C	40	18
Unit-III-A	10	2
Unit-III-B	25	9.25
Unit-III-C	30	10.25
Total Obt. Marks in Figures	200	86.25
Total Obt. Marks in Words		Eighty Six+ 1/4

प्रश्नोत्तर पुस्तिका को किसी प्रकार की क्षति पहुँचाई जाती है अथवा उस पर किसी प्रकार द्वारा उसकी संपूर्ण परीक्षा निरस्त की जा सकेगी और उसके लिए अभ्यर्थी उत्तरदायी होगा।

candidate or any attempt is made to damage the answer script or any marking as ion shall be cancelled by the Commission, for which candidate will be liable.

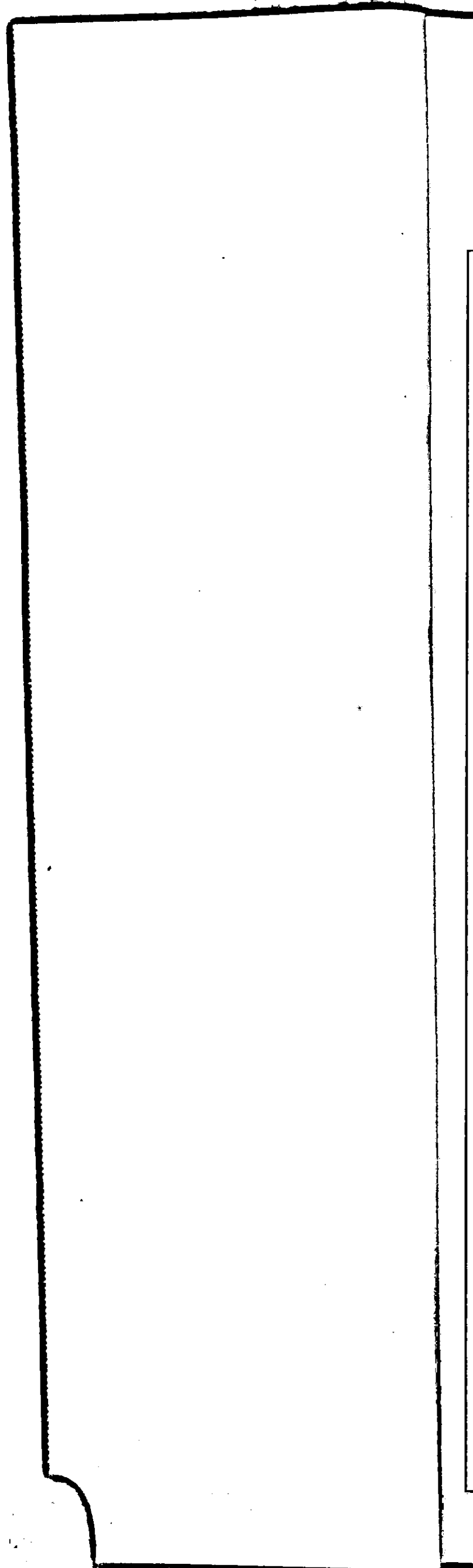
PART - I

Paper Code

P-2



220124





CANDIDATE PLEASE READ CAREFULLY

परीक्षार्थी कृपया ध्यान से पढ़ें

Do not write any mark of identity inside the Answer Script (including Paper for rough work) i.e. Name, Address, Roll Number, Mobile Number etc. Not to be written even in the letter writing (XYZ, ABC etc. may be written) Name of God, any religious sign, any irrelevant sentence, words, number other than the answer of question must not be written. Such act will be treated as unfair means and entire examination of the Candidate shall be cancelled and he may be debarred by the RPSC from all the future examinations, for which the candidate will be liable.

प्रश्नोत्तर पुस्तिका (रफ कार्य के पृष्ठ सहित) के अंदर कहीं पर भी पहचान चिह्न यथा अपना नाम, पता, रोल नंबर, मोबाइल नंबर इत्यादि नहीं लिखें। यहां तक कि पत्रादि लेखन में भी नहीं लिखें (XYZ, ABC, अ ब स आदि लिखा जा सकता है)। कोई धार्मिक चिह्न, देवताओं के नाम, अनर्गल बातें, प्रश्नोत्तर से असंबंधित वाक्य, शब्द एवं अंक, आदि भी न लिखें। ऐसा करने पर आयोग द्वारा इसे अनुचित साधन अपनाने का कृत्य माना जायेगा तथा अभ्यर्थी की संपूर्ण परीक्षा निरस्त की जाकर भविष्य में आयोजित की जाने वाली परीक्षाओं से विवर्जित करने की कार्यवाही की जा सकेगी और उसके लिए अभ्यर्थी उत्तरदायी होगा।

IMPORTANT INSTRUCTIONS (महत्वपूर्ण निर्देश)

- (A) It should be ensured that the Question-Answer Booklet is provided in a sealed envelope to the candidate. अभ्यर्थी यह सुनिश्चित कर लें कि अभ्यर्थी को प्रश्नोत्तर पुस्तिका सीलबंद लिफाफे में प्रदान की गई है।
- (B) If the Question-Answer Booklet is torn or not printed properly or some pages are missing (Please count the number of pages) then bring it to notice of Invigilator and change the Question-Answer booklet, otherwise the candidate will be liable for that. यदि प्रश्नोत्तर पुस्तिका कहीं से कटी-फटी या अमुद्रित है या पृष्ठ कम हैं (कृपया पृष्ठ गिन लें) तो अभिजागर के ध्यान में ला दें तथा उसे बदलवा लें, अन्यथा उसका दायित्व अभ्यर्थी का होगा।
- (C) Please fill up all desired details properly on Cover Sheet of Question-Answer Booklet with Blue Ball Point Pen before answering. The Commission may also deduct 5 marks from the marks obtained if Roll Number is not filled correctly on the Cover Sheet. प्रश्नोत्तर पुस्तिका में प्रश्न हल करने से पूर्व कवर पृष्ठ पर सभी वांछित विवरण नीले बॉल प्वाइंट पेन से सावधानीपूर्वक भरें। कवर पृष्ठ पर रोल नंबर का त्रुटिपूर्ण अंकन करने पर आयोग द्वारा प्राप्तांकों में से 5 अंक काटे भी जा सकते हैं।
- (D) This Cover Sheet consists of two parts, in which some information is pre-printed, remaining details have to be filled by the candidate. Please ensure that this Cover Sheet is not torn or damaged. कवर पृष्ठ दो भागों में बंटा है, जिसमें कतिपय सूचनाएँ पूर्वमुद्रित हैं, शेष की पूर्ति अभ्यर्थी को करनी है। ध्यान रखें कि कवर पृष्ठ कहीं से कटे-फटे नहीं अथवा किसी भी प्रकार से क्षतिग्रस्त नहीं हो।
- (E) The question paper is divided into different units and parts. The number of questions to be attempted and their marks are indicated in each unit and parts. प्रश्न-पत्र विभिन्न यूनिट एवं भागों में विभाजित है। प्रत्येक यूनिट एवं भाग में हल किये जाने वाले प्रश्नों की संख्या और उनके अंक उस यूनिट एवं भाग में अंकित किये गए हैं।
- (F) If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English version of the question, the English version will be treated as standard. यदि किसी प्रश्न में किसी प्रकार की कोई मुद्रण या तथ्यात्मक प्रकार की त्रुटि हो, तो प्रश्न के हिन्दी या अंग्रेजी रूपान्तरों में से अंग्रेजी रूपान्तर मान्य होगा।
- (G) Attempt answers either in Hindi or English, not in both. For Language Papers, answer in concerned language and script, unless directed otherwise to write in Hindi or English specifically. उत्तर अंग्रेजी या हिन्दी भाषा में से किसी एक में दीजिये, दोनों में नहीं। भाषा विषयक प्रश्नों के उत्तर उनकी संबद्ध भाषा व लिपि में ही दिए जाएँ, जब तक कि प्रश्न विशेष के लिए अलग से हिन्दी या अंग्रेजी में उत्तर देने के लिए न लिखा गया हो।
- (H) 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. अभ्यर्थियों को निर्देशित किया जाता है कि किसी भी प्रश्न का उत्तर प्रश्नोत्तर पुस्तिका में निर्धारित स्थान पर ही लिखें। बॉर्डर लाइन से बाहर प्रत्युत्तर नहीं लिखें। बॉर्डर लाइन के बाहर लिखे गये उत्तर को जाँचा नहीं जायेगा।
- (I) The candidates should not write the answers beyond the prescribed limit of words, failing this, marks may be deducted. अभ्यर्थियों को उत्तर निर्धारित शब्द सीमा से अधिक नहीं लिखना चाहिए, इसका उल्लंघन करने पर अंक काटे जा सकते हैं।
- (J) If there is a choice to attempt one question out of many and the candidate attempts more than one question then only first answer will be assessed. यदि कई प्रश्नों में से कोई एक हल करने का विकल्प दिया गया है और परीक्षार्थी द्वारा एक से अधिक प्रश्न हल किये जाते हैं तो ऐसी स्थिति में प्रथम उत्तर ही जाँचा जायेगा।

