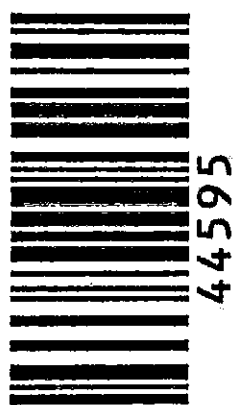


PART - I

Paper Code

P-2



Medium of Exam

English

Hindi ☐

English ☒

Q. No.	Total Marks	Obtained Marks
Unit-1-A	10	6
Unit-1-B	25	6.5
Unit-1-C	30	9
Unit-2-A	10	3.25
Unit-2-B	20	10.5
Unit-2-C	40	12.5
Unit-3-A	10	5.25
Unit-3-B	25	10
Unit-3-C	30	13
Total Obt. Marks in Figures	200	76
Total Obt. Marks in Words		Seventy Six

3

ation of the candidate shall be date will be liable- Name, Address, Roll Number,

uestions.

दि नहीं लिखें। यहाँ तक कि पत्रादि प्रश्नोत्तर से असंबंधित वाक्य, शब्द परीक्षा निरस्त की जाकर भविष्य में

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हर उत्तर नहीं लिखें। बॉर्डर लाइन के

wers beyond the prescribed limit of words, failing this, marks may be deducted.

क नहीं लिखना चाहिए। इसका उल्लंघन करने पर अंक काटे जा सकते हैं।

out of many and the candidate attempts more than one question then only first answer will be assessed.

ल्प दिया गया है और परीक्षार्थी द्वारा एक से अधिक प्रश्न हल किये जाते हैं तो ऐसी स्थिति में प्रथम उत्तर ही जाँचा जायेगा।

ny other electronic gadget in the examination hall is strictly prohibited.

भी इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है।

if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her

to be prosecuted under Rajasthan Public Examination (Measures for Prevention of Unfair

applicable and Commission's Regulations. Commission may also debar him/her permanently from

है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए और

रोकथाम अध्यापक) अधिनियम, 2022 तथा अन्य प्रभावी कानून एवं आयोग के नियमों-प्रावधानों के तहत कार्यवाही की

वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

andidate or any attempt is made to damage the Question-Answer Booklet or any page is removed or tire examination shall be cancelled by the Commission, for which candidate will be liable.

प्रश्नोत्तर पुस्तिका को किसी प्रकार की क्षति पहुँचाई जाती है अथवा कोई पृष्ठ फाड़ा जाता है या उस पर किसी प्रकार का संपूर्ण परीक्षा निरस्त की जा सकेगी और उसके लिए अभ्यर्थी उत्तरदायी होगा।

DI RANK 94



CANDIDATE PLEASE READ CAREFULLY

अभ्यर्थी कृपया ध्यान से पढ़ें

Please note that the following act is strictly prohibited and will be treated as unfair means. The entire examination of the candidate shall be cancelled. Also, he/she may be debarred by the Commission from all the future examinations for which the candidate will be liable-

- Writing any mark of identity inside the Question-Answer Booklet (including space for rough work) i.e. Name, Address, Roll Number, Mobile number etc. However in case of letter writing words like XYZ, ABC etc. can be used.
- Writing name of God, religious sign, irrelevant sentence, words and numbers other than the answers of the questions.

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। यहाँ 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 समस्त परीक्षाओं से विवर्जित करने की कार्यवाही की जा सकेगी और उसके लिए अभ्यर्थी उत्तरदायी होगा।

IMPORTANT INSTRUCTIONS (महत्वपूर्ण निर्देश)

- It should be ensured that the Question-Answer Booklet is provided in sealed polythene to the candidate.
अभ्यर्थी यह सुनिश्चित कर लें कि अभ्यर्थी को प्रश्नोत्तर पुस्तिका सीलबंद पॉलिथीन में प्रदान की गई है।
- 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 at once 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 तुरन्त अभिजागर के ध्यान में ला दें तथा उसे बदलवा लें, अन्यथा उसका दायित्व अभ्यर्थी का होगा।
- Please fill up all desired details properly on Cover Sheet (OMR 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 (OMR sheet).
प्रश्नोत्तर पुस्तिका में प्रश्न हल करने से पूर्व कवर पृष्ठ (ओ.एम.आर. पत्रक) पर सभी वांछित विवरण नीले बॉल पॉइंट पेन से सावधानीपूर्वक भरें। कवर पृष्ठ (ओ.एम.आर. पत्रक) पर रोल नम्बर का त्रुटिपूर्ण अंकन करने पर आयोग द्वारा प्राप्तियों में से 5 अंक काटे भी जा सकते हैं।
- This Cover Sheet (OMR 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 (OMR sheet) is not torn or damaged.
कवर पृष्ठ (ओ.एम.आर. पत्रक) दो भागों में बंटा है, जिसमें कतिपय सूचनाएँ पूर्वमुद्रित हैं, शेष की पूर्ति अभ्यर्थी को करनी है। ध्यान रखें कि कवर पृष्ठ (ओ.एम.आर. पत्रक) कहीं से कटे-फटे नहीं अथवा किसी भी प्रकार से क्षतिग्रस्त नहीं हो।
- The question paper is divided into different units/parts. The number of questions to be attempted and their marks are indicated in each unit and part.
प्रश्न-पत्र विभिन्न यूनिट/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 हैं।
- If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English versions 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।
- 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 हिन्दी या अंग्रेजी 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।
- Candidates are directed to write answers only in the prescribed space of Question-Answer 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 उत्तर नहीं लिखें। बॉर्डर लाइन के बाहर लिखे गये उत्तर को जाँचा नहीं जायेगा।
- 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।
- 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।
- Mobile Phone, watch, smart watch or any other electronic gadget in the examination hall is strictly prohibited.
मोबाइल फोन, घड़ी, स्मार्ट वॉच या अन्य किसी भी इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है।

Warning : If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted under Rajasthan Public Examination (Measures for Prevention of Unfair means in Recruitment) Act, 2022, other laws applicable and Commission's Regulations. Commission may also debar him/her permanently from all future examinations.

चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए और राजस्थान सार्वजनिक परीक्षा (भर्ती में अनुचित साधनों की रोकथाम अध्यापक) अधिनियम, 2022 तथा अन्य प्रभावी कानून एवं आयोग के नियमों-प्रावधानों के तहत कार्यवाही की जायेगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

Special Note :

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

विशेष नोट :

अभ्यर्थी द्वारा यदि कोई गलत सूचना अंकित की जाती है या प्रश्नोत्तर पुस्तिका को किसी प्रकार की क्षति पहुँचाई जाती है अथवा कोई पृष्ठ फाड़ा जाता है या 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।



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PAPER-II : GENERAL STUDIES & GENERAL KNOWLEDGE

Total Marks : 200

Total Questions : 39

Unit - I

(65 Marks)

Part - A

Marks : 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 के उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

1. What are cardinal virtues according to Plato ?

प्लेटो के अनुसार मुख्य सद्गुण कौन से हैं ?

cardinal virtues according to Plato are: →

① Justice

② Courage

③ Temperance

④ Wisdom

2. What is Goodwill according to Kant ?

कांट के अनुसार 'शुभ-संकल्प' क्या है ?

Goodwill according to Kant is the will and actions

done for the fulfilment of the duty. These actions

are thus ethical actions which are performed as

'Categorical imperative' and are irrelative to time,

place and result. According to Kant - Good will is

'observance of duty for the sake of duty' (Q.02)

2(Two)
(Q.01)

1(One)
(Q.02)

3. State the meaning of the term 'Purushartha'.

'पुरुषार्थ' शब्द का अर्थ बताइए।

Purushartha are the goals of individual's life which one attains in different Ashrams of life. 1.5 (One½)
(Q.03)

- ① Kam - attained in grihastha ashram ② Arth - attained in grihastha ashram ③ Dharma - observed in all ashram ④ Moksha - ultimate objective of life. Purushartha thus regulates individuals life according to ethics and morality.

4. What is meant by 'Ahimsa Parmo Dharma'?

'अहिंसा परमो धर्मः' का अर्थ क्या है ?

It is the statement of Mahatma Gandhi which means that observing non-violence is the highest duty of an individual.

Thus, individual must not propagate violence in form of thought, speech and action and shall have a compassionate attitude towards other humans and worldly beings. 1.5 (One½)
(Q.04)

5. What is meant by 'Upaya Kaushalya' in Buddhism?

बौद्ध मत में 'उपाय-कौशल' का अभिप्राय क्या है ?

According to Buddhism one should have 'Upaya Kaushalya' in his acts so as to maintain pure ends and pure means of an action. Any act has to be in efficiency and effectiveness and should adhere to highest moral standards and principles. Ex:- Administrator work with efficiency and compassion Sustainable development

0 (Zero)
(Q.05)



Unit - I/Part - B

Marks : 25

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

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

6. State the distinctive features of Human Values.

मानवीय मूल्यों के विभेदक लक्षणों का उल्लेख कीजिए।

- ① Human values are the values with which one attach preference to while dealing with other humans and beings
- ② Therefore, they are individualistic in nature
- ③ They ^{degree in person} vary from person to person. Eg:- one may have (rule of law) as value other $\Rightarrow$ (mercy) ~~as~~ value
- ④ Examples - Love • Care • Compassion • Truth • Non-violence
- ⑤ These are universal principles - ethical choices throughout world
- ⑥ These are learned values (via socialisation process) through family, society, educational institutions etc.
- ⑦ Not inborn, innate ⑧ Basic principles for overall growth development of human in house society

2(Two)
(Q.06)

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यहाँ कुछ नहीं लिखें



7. How can contemporary society benefit from the Vedic idea of 'Rina'?

समसामयिक समाज 'ऋण' की वैदिक अवधारणा से किस प्रकार लाभान्वित हो सकता है?

Rina - debt one owes towards ^{family, friends} ~~parents~~ 0.5 (Zero 1/2)
(Q.07)
 (1) Social i) Promotes social harmony
 ii) Promotes social cooperation and mutual trust
 iii) leads to religious tolerance and mutual inter-dependence
 iv) better socialisation of social values etc. v) women empowerment
 (2) Economic - i) Economic equality - poverty, unemployment etc.
 ii) educating others → human development iii) Sustainable Development
 iv) Inclusive development (3) Environment i) protection of environment ii) prohibits pollution. (4) Political → participation
 ii) political rights - equal etc. Thus, concept of Rina have various benefits for today's society.

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यहाँ कुछ नहीं लिखें



8. What does Aurobindo mean by 'Life Divine'?

‘दिव्य-जीवन’ से अरविंद का क्या आशय है ?

‘Life Divine’ according to Aurobindo is the one which is lead according the concept of ‘Sat Chit Anand’ means to remain happy, ^{have} patience and lead a fulfilling life even in adverse conditions. ‘Life Divine’ is achieved through realising true self through meditation and having compassionate attitude towards other beings and developing good cordial relations with other. ‘Life Divine’ is also the life lead with principles of human values. Final aim of ‘Life Divine’ is to merge with Supreme Soul (Brahma). It is true condition of pure bliss and happiness.

2(Two)
(Q.08)

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यहाँ कुछ नहीं लिखें



9. What according to Gandhi is the ideal of 'Swaraj' ?

गांधी के अनुसार 'स्वराज' का आदर्श क्या है ?