विशेष नोट:

अभ्यर्थी द्वारा यदि कोई गलत सूचना दी जाती है या प्रश्नोत्तर पुस्तिका को किसी प्रकार की क्षति पहुँचाई जाती है अथवा उस पर किसी प्रकार का पहचान चिह्न अंकित किया जाता है, तो आयोग द्वारा उसकी संपूर्ण परीक्षा निरस्त की जा सकेगी और उसके लिए अभ्यर्थी उत्तरदायी होगा।

Special Note:

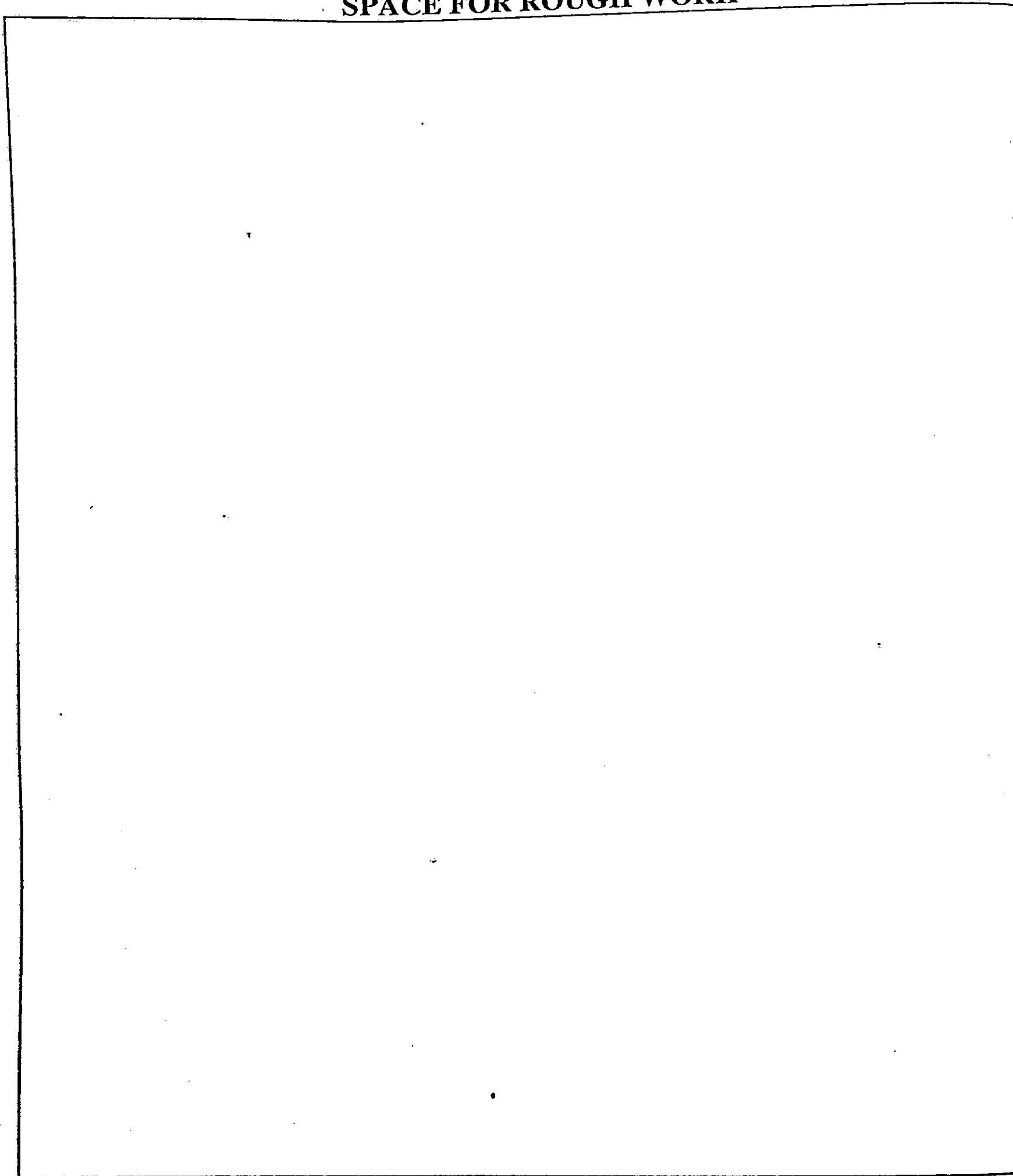
If there is any wrong information filled by the candidate or any attempt is made to damage the answer script or any marking as identification is done, then his entire examination shall be cancelled by the Commission, for which candidate will be liable.

Paper-II

4



SPACE FOR ROUGH WORK





PAPER - II

GENERAL STUDIES & GENERAL KNOWLEDGE

(Total 200 Marks)

(Total 39 Question)

Unit - I
(यूनिट - I)

(65 Marks)

(65 अंक)

Part - A
भाग - अ

Marks : 10

अंक : 10

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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

1. Explain the role of the concept of 'sthit pragya' in the discharge of administrative responsibility.

प्रशासनिक कर्तव्य के निर्वहन में 'स्थित प्रज्ञ' की संकल्पना की भूमिका को स्पष्ट कीजिए।

'Sthitpragya' stands for equanimity of yogi in adverse situations. A civil servant while discharging his duties must show strict adherence to values and should not be influenced by successes as well as failures. eg. → Doctors patience during COVID-19

1.25(One¹/₄)
(Q.Unit-I-A-1)

2. What teachings of Buddha are most relevant today and why?
बुद्ध की कौनसी शिक्षा आज सर्वाधिक प्रासंगिक है और क्यों?

- Non violence → Age of nuclear weapons demands restraint
- Madhyam Marg → Foreign policy in era of protectionism and extreme nationalism.
- Peace → Rising instances of communalism and weak moral fabric of society.

1.5(One¹/₂)
(Q.Unit-I-A-2)



3. What do you understand by ethical dilemma?

नैतिक द्वन्द्व से आप क्या समझते हैं?

Ethical dilemma occurs when a person is unable to ~~decide~~ choose between two immoral alternatives. Here person's ethical values are tested. egs To inform or not the teacher regarding cheating done by best friend.

1.25(One¼)

(Q.Unit-I-A-3)

4. Explain the relevance of ethical idea of 'Rina' in the administrative life.

प्रशासनिक जीवन में 'ऋण' के नैतिक आदर्श की प्रासंगिकता को स्पष्ट कीजिए।

- 'Rina' is the scriptural duties
 ↗ Pitra Rina
 ↘ Daiva Rina
 Rishi Rina
- In administrative life a civil servant ~~must~~ is under debt of society for resources and thus he must repay the debt by facilitating good governance for citizens.

1(One)

(Q.Unit-I-A-4)

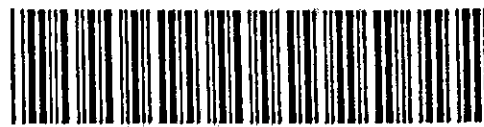
5. What way 'detachment theory' of Bhagvad Geeta is significant in the life of an administrator?

भगवद्गीता का 'अनासक्ति सिद्धान्त' किस रूप में एक प्रशासक के जीवन में सार्थक है?