Gandhiji gave the idea of 'Swaraj' - according to which there is establishment of society where non-violence and truth prevails and where no being hurt other being. Other meaning of 'Swaraj' is to have self-sufficiency in production and consumption level. The vision of Gandhiji was to establish 'Swaraj' in each and every village - self-sufficiency. Swaraj according to Gandhiji can be achieved through establishment of 'Ramon Rajya' where everyone realises the inner divine elements and follows path of truth and non-violence. Thus, idea of 'Swaraj' of Gandhi is all encompassing concept.

2(Two)
(Q.09)

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यहाँ कुछ नहीं लिखें



10. What is 'Surplus in man', according to Tagore ?

टैगोर के अनुसार, 'मानव का आधिक्य' क्या है ?

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0 (Zero)
(0/10)

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यहाँ कुछ नहीं लिखें



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 के उत्तर 100-100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

11. Discuss the role of administration in bringing about 'social reform'.

'समाज-सुधार' की दिशा में प्रशासन की भूमिका की चर्चा कीजिए।

Social reform refers to the eradication of evils of the society.

Role of administration in social reforms :-

- ① Regulates behaviour of citizens. (eg) - thru laws, regulation
- ② Establishes equality in society through implementation of DPSP and other schemes.
- ③ [Social welfare] - main aim of the administration.
- ④ Promotes rationality, logic and scientific temper in citizens. eg - Awareness Campaigns
- ⑤ Fights 'social evils' and help in their eradication.
eg:- Dowry Prohibition Act, 1961, POCSO Act, 2012
- ⑥ Administrators - [role models] for youth to follow.
eg:- TN Seshan, Ashok Khemka (IAS)
- ⑦ Propagates social values and human values.
eg:- Prakash Sir (IAS) - Education of disabled children.
- ⑧ Promotes [modernisation] in the society.
- ⑨ Acts as channel for [Socio-economic justice] to vulnerable sections of society.

- (10) Promote sustainable development, inclusive development
- (11) Brings attitudinal changes in people via social engineering and persuasion. Eg:- Swachh Bharat Mission
- (12) Work for women empowerment Eg:- Schemes for women welfare - Standup India Scheme
- (13) upliftment of SC and ST, other minorities
eg:- Prohibition of Employment as Manual Scavengers Act
Thus, administration being Spine of Governance plays important role in 'Social reform'

Do Not Write Here

यहाँ कुछ नहीं लिखें

2.5(Two½)
(Q.11)

12. State the features of Deontology and Consequentialism. Which one of the two approaches is more suitable for an administrator? Why?

परिणामनिरपेक्षवाद एवम् परिणामसापेक्षवाद की विशेषताएँ बताइए। इन दोनों दृष्टिकोणों में से प्रशासक के लिए अधिक उपयुक्त कौन सा है? क्यों?

Deontology

- ① Supported by Kant, Gandhi, Ethics of Gita
- ② Emphasises on means rather than ends
- ③ Right Means leads to right end. Thus action is ethical
- ④ Kant gave - Categorical imperative as duty
- ⑤ Ethical principles are not relative to time, situation and conditions

Consequentialism

- ① Supported by - Thomas Hobbes, J.S. Mill, Jeremy Bentham
- ② Emphasises on ends rather than means
- ③ If ends are right then action is considered ethical
- ④ Bentham gave principle of "max happiness to maximum number of people"
- ⑤ Ethical principles are relative to time, situation, conditions

Administrator has to follow the mixture of 2 approaches so as to do justice with his task.

* Deontology - ~~should~~ ^{should} be used in principles which are universally accepted as moral and ethical. For eg:- Adhering to integrity, compassion, rationality etc. Benefits should be provided with pure means and intentions without corruption etc. In most actions → Deontology needs to be followed.

* Consequentialism - can be applied according to situation where ethical dilemmas etc. occur → it can be resolved by keeping ends in mind. For eg:- Making policies, DBT scheme etc. Thus, mixture of both approaches can be used with maximum emphasis on Deontology while using Consequentialism according to situation.

4.5 (FOUR 1/2)

(10.12)



13. What do you mean by moral dilemma? Should personal ethics take precedence over professional ethics in a situation of moral conflict?

नैतिक द्वन्द्व से आप क्या समझते हैं? क्या किसी नैतिक संघर्ष की स्थिति में वैयक्तिक नैतिकता को वृत्तिपरक नैतिकता पर वरीयता दी जानी चाहिए?

Moral dilemma refers to the situation where there are 2 or more conflicting choices which invariably lead to violation of one or other value of a person.

Eg:- Environment v/s development in Dam construction

* Personal ethics - refers to the individual standards of right and wrong. Includes self-interest. Subjective

* Professional ethics - refers to acting according to rules and regulation of my profession and is objective.

In a situation of moral conflict → Professional ethics should take precedence over personal ethics as

→ Person is bound by professional and organisational goals and interests rather than individual interest

→ Person is ethically and morally responsible and accountable to the organisation. Thus it can't violate professional terms for personal gains.

→ Integrity - most important value of human gets compromised if any individual violates professional ethics for personal gains

Integrity compromised → erosion of trust → affects his image

→ affects his overall mental health → social status diminished (2/100)

Therefore, individual should give preference to professional ethics. (10/10)



Unit - II

(70 Marks)

Part - A

Marks : 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 के उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

14. (a) Why is solid carbon dioxide known as "dry ice" ?

(b) Why Bee-sting causes pain and irritation ?

1+1

(a) ठोस कार्बन डाई-ऑक्साइड को "शुष्क बर्फ" क्यों कहा जाता है ?

(b) भ्रमर-डंक, दर्द एवं जलन क्यों कारित करता है ?

(a) Carbon dioxide in solid form looks like crystalline ice and gives smoke which can be used to dani floor. Thus, it is known as 'dry ice'

0 (Zero)

(Q.14(a))

(b) Bee-sting have formic acid which causes pain and irritation.

0.5(Zero½)

(Q.14(b))

15. Write Kepler's second law of planetary motion. On which conservation principle it is based ?

1+1

केपलर की ग्रहीय गति का द्वितीय नियम लिखिए। यह किस संरक्षण सिद्धांत पर आधारित है ?

Kepler's second law - The ^{square of the} Time period or time taken ^(T) to complete one revolution by the planet around is proportional to the cube of radii of elliptical orbit. $T^2 \propto R^3$

0 (Zero)

(Q.15(i))

It is based on principle of conservation of Angular momentum.

1(One)

(Q.15(ii))



16. What is a "DNA Vaccine"? Name the world's first Covid-19 "DNA Vaccine".

1½+½

“डी.एन.ए. वैक्सीन” क्या होती है ? विश्व की प्रथम कोविड-19 “डी.एन.ए. वैक्सीन” का नाम बताइए।

0.5(Zero½)

(Q.16(i))

"DNA Vaccine" - vaccine made from RNA Plasmid using Concept of Genetic Engineering process. In it RNA of virus is cut using above technique and is attach to plasmid DNA → multiply → vaccine production.

* world's 1st "DNA-vaccine" - Covaxin

0 (Zero)

(Q.16(ii))

17. Write any two differences between IP Address and MAC address.

2

आई.पी. (IP) एड्रेस तथा मैक (MAC) एड्रेस में कोई दो अंतर बताइए।

IP Address	MAC Address
① larger in size (more space)	① smaller
② Can be used to trace location of any user	② Can't be used to trace location of user

0 (Zero)

(Q.17(i))

0.25(Zero¼)

(Q.17(ii))

0 (Zero)

(Q.17(ii))

18. Write any two differences between Classical Computing and Quantum Computing.

2

चिरसम्मत अभिकलन (क्लासिकल कम्प्यूटिंग) एवं क्वांटम अभिकलन (क्वांटम कम्प्यूटिंग) के बीच कोई दो अंतर लिखिए।

Classical computing	Quantum computing
① works on principles of <u>Boolean Algebra</u>	① works on quantum principles of <u>superimposition & entanglement</u>
② uses <u>bits</u> - ①, ②	② uses <u>qubits</u> - represent 1, 0 at same time.

0.5(Zero½)

(Q.18(i))

0.5(Zero½)

(Q.18(ii))



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 के उत्तर 50-50 शब्दों में दें। प्रत्येक प्रश्न के 5 अंक निर्धारित हैं।

19. (a) Name the scientist known as "Birdman of India" and briefly mention his contributions.

(b) Who is called the "Milkman of India"? Briefly mention his contributions.

2½+2½

(a) "बर्डमैन ऑफ इण्डिया" के नाम से जाने जाने वाले वैज्ञानिक का नाम लिखिए तथा संक्षेप में उनके योगदानों को उल्लेखित कीजिए।

(b) "मिल्कमैन ऑफ इण्डिया" किसे कहा जाता है? उनके योगदानों का संक्षेप में उल्लेख कीजिए।

(a) "Birdman of India" was the famous Ornithologist Salim Ali. He was the leading ornithologist of India & Pioneer in study of ornithology in India. → Conducted research on bird diversity of India. → recorded bird diversity in records for India. → Conducted Bird Survey for India. → Established institutions for the study of Ornithology.

0.5(Zero½)
(Q.19(a))



→ Measured bird diversity in ~~Kedade~~ ^{Kedade} National Park
→ Salim Ali Bird Sanctuary is named ^(Bhoratpur)
after him

(b) "Milkman of India" → Verghes Kurien
is also known as father of white revolution
in India

→ He revolutionized milk production in India
by setting up 'Amul' cooperative in
Gujarat - started as a union of small farmers
is now ^{one of} top most global cooperatives

→ He also used various new techniques
for milk production, breed improvement etc.

0.5 (Zero 1/2)
(Q.19(a))

1.5 (One 1/2)
(Q.19(b))

Do Not Write Here

यहाँ कुछ नहीं लिखें



20. What is National Super Computing Mission (NSM) ? Write any three salient achievements of this mission.

5

राष्ट्रीय सुपर कम्प्यूटिंग मिशन (NSM) क्या है ? इस मिशन की कोई तीन मुख्य उपलब्धियाँ लिखिए ।

Nodal Agency - CDAC
National Super Computing Mission (NSM) is a mission of Ministry of Science & Technology, to develop super computing capacity of India. Objective is to develop super computers based on quantum technology

- 2) faster processing of data in pico seconds.
- 3) development of quantum technology in India
- 4) providing quality data sets for use by.
- 5) Promotion of research and development in super computing

Achievements ① developed supercomputers - Pootyush, Mihir

② quality data sets ③ pioneer in research and development

1.5 (One 1/2)
 (Q.20)

Do Not Write Here

यहाँ कुछ नहीं लिखें



21. Write brief note on "ADITYA-L1" mission.

5

"आदित्य एल-1" मिशन (अभियान) पर संक्षेप में टिप्पणी लिखिए।

Aditya-L1 was a solar mission launched by ISRO in 2023 via PSLV-C57 from Sriharikota. It is India's 1st solar mission to study sun's chromosphere and corona and is orbiting around L1 (Lagrange point).

Objectives :-

① To study Chromospheric and Coronal sun's dynamic :-

→ To detect coronal heating pattern.

→ To detect process behind coronal mass ejections (CMEs)

3.5 (Three½)

(Q.21)

② Study solar physics - sun's magnetic field, study of plasma

③ Study solar weather and solar wind and eruption

④ Study effect of solar dynamics on space weather and earth's weather

Thus, it will act as a ~~pivotal~~ in solar dynamic research and effect of solar weather on earth's weather etc.