- 'Bhagwat gita' stands for 'Nishkam Karma' i.e. detachment from the fruits of the action.
- A civil servant must perform his duties for the sake of duty and do not seek for materialistic gains out of it. He should detach himself from privileges attached to service.

1.5(One½)

(Q.Unit-I-A-5)



Part - B

Marks : 25

भाग - ब

अंक : 25

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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 50-50 शब्दों में दें। प्रत्येक प्रश्न के 5 अंक निर्धारित हैं।

6. 'Men's Moral Advancement depends upon complete advancement of society.' Discuss.

'मनुष्य की नैतिक उन्नति समाज की सर्वांगीण उन्नति पर निर्भर करती है।' विवेचना कीजिए।

Men is part and parcel of the society. Men is gregarious in nature (Social Animal). When society as a whole advances ~~to~~ towards progress and development, each individual is dragged along with it. e.g. With democracy comes Rule of law and Concept of Fundamental Rights. Now deviant persons are contemptible in this progressive society. Thus one must adopt morality as per the social code of conduct. Society has a deep impact upon morality of individual.

7. "Family is the most important institution for the moral development of man". Evaluate this statement.

"परिवार मनुष्य के नैतिक विकास की सबसे महत्वपूर्ण संस्था है।" इस कथन की समीक्षा कीजिए।

* Role of Family in moral development :-

• Mother $\longleftrightarrow$ Love & Care ; Management
Harmony
Empathy and Conscience

• Father $\longleftrightarrow$ Gender appropriate behaviour
Discipline & Conduct
Obedience

• Siblings $\longleftrightarrow$ Peer learning during plays
Emotional Intelligence

• Grandparents $\longleftrightarrow$ Spiritual development
Moral Education

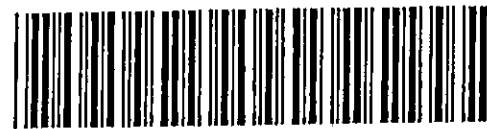
↳ Family is the first school which plays foundation role in development of character & personality.

2(Two)

(Q.Unit-I-B-6)

2.5(Two½)

(Q.Unit-I-B-7)



8. Explain the Kant's ultimate good on the basis of relative and categorical imperative.

कांट किस प्रकार सापेक्ष एवं निरपेक्ष आदेश के आधार पर अंतिम शुभ की व्याख्या करता है।

* Categorical Imperative → Duty for the sake of duty is deontology. Here means must be good to achieve good ends.

* Hypothetical / Relative Imperative → Duty for the achievement of goal is utilitarian. Here means can be sacrificed to achieve the outcomes.

→ As per Kant ultimate Good is only achieved through Categorical imperative. It is equivalent to Nishkama Karma of Gesta and Means & Ends Concept of Gandhiji.

2.5(Two½)

(Q. Unit-I-B-8)

9. What are generally considered to be the minimum basic needs of an individual to lead a healthy and productive life? What is the administrators responsibility in ensuring these minimums?

आमतौर पर एक स्वस्थ और उत्पादक जीवन जीने के लिए व्यक्ति की न्यूनतम बुनियादी जरूरतें क्या मानी गयी हैं? इन न्यूनतम को सुनिश्चित करने में एक प्रशासक की क्या जिम्मेदारी है?

* Minimum basic needs

- Roti, Kapda, Makaan
- Good health & well being
- Quality Education
- Social Esteem
- Fundamental Rights
- Dignified living

Employment

1.5(One½)

(Q. Unit-I-B-9)

* Administrators are responsible in following way :-

- To ensure Good Governance
- Smooth running of public, healthcare and Educational Institutions
- Employment generation by Infra. development

1.5(One½)

(Q. Unit-I-B-9)



- Timely delivery of Housing projects, Food security targets ~~and~~
- Equitable distribution of public resources.

1(One)

(Q. Unit-I-B-9)

10. What are the core ethical values required for excellence in civil service?

लोक सेवा की उत्कृष्टता के लिए आवश्यक प्रमुख नैतिक मूल्य कौन से हैं?

As per Nolan Committee, 7 foundational values are:-

- Honesty → Truthfulness in Conduct
- Objectivity → decision making backed by facts
- Leadership → Ability to lead the team in adversity
- Accountability → Submission to appropriate scrutiny
- Openness → Transparency in Conduct
- Integrity → Steadfast adherence to core values
- Sympathy → for weaker sections of society

↳ Apart from this Empathy, dedication to public Service, Conscience are other Core Ethical Values for excellence in public service.

3.5(Three½)

(Q. Unit-I-B-10)

Part - C
भाग - स

Marks : 30
अंक : 30

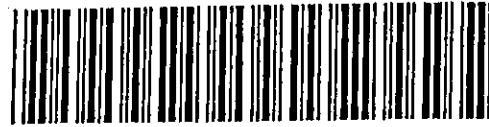
Note: Attempt all questions. Answer the following questions in 100 words each. Each question carries 10 marks.

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 100-100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

11. "Necessarily related, means cannot be separated from ends. Therefore, both must be auspicious for real and lasting success." Explain the above comment in the context of Gandhian ethics.

"अनिवार्यतः सम्बन्धित होने के कारण साधनों को साध्य से पृथक नहीं किया जा सकता, अतः वास्तविक और स्थाई सफलता के लिए दोनों का शुभ होना आवश्यक है।" गाँधी नीतिशास्त्र के सन्दर्भ में उक्त टिप्पणी को स्पष्ट करें।

As per Gandhian Ethics Means are as important as Ends. Same is explained in the



Nishkama Karma' of Gesta and deontology of Kant.

- If means are bad than Ends are good only in short term. e.g. gambling money doesn't last long.
- If means are good but ends are bad, ~~then~~ they are bad only in short term. e.g. culture of forgiveness in Indian culture.
- For real and lasting success, means ~~can't~~ can't be separated from ends i.e. both must be auspicious!
e.g. • Culture of forgiveness
 - ~~Sincere~~ sincere efforts for passing Examination

↳ Methods of Satyagraha and Ahimsa brought freedom in the long run because they were good in themselves. If Gandhiji had used violence, Britishers would have suppressed the movement violently. Only good means gives us the moral support and courage to win over the adversity.

↳ Thus Good means must be acquired for Good Ends in life as evident from the lives of Rama, Vivekananda and Raja Rammohan.

1(One)

(Q.Unit-I-C-11)

1(One)

(Q.Unit-I-C-11)

0.5(Zero½)

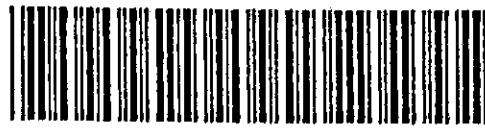
(Q.Unit-I-C-11)

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(Q.Unit-I-C-11)

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(Q.Unit-I-C-11)



12. Explain the factors essential in "Ethical decision" making. In case of ethical decision being against to administrative decision, how will you harmonise them? Explain with examples.
 "नैतिक निर्णय" लेने में महत्वपूर्ण कारकों को समझाइए। यदि नैतिक निर्णय प्रशासनिक निर्णय के विरुद्ध हो, तो आप दोनों में किस प्रकार समन्वय करेंगे? सोदाहरण समझाइए।

* Factors essential in Ethical decision making

- Constitutional / legal principles
- Deontology
- Utilitarian principle → Max. good for Max. people
- Conscience
- Social code of conduct and Norms
- Civil Services code of conduct
- Ancient, ethical principles

↳ If ethical decision is against the administrative decision it will be guided by my Conscience and examine administrative decision on the altar of Constitutional principles. If the decision is against the Constitution, I will disobey it.

Eg. Administrative decision to rehabilitate the Slum dwellers elsewhere to Construct shopping mall.

* Response → Only if rehabilitation is prior, Comprehensive and near to employment place, it will support the project.

↳ Thus Conscience is the guide in the dilemma situation.