Do Not Write Here

यहाँ कुछ नहीं लिखें



22. Write the salient features of the following missiles :

2½+2½

(a) ORSAM

(b) ASTRA

निम्नलिखित मिसाइलों के मुख्य बिन्दुओं को लिखिए :

(a) ओ आर एस ए एम

(b) अस्त्र (ए एस टी आर ए)

(a) ORSAM - missile developed by DRDO. Inducted in Navy and have a mobile launch pad.

2.5(Two½)
(Q.22(a))

(b) ASTRA - is a missile developed by DRDO. Surface to air missile.

0.5(Zero½)
(Q.22(b))

Do Not Write Here

यहाँ कुछ नहीं लिखें



Unit - II/Part - C

Marks : 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 के उत्तर 100-100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

23. What are Nanomaterials ? Give a brief account of any two carbon allotropes that are being used as Nanomaterial. 2+4+4

नैनोपदार्थ क्या होते हैं ? नैनोपदार्थ के रूप में प्रयुक्त हो रहे कार्बन के किन्हीं दो अपरूपों का संक्षिप्त विवरण दीजिए।

Nanomaterials are the materials which have different 1(One)
property at the nano scale (10^{-9} m). Nanomaterials (Q.23(i))
density, conductivity, electro sensitivity, sticking
properties etc. vary at nano scale level.
Nano word means - 'small' in Latin.

① Carbon Nano Tube - is an allotrope of carbon
used as an Nanomaterial

- very rigid and strong material. 1(One)
- used in sheeting material. (Q.23(ii))

② Graphene - allotrope of Graphite

- hardest material known
- 100 times harder than steel
- Electrical conductivity
- used to manufacture aeroplanes,
bullet proof vehicles

1(One)
(Q.23(ii))



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Do Not Write Here

यहाँ कुछ नहीं लिखें



24. Discuss in brief the principle and working of MRI. Why it is considered safer than x-ray tomography?

6+4

एम आर आई (MRI) के सिद्धान्त एवं कार्यप्रणाली की संक्षिप्त विवेचना कीजिए। इसे एक्स-रे टोमोग्राफी की तुलना में अधिक सुरक्षित क्यों माना जाता है?

MRI - (Magnetic Resonance Imaging) works on the principle of NMR - which has following working -

• In MRI concept an atom nuclei placed in the external magnetic field $\rightarrow$ magnetic field is induced in the atom nuclei thus aligning all nuclei atoms in same direction. When radio wave of different frequency is applied to the atom nuclei then atom nuclei excite to β -stage due to absorption of radio waves. When supply of radio wave is switched off then excited nuclei comes back to α -stage thereby emitting frequencies different from those absorbed. This frequency difference is analysed and used to form clear images of internal body organs and tissues. MRI uses hydrogen active elements as they have non-zero spin quantum number.

MRI is more safe than X-ray because:-

- * X-Ray are the ionising radiations which cause ionisation in the body of a person thus ~~increasing~~ increased exposure to X-rays for prolonged period of time may cause mutation in person's body causing cancer while MRI $\rightarrow$ safer $\rightarrow$ Radio wave used
- * MRI - more clear image than X-Ray.
- * MRI - image of internal organs X-Ray can't image internal organs

2.5(Two½)
(Q.24(i))

1.5(One½)
(Q.24(ii))



25. (a) What is "Shree anna"? Why are they considered to be the nutri-cereals?
- (b) Describe the digestive-glands and their secretions which are associated with alimentary-canal in Human-beings.

5+5

- (a) "श्री अन्न" क्या है ? उन्हें पोषक-धान्य (न्यूट्री-सीरिअल्स) क्यों माना जाता है ?
- (b) मानव के आहार-नाल से सम्बद्ध पाचक ग्रन्थियों एवं उनके स्रवण का वर्णन कीजिए ।

⑨ Millets such as - Jowar, Bajra, Sorghum, Rai etc. are considered as "Shree anna" because of the nutritional value of these coarse grain cereals. These "Shree anna" have optimum amount of micro-nutrients and minerals in them. Thus, they ~~have~~ are becoming important due to their low cost, and their ability to fight the menace of malnutrition.

⑥ Digestive Glands	Location	Secretion and function
① <u>Salivary gland</u>	<u>Parotid</u> <u>portion</u>	<u>Saliva</u> - contains <u>ptyalin</u> and <u>amylase</u> → work on <u>carbohydrate</u> in mouth.
② <u>Liver</u>	<u>upper</u> <u>Abdomen</u>	Secretes <u>bile</u> juice



<u>Digestive Gland</u>	<u>Location</u>	<u>Secretion and Function.</u>
		Bile juice is used in fat digestion in small intestine. (contains lipase)
(3) <u>Pancreas</u>	Lower Abdomen	Pancreatic juice is secreted which get mixed with food in small intestine.
(4) Glands secreting HCl.	Stomach	Provides acidic medium to food. 2.5 (Two 1/2) (Q.25(b))
(5) <u>Pancreas</u>		Insulin maintain blood glucose level.

Do Not Write Here

यहाँ कुछ नहीं लिखें



26. (a) What is the full form of AIRAWAT ? Write its any four infrastructure requirements. . 5
- (b) Describe in brief about ChatGPT. 2.5
- (c) What is neural network in context of Artificial Intelligence ? 2.5
- (a) ए आई आर ए डब्ल्यू ए टी (AIRAWAT) का पूर्ण रूप क्या है ? इसकी कोई चार ढाँचागत आवश्यकताओं को लिखिए ।
- (b) चैटजीपीटी (ChatGPT) के बारे में संक्षिप्त में वर्णन कीजिए ।
- (c) कृत्रिम बुद्धिमत्ता (AI) के संदर्भ में न्यूरल जाल (network) क्या है ?