1.5(One½)
(Q. Unit-I-C-12)

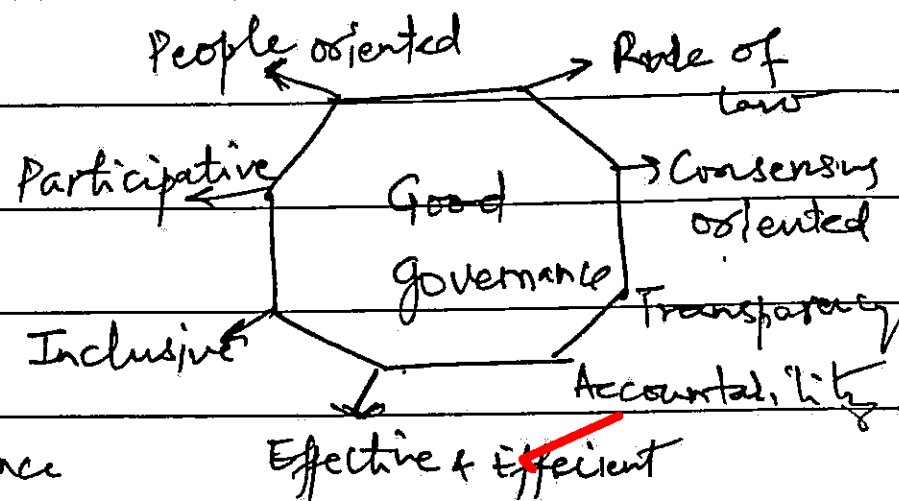
2.5(Two½)
(Q. Unit-I-C-12)



13. "Each other's success teaches a lesson for better governance." Analyze this statement with examples.

"एक दूसरे की सफलता बेहतर प्रशासन के लिए सीख देती है।" इस कथन का विश्लेषण उदाहरणों द्वारा कीजिए।

Every person/organise
Can imitate the best
practices of of other
person/organisation to
improve on the governance
indicators, in the spirit
of sabka saath sabka vishwas



eg. Competitive federalism → Ramgarh model of Rajasthan
can be adopted by other states to contain
Covid pandemic.

eg. PM's monitoring of central projects.

eg. HITI Ayog's Aspirational Districts programme

eg. one District one product scheme.

↳ Learning from the best practices, we can
improve our personality and governance
of state for delivery of public services
in an efficient manner.

eg. Mohalla Clinic of AAP

Janta Clinic of Rajasthan

1(One)

(Q.Unit-I-C-13)

3(Three)

(Q.Unit-I-C-13)



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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

1. Differentiate between nuclear fission and fusion.

नाभिकीय विखण्डन एवं संलयन को विभेदित कीजिए।

Nuclear Fission	Nuclear Fusion
• Fission of large atom to give Energy	• Fusion of 2 small atoms to produce Energy
• Require low energy to start	• Thermonuclear Reaction
• Controllable	• Uncontrollable
• Nuclear Reactors	• Energy of sun & stars
e.g. ${}_{92}^{235}\text{U} + {}_0^1\text{n} \longrightarrow {}_{56}^{142}\text{Ba} + {}_{37}^{91}\text{Kr} + \text{Energy}$	e.g. ${}_1^2\text{H} + {}_1^3\text{H} \longrightarrow {}_2^4\text{He} + \text{Energy}$

1.5(One½)
(Q.Unit-II-A-1)

2. Explain the role of calcium carbide in the artificial ripening of fruits.

फलों को कृत्रिम रूप से पकाने में कैल्शियम कार्बाइड की भूमिका स्पष्ट कीजिए।

Calcium carbide helps in fruit ripening by stimulating the ethylene gas. It help in fruit ripening on exposure to ethylene / Acetylene gas.

1.75(One¾)
(Q.Unit-II-A-2)



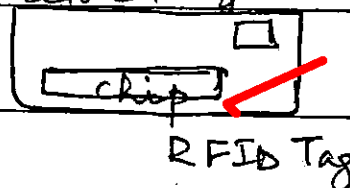
3. What is an OTT platform?
ओ.टी.टी. प्लेटफॉर्म क्या है?

Over The Top (OTT) platforms are medium of entertainment played directly on the internet. e.g. Amazon Prime, Netflix

↳ OTT platforms regulation is done by social media intermediaries and digital media guidelines 2021.

4. What is the basic concept of operation of RFID? Give two application of this technology.
आर.एफ.आई.डी. प्रचालन का मूल सिद्धान्त क्या है? इस तकनीक के दो उपयोग दीजिए।

RFID operates on Radio frequencies received by transceiver and thus transmission of information stored within it.



Applications :- (i) Fast tag RFID for Toll Tax
(ii) Payment Card

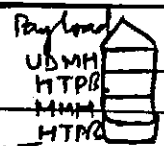
5. What is the difference between Polar Satellite launch vehicle and Geosynchronous Satellite launch vehicle?

ध्रुवीय उपग्रह प्रक्षेपण यान और भूस्थिर उपग्रह प्रक्षेपण यान में क्या अंतर है?

PSLV

GSLV

• Four stage

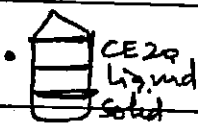


• Capacity → LEO → 4 Tonne
→ GEO → 2 Tonne

• payload → 2 Tonne Max

• Workhorse of ISRO

MOM ; CHANDRAYAN 1



• Capacity → LEO → 40 Tonne
→ GEO → 4 Tonne

• payload → 4 Tonne max

• Heavy weight launcher of ISRO

MOM 2 ; ADITYA L1

0.5(Zero¹/₂)

(Q.Unit-II-A-3)

0.5(Zero¹/₂)

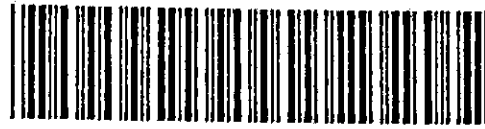
(Q.Unit-II-A-3)

0.75(Zero³/₄)

(Q.Unit-II-A-4)

1.25(One¹/₄)

(Q.Unit-II-A-5)



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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 50-50 शब्दों में दें। प्रत्येक प्रश्न के 5 अंक निर्धारित हैं।

6. Write any five benefits of the medicinal plant - Guduchi/Giloy.
औषधीय पौधे - गुडूची/गिलोय, के कोई पाँच लाभ लिखिए।

1. Giloy Kadha is an immunity booster in pandemic times.

2. Giloy juice is beneficial in stomach diseases $\longleftrightarrow$ Upset Stomach
Kabj

3. Giloy juice purifies the blood and thus rectifies blood related diseases.

4. Giloy paste gives relief in ulcers and bawaseer.

5. Giloy Kadha is Consumed to Cure the diseases of liver and urinary tract.

7. What is Cryptocurrency? What are its advantages and disadvantages?

क्रिप्टोकॉरेंसी क्या है? इसके फायदे और नुकसान क्या हैं?

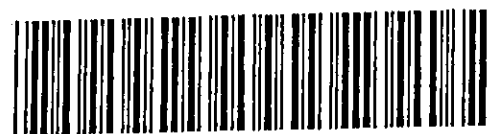
* Cryptocurrency is a virtual store of money backed by blockchain technology (decentralised encrypted ledger). e.g. Bitcoin, Dogecoin etc

* Advantages : • Ease of transaction
• Secure Transactions
• ↓ Cost of Transactions

2(Two)
(Q.Unit-II-B-6)

1.5(One½)
(Q.Unit-II-B-7)

0.5(Zero½)
(Q.Unit-II-B-7)



- Unaffected by govt. regulations

- * Disadvantages :-
- Threat to Financial system
 - High volatility ~~→~~ crash in value
 - Misuse by Terrorists
 - Waste of Energy in mining of crypto

0.5(Zero½)

(Q.Unit-II-B-7)

0.5(Zero½)

(Q.Unit-II-B-7)

8. What are the differences between the previous generations of mobile networks and 5G Network?

पिछली पीढ़ियों के मोबाइल नेटवर्क और 5G नेटवर्क में क्या अंतर है?

	Previous Generations ^{1G, 2G, 3G, 4G}	5G Network
Technology	• 3G → Multimedia 4G → LTE (only data)	• VoLTE (voice over long Term Evolution) (voice + data)
Latency	• 4G → 50ms latency	• 1ms
Bandwidth	• 1 Gbps	• 100 Gbps
Connections	• Thousands under one cell	• Millions Millions under One cell
Uses	• video calls • Multimedia • HD Screens	• Internet of Things • Cloud Computing • Machine Learning • Augmented Reality

1(One)

(Q.Unit-II-B-8)

0.5(Zero½)

(Q.Unit-II-B-8)

9. Write the objective of Missiles and Strategic System (MSS). Name the laboratories which comprises MSS clustre.

मिसाइल और सामरिक प्रणाली (एम.एस.एस.) का उद्देश्य लिखिए। एम.एस.एस. क्लस्टर में शामिल प्रयोगशालाओं के नाम लिखिए।

↳ Objective of MSS

- To defend the strategic locations by missile defence system
- production of indegenous strategic



missiles system

- To develop missiles of nuclear grade

1(One)

(Q.Unit-II-B-9)

Part - C

Marks : 40

भाग - स

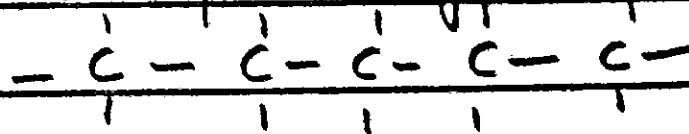
अंक : 40

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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 100 - 100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

10. (a) Which property of carbon is responsible for formation of large number of compounds?
 (b) Write domestic and industrial applications of carbon compounds.
 (c) Give an example of each –
 (i) Artificial sweeteners
 (ii) Food preservatives
 (iii) Ores of zinc
- (a) कार्बन का कौन सा गुण बड़ी संख्या में यौगिकों के निर्माण के लिए उत्तरदायी है?
 (b) कार्बन यौगिकों के घरेलू और औद्योगिक अनुप्रयोग लिखिए।
 (c) प्रत्येक के उदाहरण दीजिए –
 (i) कृत्रिम मधुरक
 (ii) खाद्य संरक्षक
 (iii) जिंक के अयस्क

(a). Catenation → Carbon can form long chain compounds.



- Tetravalency → 4 valence atoms can be replaced by other atoms.

2(Two)

(Q.Unit-II-C-10)



↳ due to Catenation & Tetravalency carbon is the most known atom in the universe.

(b) Domestic applications → Charcoal → ~~Fuel~~
 → Graphite → Dry cell ; Lead pencil
 → Coal → Fuel in oven
 → Diamond → Jewellery

Industrial Applications → Coal → Thermal power
 → Diamonds → Metal cutter
 → Graphite → ~~Lubricant~~
 → CNT → Medical Surgery
 → Dry Ice → Coolant

(c) (i) ~~Aspartame~~

(ii) ~~Sodium Benzoate~~

(iii) ~~ZnS (Zinc Sulphide)~~

2(Two)
(Q. Unit-II-C-10)

2.5(Two½)
(Q. Unit-II-C-10)

11. Describe the functioning of the human eye and explain any one of the refractive defects of vision and its corrective measure.

मानव आँख की कार्यप्रणाली का वर्णन करें और दृष्टि के किसी एक अपवर्तक दोष और उसके सुधारात्मक उपाय की व्याख्या करें।

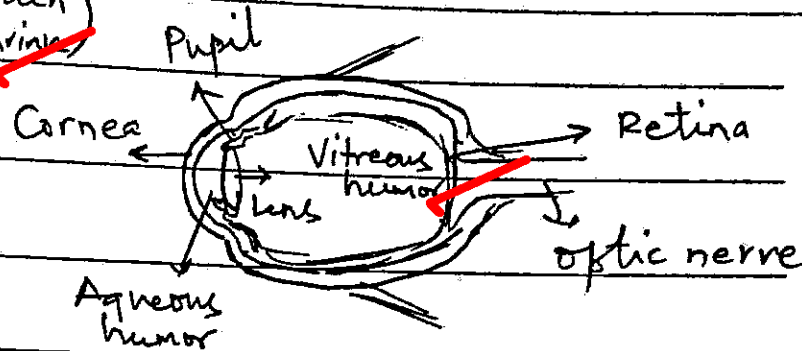
* Functioning of Human Eye :-

- Visible light enters through the Cornea and Passes through lens which is ~~is~~ Controlled

0.5(Zero½)
(Q. Unit-II-C-11)



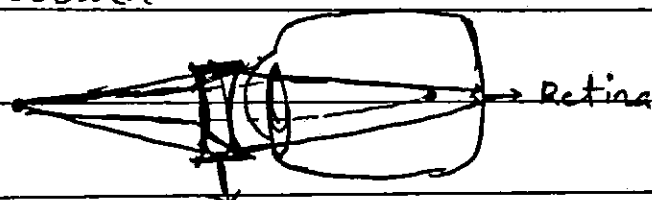
- through pupils. (Dark $\rightarrow$ widen)
(light $\rightarrow$ shrink)
- light falls upon Retina of eye which forms the image of the object.
 - optic nerve transmits the signal to the brain which interprets the signal and understands the image.



Defects of vision

- Hypermetropia
- Myopia
- Astigmatism
- glaucoma

* Myopia $\rightarrow$



defect :- Image formation before the retina

Concave lens

thus non-capability to clearly see far away placed objects.

Treatment $\rightarrow$ Concave lens Spectacles are used to correct the vision.

12. Explain the concept of real time-PCR. What is 'Ct value' in RT-PCR Test for Covid-19? रीयल टाइम-पीसीआर की अवधारणा की व्याख्या करें। कोविड-19 के लिए आरटी-पीसीआर टेस्ट में 'सीटी वैल्यू' क्या है?

* RT-PCR (Reverse Transcriptase Polymerase chain Reaction)

- Step 1 $\Rightarrow$ Extraction of RNA from the virus by sample collection.

1(One)

(Q.Unit-II-C-11)

2.5(Two½)

(Q.Unit-II-C-11)

2(Two)

(Q.Unit-II-C-11)

0.5(Zero½)

(Q.Unit-II-C-12)



- Step 2 → Conversion of RNA into DNA i.e. reverse transcriptase
 - Step 3 → Amplification of the DNA sample through Polymerase chain reaction.
- ↳ RT-PCR test is used for the test of COVID-19.

0.5(Zero½)
(Q.Unit-II-C-12)

0.5(Zero½)
(Q.Unit-II-C-12)

13. Mention the contribution of the following Indian Scientists –

- | | |
|---------------------------|--|
| (i) Homi Jehangir Bhabha | (ii) Sir Mokshagundam Visvesvaraya |
| (iii) Satyendra Nath Bose | (iv) Meghnad Saha (v) Har Gobind Khorana |
- निम्नलिखित भारतीय वैज्ञानिकों के योगदान का उल्लेख करें –
- | | |
|-------------------------|---------------------------------------|
| (i) होमी जहाँगीर भाभा | (ii) सर मोक्षगुंडम विश्वेश्वरैया |
| (iii) सत्येंद्र नाथ बोस | (iv) मेघनाद साहा (v) हर गोबिंद खुराना |

(i) H. J. Bhabha → Chairman Atomic Energy Commission
 (Nuclear scientist) → Father of Indian Nuclear programme
 → Apsara • Reactor for R&D
 → First Space Rocket mission

1(One)
(Q.Unit-II-C-13)



- (ii) Sir M. Visvesvaraya
(Civil Engineer)
'Bharat Ratna'
- Krishna Raja Sagara Dam Construction
 - Madras State Civil Service
 - Development of Education Sector
- (iii) S. N. Bose
- Bose - Einstein Condensate (5th state of matter)
 - Bose Equation
 - study of outer space
- (iv) Meghnad Saha
(Astrophysicist)
- Indigenous Cyclotron
 - Saha Equation in Astrophysics
 - planning of Damodar valley Project
- (v) Har Gobind Khorana
(Botanist)
- Pioneer in Biotechnology
 - Research on plants
 - Novel plant genetics

0.5(Zero½)
(Q. Unit-II-C-13)

1(One)
(Q. Unit-II-C-13)

1(One)
(Q. Unit-II-C-13)

0.5(Zero½)
(Q. Unit-II-C-13)

Unit - III
(यूनिट - III)

(65 Marks)
(65 अंक)

Part - A
भाग - अ

Marks : 10
अंक : 10

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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