(a) AIRAWAT -

Infrastructure requirements

- (1) Transponder (2) Antenna (3) Receiver
(4) Modulator (5) De-modulator

x

0 (Zero)

(Q.26(a))

(b) ChatGPT - is the AI-based chatbot of the Open AI Company. It works on the principles of machine learning and AI. It is thus a chatbot which satisfies our query when any query is presented to it. It can respond with text, picture, video etc. It is criticised on the basis of prejudices basis of data used to train it.

1 (One)

(Q.26(b))

(c) Neural network - are the artificial neural network which acts as an "artificial brain" when trained with



datasets using machine learning and GPT
(Generative Programmed AI).

1(One)
(Q.26(c))

Do Not Write Here

यहाँ कुछ नहीं लिखें



Unit – III

(65 Marks)

Part – A

Marks : 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 के उत्तर 15-15 शब्दों में दें। प्रत्येक प्रश्न के 2 अंक निर्धारित हैं।

27. Write names of any 6 deserts found in Australia.

ऑस्ट्रेलिया के किन्हीं 6 मरुस्थलों के नाम लिखिए।

① Great Victoria Desert

② Great Australian Desert

③ Bolson Desert

④ Gibson Desert

1(One)

(Q.27)

28. Name any eight tributaries of river Krishna.

कृष्णा नदी की किन्हीं आठ सहायक नदियों के नाम लिखिए।

① Bhima ② Musi ③ Godavari

④ Malprabha ⑤ Koyana ⑥ Tungbhadre

1.5(One½)
(Q.28)



29. Mark the following places in the given outline map of India :

- (a) Thal Ghat
- (b) Pal Ghat
- (c) Nathu La
- (d) Shipki La

भारत के दिये गये रेखा-मानचित्र पर निम्न स्थानों को चिह्नित कीजिए :

- (a) थाल घाट
- (b) पाल घाट
- (c) नाथू ला
- (d) शिपकी ला



0 (Zero)
(Q.29(a))

0 (Zero)
(Q.29(b))

0.5(Zero½)
(Q.29(c))

0 (Zero)
(Q.29(d))

30. Sabarmati river flows in which districts of Rajasthan ? Name its tributaries.

राजस्थान के किन जिलों में साबरमती नदी प्रवाहित होती है ? इसकी सहायक नदियों के नाम लिखिए ।

Districts - Sirohi, Jalore, Banswara, Dungarpur

Tributaries - Sapal, Wakhal, Watsar, Sei

1 (One)
(Q.30)

31. Name the major rock phosphate producing areas of Rajasthan and mention its use.

राजस्थान के प्रमुख रॉक फॉस्फेट उत्पादक क्षेत्रों के नाम दीजिए और इसका उपयोग बताइए ।

Area - Udaipur, Chambal, Bhadra

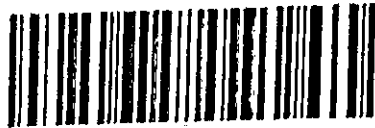
① Udaipur - Chambal Kotra, Dakan Kotra.

② Bikaner - Jaisalmer, Halkasar, Loonkaransar ③ Jodhpur

Use - Barmer Area - Chandhan, Mohangarh, Karol, Uthar

① used in fertilizer industry ② used in chemical, paper dye industry.

1.25 (One¼)
(Q.31)



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 के उत्तर 50-50 शब्दों में दें। प्रत्येक प्रश्न के 5 अंक निर्धारित हैं।

32. Describe the time and duration of carboniferous period and its chief characteristics.

कार्बोनिफेरस काल के समय और अन्तराल तथा इसकी प्रमुख विशिष्टताओं का वर्णन कीजिए।

Carboniferous period → Duration → Palaeozoic Era
Time period - around 200 million years ago ~~220 million~~

Chief characteristics

5th ~~epoch~~ ^{Period}
 is Carboniferous

- ① Forests of vascular plants found.
- ② Tall trees - Glossopteris were found in this period
- ③ Trees submerged in this period in rift valleys
- ④ Thus, Gondwana Coal is formed in Damodar, Mahanadi, Krishna-Godavari rift valleys
- ⑤ Gondwana rocks were also ~~formed~~ formed
- ⑥ Origin of reptiles in this period
- ⑦ Age of Amphibians - Amphibians dominant in this period.

Thus, this period have distinct characteristics

3(Three)
(Q.32)



33. Which are the important Bauxite mining areas of Odisha, Gujarat and Jharkhand in India ?

भारत में ओडिशा, गुजरात एवम् झारखंड के प्रमुख बॉक्साइट खनन क्षेत्र कौन से हैं ?

Important Bauxite mining areas:-

Odisha - Kodumuri, Laya.

Jharkhand - Singhbhum, Hazaribagh.

Gujarat - Kutch region, Gir range, plateau
part of Gujarat

0.5(Zero½)
(Q.33)

Do Not Write Here

यहाँ कुछ नहीं लिखें

34. Discuss the period of high growth of population with declining trend (1981-2011) in India.

भारत में जनसंख्या की उच्च वृद्धि के साथ गिरावट की प्रवृत्ति (1981-2011) की विवेचना कीजिए।

4th Phase of Population (1981-2011)

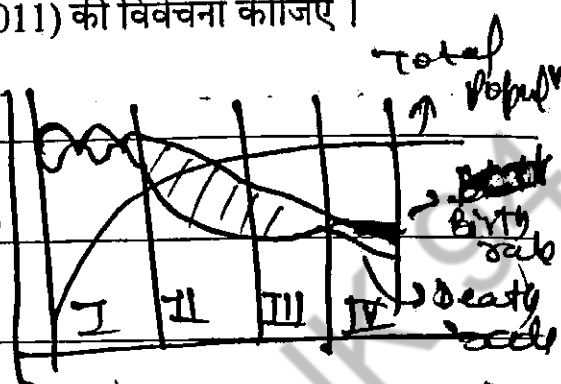
→ Period of declining birth rate due to population control

measure brought fruit, implementation of family planning programmes

→ while death rate also declined due to improved technology and improvement in health sector Universal Immunisation programmes etc.