1. Write about time range of Mesozoic era.
मेसोजोइक युग की समय सीमा लिखिए।

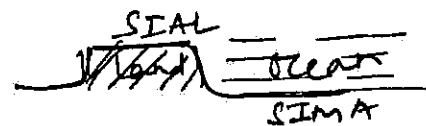
• Time Range

- Cretaceous (135 mya)
- Jurassic (157 mya)
- Triassic (197 mya)

0.25(Zero¹/₄)

(Q. Unit-III-A-1)

2. Write about the structure of Sial.
सियाल की संरचना के बारे में लिखिए।



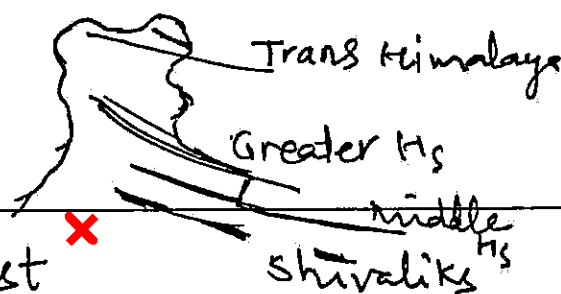
↳ Sial ⇒ Silica + Aluminium

↓
Land surface rich in Silica and Aluminium
of low density ~~in~~ comparison to Sima.
(Basalt)

0.5(Zero¹/₂)

(Q. Unit-III-A-2)

3. How Shivalik Himalayas was formed?
शिवालिक हिमालय का निर्माण कैसे हुआ?



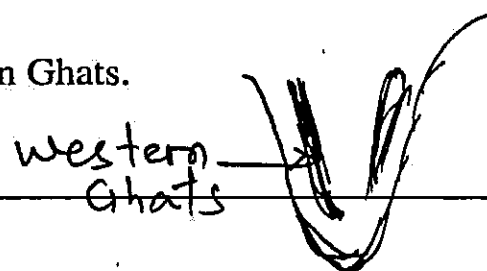
Shivaliks were formed in last
thrust of the formation of Himalayas, resulting
into longitudinal valleys i.e. Duns & Duars.

↓
Boundary Thrust

0 (Zero)

(Q. Unit-III-A-3)

4. Write the names of Mountain Ranges/Hills of Western Ghats.
पश्चिमी घाट की पर्वत श्रेणियों/पहाड़ियों के नाम लिखिए।



- Nilgiri Hills
- Baba Budan hills
- Wayanad hills



5. Write the zinc producing areas of Rajasthan.

राजस्थान के जस्ता उत्पादक क्षेत्रों का उल्लेख कीजिए।

- Rajpura - Dariba (Chittorgarh)
- Rampura - Agucha (Bhilwara)
- ~~Zawar~~ mines (Udaipur)



0.5(Zero $\frac{1}{2}$)

(Q. Unit-III-A-4)

Part - B

भाग - ब

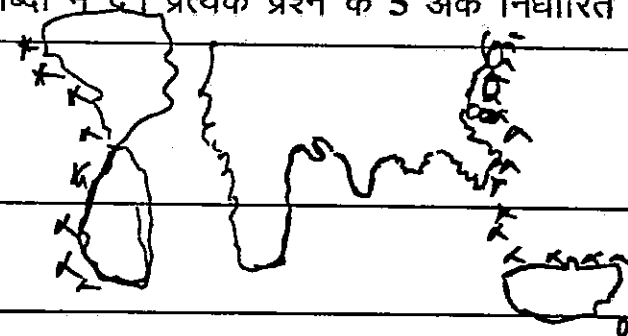
Marks : 25

अंक : 25

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

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 50-50 शब्दों में दें। प्रत्येक प्रश्न के 5 अंक निर्धारित हैं।

6. Describe the Circum - Pacific belt of Volcanoes.
ज्वालामुखी की परिप्रशांत मेखला का वर्णन कीजिए।



- Circum-Pacific belt includes countries aligning to Pacific Ocean i.e. Australia & NZ; ASEAN countries; Russia; Japan, Korea; S. America; Canada & USA

fig: Circum-Pacific Belt

- 90% of the major Earthquakes and 90% of volcanic activities ~~are~~ occurs in this belt
- Divergent plate boundaries causes EQ & volcanism.
- Continuous chain of volcanoes is observed.

0.75(Zero $\frac{3}{4}$)

(Q. Unit-III-A-5)



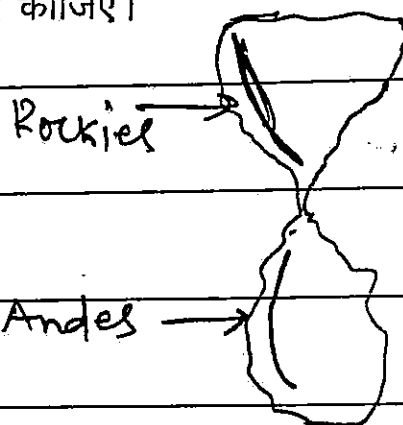
- Examples → ~~the~~ Hawaii ; Pelean ; Fujiyama ; etc.

1(One)
(Q. Unit-III-B-6)

7. Discuss in brief the geographical features of Rocky Mountain range.
रॉकी पर्वत श्रेणी की भौगोलिक विशेषताओं का संक्षिप्त वर्णन कीजिए।

* Rocky Mt Range

- Youngest mt ranges of the world along with Himalayas
- Formation in Cretaceous period Andes →
- origin of rivers, plateaus and volcanic activity. → America
- Crisscrossing N. America through Canada & USA.
- Andes mt. range counterpart
- Minerals → Gold, Silver, platinum
Iron, zinc-lead, chromium
- Rivers → Rio Grande
Arizona



8. Discuss the geographical characteristics of Tropical evergreen forest of India.
भारत के उष्ण कटिबंधीय सदाबहार वनों की भौगोलिक विशेषताओं का वर्णन कीजिए।

* Geographical characteristics

- Area → Eastern Himalayas
Western Ghats
Nilgiri Himalayas
A&N Islands
- Rainfall → > 250 cm in year
- Temperature → Moderate (~25°C)

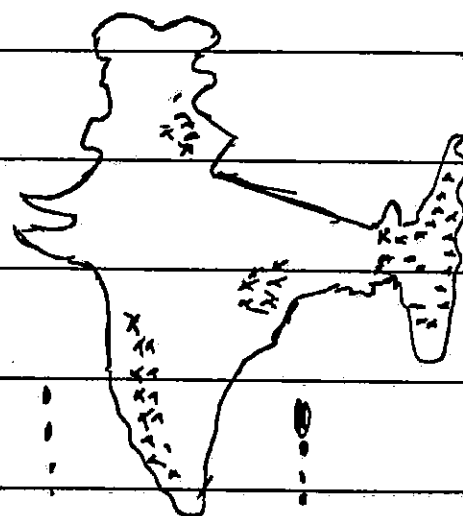


fig: Distribution of Tropical Evergreen forest

1.5(One½)
(Q. Unit-III-B-7)



- Vegetation → Cinchona ; Ebony ; Rubber ; Mangrove ; Hardwood Trees ; Sandal wood
- Importance
 - Conservation of fauna
 - Aesthetic & Tourism purpose
 - Commercial lumbering
 - Minor forest produce
 - preservation of tribal culture

2.5(Two½)

(Q.Unit-III-B-8)

9. Discuss the physical features of Hadoti plateau of Rajasthan.

राजस्थान के हाड़ौती पठार की भौतिक विशेषताओं की विवेचना कीजिए।

- * Districts → Kota ; Bundi ; ~~Karan~~ ; Jhalawar  Hadoti
- * Climate → "Aw" (Koeppen) → Humid tropical Plateau
- * Soil → Black ~~type~~ Regur soil
- * Rainfall → 100-200 cm
- * Rivers
 - Chambal
 - Kanas
 - Meji
- * Physical division
 - Chambal landscape
 - vindhyan plateau
 - Badland Topography
- * Minerals
 - Kota stone (Limestone)
 - Gypsum
 - Granite
- * Biodiversity → Gharials ; Crocodile ; Gangetic dolphin

0.25(Zero¼)

(Q.Unit-III-B-9)

1.5(One½)