⇒ Therefore, overall population continue to grow but rate

of growth rate declined. Population reached to 12.1 crore in 2011 from 85 crore in 1981. growth rate 9.81% per annum.



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35. Give a brief account of Biomass projects of Rajasthan.
राजस्थान में बायोमास परियोजनाओं का संक्षिप्त विवरण दीजिए।

Biomass projects in Rajasthan produces 120 MW energy according to Economic Survey 2022-23. Total ⁽¹⁸⁾ ~~10~~ biomass projects are operational in the state. Main sources of Biomass - Mustard husk, Julefara, industrial waste, Livestock waste, waste from homes can be used to produce biomass energy. Potentiality ⇒ Rajasthan have primarily agriculture (28% of GDP) and have 10.5% of livestock of country. Thus, Biomass have immense potentiality in Rajasthan.

(One)
(Q.35)

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36. Name the major endangered species of wild life found in Southern Aravalli region of Rajasthan. What are the major reasons for wild life loss in the state ?

राजस्थान के दक्षिणी अरावली प्रदेश की प्रमुख संकटग्रस्त वन्यजीव प्रजातियों के नाम लिखिए। राज्य में वन्यजीव हानि के मुख्य कारण क्या हैं ?

Endangered species in southern Aravalli - Tiger, elephant, Aravali parrot, Great Indian Vulture, Himalayan Bear etc.

Reasons for wild life loss:-

- ① Illegal hunting and poaching
- ② Habitat destruction of the wildlife
- ③ Deforestation due to grazing of livestock, population pressure, shifting cultivation and unsustainable agricultural practices
- ④ Urbanisation and industrialisation → Increase of demand for resource ⑤ dam construction ⑥ Climate change

3(Three)
(Q.36)

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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 के उत्तर 100-100 शब्दों में दें। प्रत्येक प्रश्न के 10 अंक निर्धारित हैं।

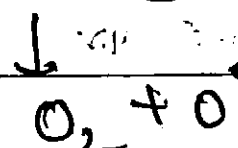
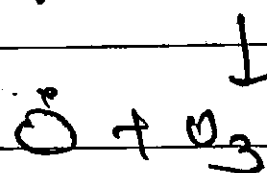
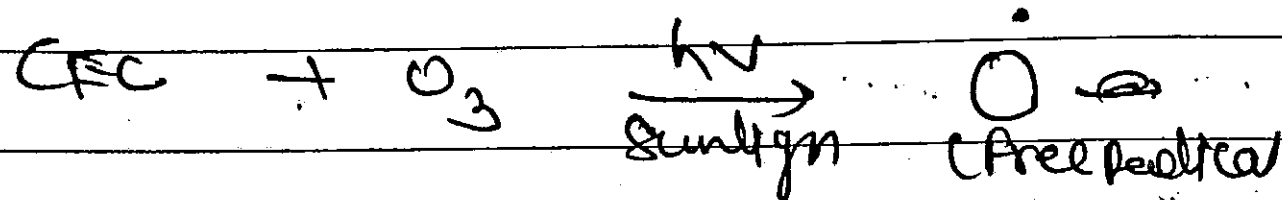
37. Discuss the causes and effects of Ozone layer depletion in the world.

विश्व में ओजोन परत के क्षरण के कारणों एवं प्रभावों की विवेचना कीजिए।

Causes of ozone layer depletion $\Rightarrow$ Extensive use of CFCs (Chloro-Fluoro-carbons) and other halogen products which are used in Air conditioning, refrigeration and other cooling applications. These CFCs react with O_3 in stratosphere in presence of sunlight which produces free radicals ($\text{O}^\bullet$) thus establishing a chain reaction in which O_3 is consumed.

Effects

- ① leads to 'ozone hole' over Antarctica region over South Pole
- ② leads to skin cancer as ozone layer absorbs UV rays coming from sun
- ③ Harmful for the flora and fauna of the region.
- ④ Flora - Stunted growth, affect photosynthesis process, drying and wilting of leaves
- ⑤ Fauna - Disturbs physiological processes of animals etc.



(Chain Reaction Starts)

Other effects ⑦ Coral bleaching

⑧ Loss of biodiversity

3.5(Three½)
(Q.37)

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यहाँ कुछ नहीं लिखें

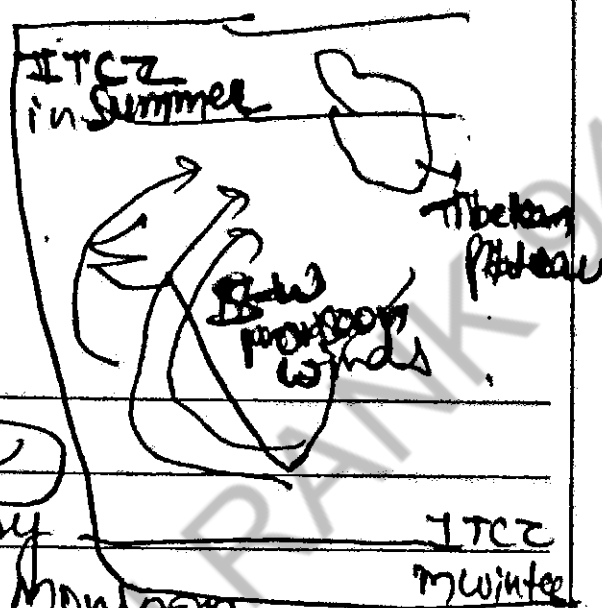


38. Write short notes on any two of the following :

- El-Nino effect on Indian monsoon
- Indian monsoon and Tibet plateau
- Western Disturbances in India

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियाँ लिखिए :

- एल-नीनो का भारतीय मानसून पर प्रभाव
- भारतीय मानसून एवं तिब्बत का पठार
- भारत में पश्चिमी विक्षोभ



(b) Indian monsoon and Tibet plateau

Tibetan plateau plays a very important role in the Indian monsoon.