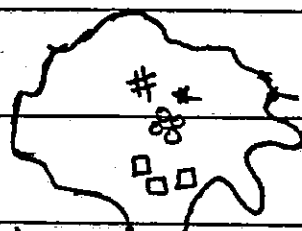
(Q.Unit-III-B-9)

10. Discuss the distribution of major metallic minerals of Rajasthan in brief.

राजस्थान में प्रमुख धात्विक खनिजों के वितरण की संक्षेप में विवेचना कीजिए।

→ Major Metallic minerals

* Iron → Jaipur (Kaladera)



* Copper → Khetdi - Singhara (Jhunjhuna)
Kho - dariba (Alwar)



<u>Lead - zinc</u>	<u>Manganese</u>
• Rampura-Agucha (Bhilwara)	• Tonsk
• Rajputa-dariba (Chittor)	• Jaipur
• Zawar (Udaipur)	• Nagaur
	• Ajmer

Part - C

भाग - स

Marks : 30

अंक : 30

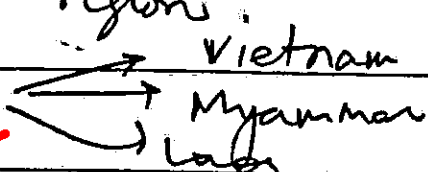
Note: Attempt all questions. Answer the following questions in 100 words each. Each question carries 10 marks.

नोट : सभी प्रश्नों के उत्तर दें। निम्न प्रश्नों का उत्तर 100 - 100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

11. Describe the problems of Geopolitics in context of South East Asian countries.

दक्षिणी पूर्वी एशिया की भू-राजनीतिक समस्याओं की विवेचना कीजिए।

* problems of S-E Asian Geopolitics

- South-China sea dispute → china's encroachment on the Islands challenges the UNCLOS rules and sovereignty of Philippines, Vietnam, Japan etc.
- china's debt trap diplomacy → chinese control over ~~administration~~ ^{Economy} of S-E Asian is a dangerous sign.
- military Regime in Myanmar and ~~genoc~~ ethnic cleansing of Rohingya muslims has destabilized the region.
- Golden Triangle  of drugs.
- One China policy of china in hongkong

2.5(Two½)

(Q.Unit-III-B-10)



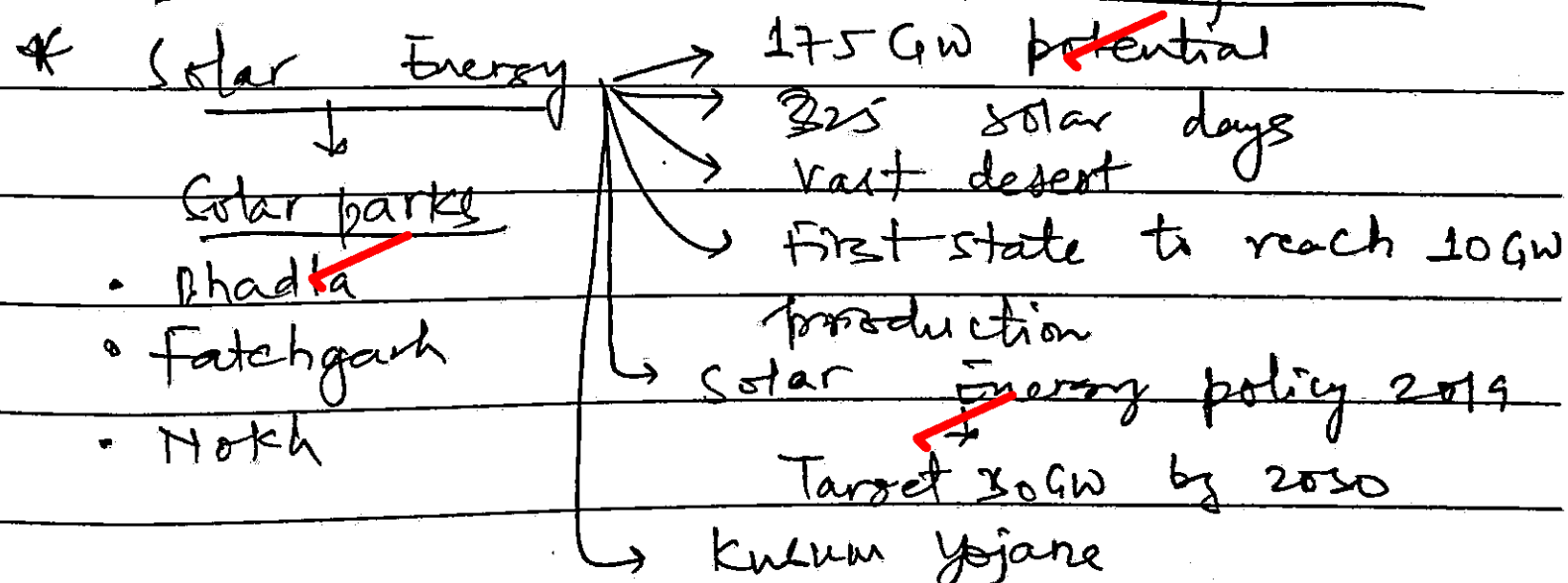
and Taiwan. Hong Kong Revolution has seen suppression of democratic voice.

- Korean peninsula ~~dispute~~ b/w North & S. Korea. Aggression of N. Korean dictator has destabilized the region.
- India left the RCEP agreement ~~due~~ citing agricultural and trade deficit problems.
- Climate change has threatened the Island nations.
- Belt and Road ~~initiative~~ of China has integrated the region economically.

12. Describe the development of non-conventional energy in Rajasthan.

राजस्थान में गैर-परम्परागत ऊर्जा के विकास का विवरण दीजिए।

* Non-Conventional Energy in Rajasthan



4(Four)

(Q. Unit-III-C-11)



* Wind Energy → wind & Hybrid Energy policy
 Wind parks → 127.5 GW potential at 120 m height
 • Sam, Jaisalmer → 5 GW wind energy production
 • Falodhi

* Biomass Energy → 400 MW production
 Mustard Husk
 Jutil flour
 Rice bran

* Biofuel Energy → Biofuel Authority
 Rotarjet & Karanj
 Southern Rajasthan
 Biofuel policy

↳ Rajasthan is rich in non-conventional form of energy and thus leading in ~~the~~ country.

13. Explain the concept of Geo-heritage and highlight its potentialities in Rajasthan.

भू-धरोहर स्थल की अवधारणा को स्पष्ट कीजिए तथा राजस्थान में इसकी संभाव्यता पर प्रकाश डालिए।

As per UNESCO a Geo-heritage is a recognised site of evidence of geological activity occurred in the past. ~~Following~~

• objective → Conservation of Geo-heritage

3.5(Three½)

(Q.Unit-III-C-12)

0 (Zero)

(Q.Unit-III-C-13)



- Sustainable Tourism
- Inclusive development of local people by participative conservation.
- Research on past activities
- Identification of rare minerals and their study.
- preservation of geo-heritage from encroachment and destruction.

↳ Potentialities in Rajasthan

- 12 out of 34 recognised Indian sites are in Rajasthan only :-
 - Nepheline syenite, Ajmer
 - Gossan, Rajpura Dariba
 - Rajasthan is known as museum of minerals.
 - Stromatolite park → Bhojunda, Chittor
 - welded Tuff → Jodhpur
 - Great Boundary Fault → Sathur, Bundi
 - Alkal wood fossil park, Jaisalmer
 - Vast desert and diverse climatic conditions.
 - Saraswati River underground path, Pushkar Lake etc. can be developed as Geo-heritage in future
 - Evidences of glacial age are found in desert areas.
- ↳ Hence Rajasthan is rich in terms of geo-heritage which can be harnessed for tourism potential.