ITCZ in winter is at equator (0°N) which gets shifted over Tibetan Plateau

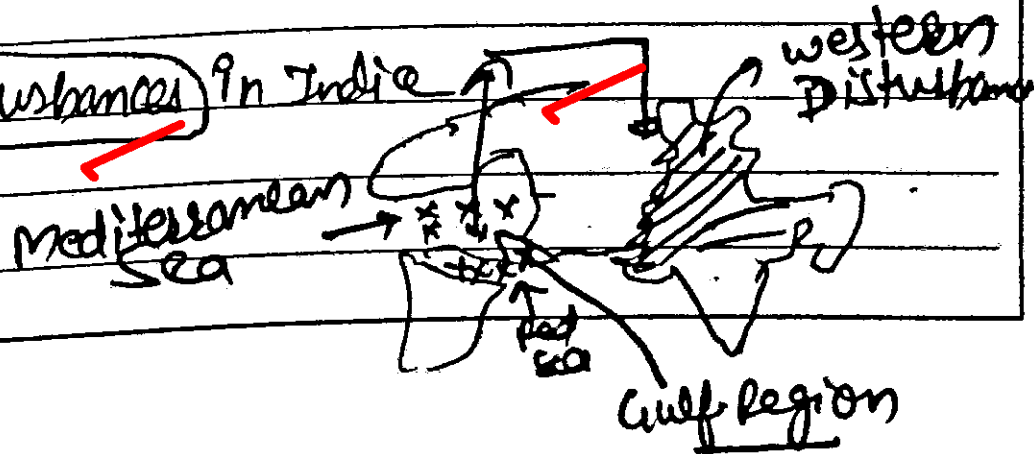
because of Intense heating of Tibetan plateau in summer a low pressure is developed over Tibetan plateau.

This low pressure attracts the monsoon winds towards the Indian Subcontinent.

These winds enter India as SW monsoon winds, and causes rainfall over India.

Monsoon Break whenever low pressure over Tibetan Plateau weakens it produces monsoon break in Indian monsoon.

(c) Western disturbances in India



2.5(Two½)
(Q.38(i))

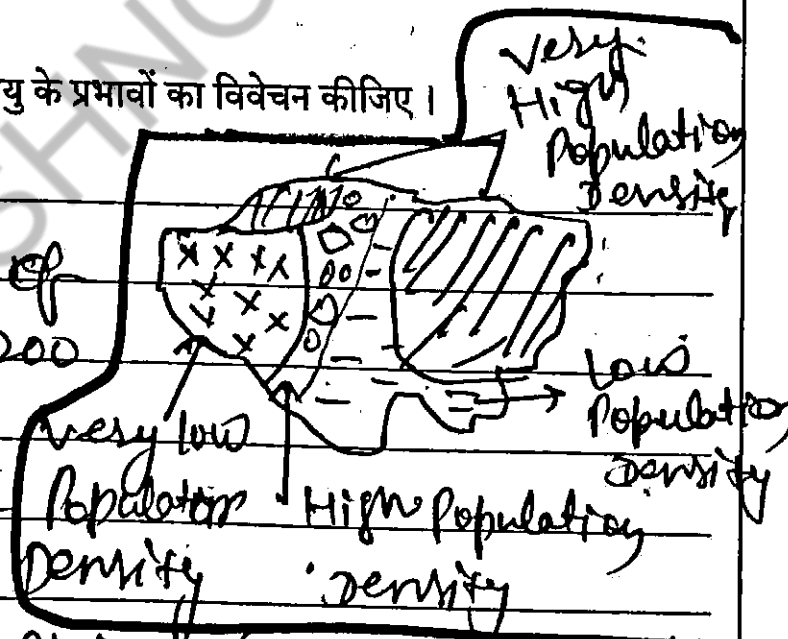


western disturbances are the moisture-laden winds originating from mediterranean sea. On route to India they absorb further moisture from Gulf of Persia and when enter India they cause rainfall in Northern Indian region thus providing unseasonal rainfall which is beneficial for the Rabi crops. They are called as 'Mauas' in winter and are important for crops of wheat, Gram etc.

39. Discuss the impact of physiography and climate on population distribution of Rajasthan.

राजस्थान के जनसंख्या वितरण पर भू-आकृति एवं जलवायु के प्रभावों का विवेचन कीजिए।

Impact of Physiography on Population distribution of Rajasthan. Avg density = 200



① Plain regions of Ghagghar Plains (Sir-ganganagar, Hanumangarh), Baras Plains (Eastern Rajasthan) and Chambal plains have very high population density of more than 300.

② Bunger Pradesh of Shekhawati, Sirohi, Pali nagar etc. have even topography. Therefore they have High population density.



③ Aravalli region and Madoti Plateau - undulating land, mountainous and plateau region. not well developed transport system and agriculture. Therefore, they have low population density.

④ Desert region - undulating sand dunes, no agriculture. Therefore they have very low population density.

Impact of Climate :- Moderate Climate

① Cooling Climate - for eg. - Plain region, low lying areas in Aravalli etc. have high density of population.

3.5 (Three & 1/2)

(Q.39)

② Extreme Climate - for eg. - Desert region - hot and Arid conditions, lack of rainfall. Therefore population density is low in these regions.

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