0.5(Zero½)

(Q. Unit-III-C-13)

0.25(Zero¼)

(Q. Unit-III-C-13)

1.5(One½)

(Q. Unit-III-C-13)

0.5(Zero½)

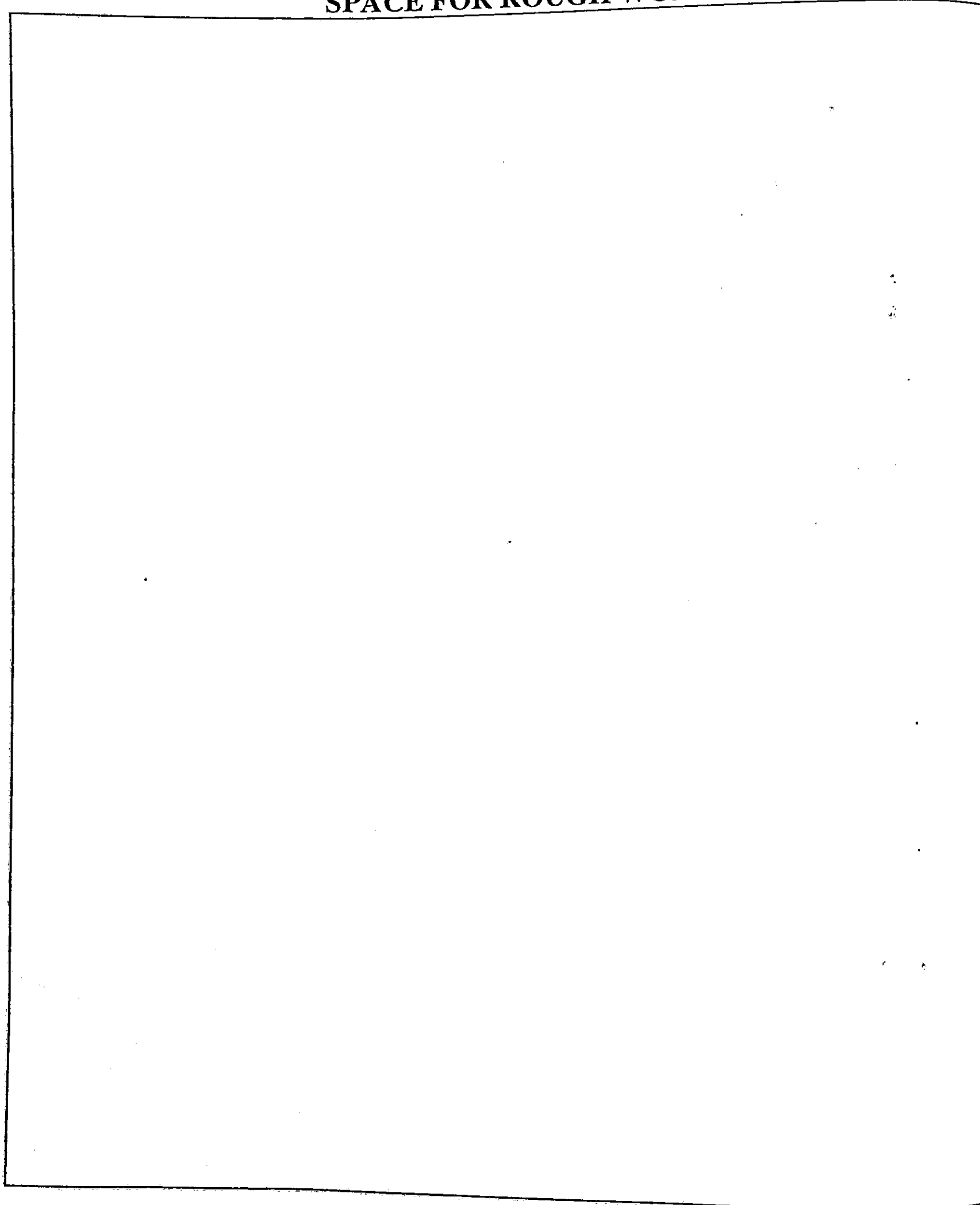
(Q. Unit-III-C-13)

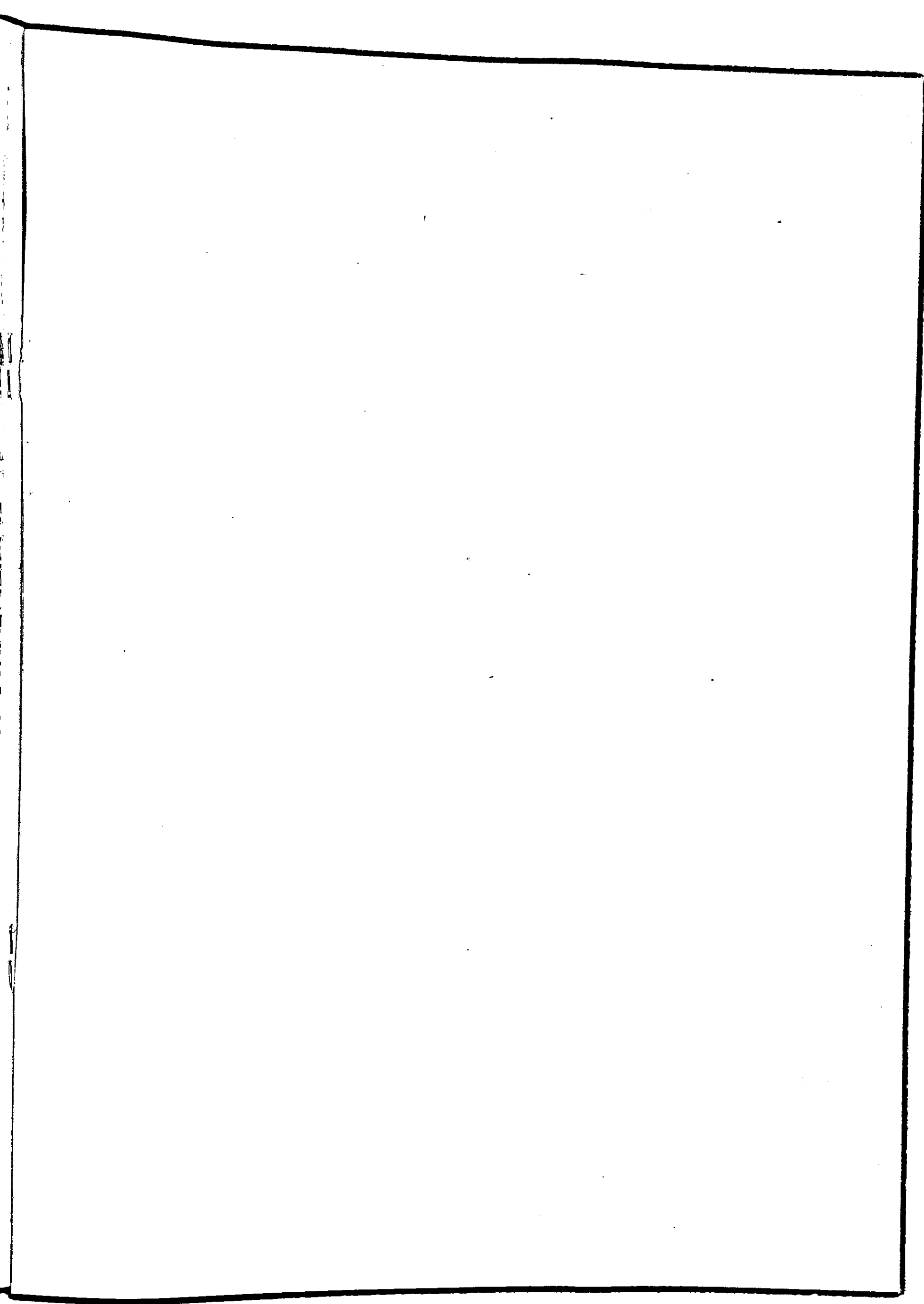
Paper-II

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SPACE FOR ROUGH WORK



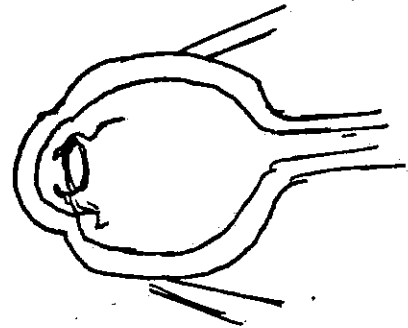


Cenozoic
 Mesozoic
 Palaeozoic

Pre Cambrian

C 138 mya
 J
 T

P
 C 270
 D 320
 S 470
 O 500
 C 570



570



Iron
 Manganese
 lead-zinc
 Copper

