HINDMOTOR HIGH SCHOOL

WORKSHEET

CLASS - 10

ENGLISH

Worksheet

Chapter-My Own True Family

Summary:

The poem is a commentary by the poet, Ted Hughes on the importance of afforestation. The poet plays the role of a child whose sportive search for a stag in an Oakwood leads him to a different world. There, he meets an old woman with a stick in her hand. She puts him under a magic spell and in his trance he discovers himself to be tied to a stake and surrounded by oak trees. The trees not only dictate him but also claim to be his true family. They rebuke him for remaining indifferent to the reckless cutting down of the trees. They make him promise that in future whenever he witnesses the destruction of trees, he will take the initiative to replenish the loss of each tree by planting two more new trees. He is threatened that if he fails to keep his promise, the bark of the oak trees will wrinkle over him and root or transfix him among the oaks. To the child's or (the poet's) utter amazement, as the trance breaks , he discovers himself to be morally connected with the oak trees and he acknowledges his affinity with the world of nature despite being a human child .

Worksheet:

Questions related to the summary...

1) Where did the poet creep in?
2) What was the poet looking for, there?
3) Whom did the poet meet there? Describe the person's appearance.
4) What did the poet see when the person whom he met there open his / her bag?
5) What promise did the poet have to make?
6) What would be the result if the poet failed to keep his promise as revealed in the poem?
7) What was the poet's realisation after coming out of the Oakwood?
8) What message does the poem ' My Own True Family ' convey to the readers?

BENGALI

Chapter-অভিষেক

Summary: রবীন্দ্র পরবর্তী যুগের কবি মাইকেল মধুসূদন দত্তের শ্রেষ্ঠ সৃষ্টি আমিত্রাক্ষর ছন্দে রচিত মহাকাব্য ‘মেঘনাদবধ কাব্য । রামায়ণ থেকে কিছুটা অংশ গ্রহণ করে নিজস্ব চিন্তাধারায় কল্পিত রচনা করেন ‘মেঘনাদবধ কাব্য । এই কাব্যগ্রন্থটিতে মোট নয়টি সর্গ রয়েছে। পাঠ্যাংশের ‘অভিষেক’ শীর্ষক কাব্যাংশটি মেঘনাদবধের প্রথম সর্গ থেকে সংকলিত।

রামচন্দ্রের আক্রমণে স্বর্ণলঙ্কার বুকে শুরু হয়েছিল মহারণ। লঙ্কারাজ রাবণের সেনানী ও বীরবাহু যুদ্ধে নিহত হয়। তারই শোকে শোকাহত লঙ্কেশ্বর যুদ্ধযাত্রার জন্য রণসাজে সজ্জিত হন। সেইসময় রাবণরাজার পুত্র ইন্দ্রজৎ প্রিয়তমা পত্নী প্রমীলা ও তার সখীদের নিয়ে বিলাসব্যসনে মত্ত ছিলেন। ধাত্রীমাতা প্রভাষা অর্থাৎ অম্বুরাশিসুতা ছদ্মবেশী লক্ষ্মীর কাছ থেকে কনকলঙ্কার দুঃসংবাদ পেয়ে ইন্দ্রজিৎ বিস্মিত হন কারণ যে রামচন্দ্রকে সে নিজহাতে শরবিদ্ধ করে খন্ড খন্ড করেছেন কে কীভাবে জীবিত হয়ে উঠল। ইন্দ্রজিৎ রাগে কন্ঠের মালা, কনকবলয়, কানের দুল সব ছিঁড়ে ফেলেন। ইন্দ্রজিৎ রণসাজে সজ্জিত হয়ে স্ত্রী প্রমীলার বন্ধনমুক্ত হয়ে রথ নিয়ে আকাশপথে উড়ে চলে। তাতে লঙ্কা ও জলধি কেঁপে উঠল। অন্যদিকে রাক্ষসাধিপতি রাবণও যুদ্ধযাত্রার জন্য প্রস্তুত হচ্ছিলেন। ইন্দ্রজিৎ পিতাকে প্রণাম করে যুদ্ধে যাওয়ার অনুমতি প্রার্থনা করেন। রাক্ষসকুলের একমাত্র ভরসা ইন্দ্রজিৎকে রাবণ যুদ্ধে পাঠাতে চান না। কারণ তিনি বলেন বিধাতা তার প্রতি বিমুখ। ইষ্টদেব অগ্নিকে পূজা করে নিকুম্ভিলা যজ্ঞাগারে যজ্ঞ শেষ করে পরদিন প্রভাতে যুদ্ধে যাওয়ার নির্দেশ দেন। এরপর পুত্রকে সেনাপতি পদে বরণ করে গঙ্গোদক দিয়ে অভিষেক করেন।

Worksheet

১। নীচের প্রশ্নগুলির উত্তর দাওঃ- ১X৮=৮

১.১ "অভিষেক করিলা কুমারে" - কুমারের অভিষেক কীভাবে সম্পন্ন হয়েছিল ?

১.২ "হা ধিক্ মোরে" - বক্তা কেন নিজেকে ধিক্কার দিয়েছিলেন ?

১.৩ "বিধি বাম মম প্রতি" - বক্তার এমন মনে হয়েছে কেন ?

১.৪ "প্রণমিয়া ধাত্রীর চরণে" - ধাত্রীর প্রকৃত পরিচয় কী ?

১.৫ "ঘুচাব এ অপবাধ বধি রিপুকূলে" - বক্তা কোন্ অপবাদের কথা বলেছেন ?

১.৬ "হাসি উত্তরিলা মেঘনাদ" - মেঘনাদ কী উত্তর দিয়েছিলেন ?

১.৭ "কুম্ভকর্ণ বলী" - কুম্ভকর্ণ কে ছিলেন ?

১.৮ "তুরঙ্গম বেগে আশুগতি" - এখানে কার কথা বলা হয়েছে বিবৃত করো।

২। কমবেশি ৬০টি শব্দে উত্তর দাওঃ- ৩X৪=১২

২.১ "কাঁপিলা লঙ্কা, কাঁপিলা জলধি" - কম্পনের কারণ ব্যাখ্যা করো। ৩

২.২ "এই কি সাজে আমারে" - বক্তা কে ? কেন একথা বলেছেন ?১+২

২.৩ "নতুবা বাঁধিয়া আনি দিব রাজপদে" - বক্তা কাকে কোন্ প্রসঙ্গে একথা বলেছেন ? ১+২

২.৪ "বৃহন্নলারূপী কিরীটি, বিরাটপুত্র সহ উদ্ধারিতে গোধন" - 'বৃহন্নলারূপী কিরীটি' কে ? তাঁর কোন্ কথা এখানে বিবৃতহয়েছে ?১+২

HINDI

Chapter-आत्मत्राण

Summary:

(आत्मत्राण – रवींद्रनाथ टैगोर)

रवींद्रनाथ टैगोर का जीवन परिचय: रवींद्रनाथ टैगोर का जन्म 1861 में बंगाल में हुआ था। इनकी शिक्षा घर पर ही पूरी हुई। उन्होंने 8 साल की उम्र से कविता लिखना शुरू कर दिया। 16 वर्ष की उम्र में उन्होंने अपना पहला कविता-संग्रह प्रकाशित किया। इन्हें गुरुदेव के नाम से भी जाना जाता है। रवींद्रनाथ टैगोर हमेशा से ही समाज को शिक्षित और जागरूक बनाने के लिए कुछ करना चाहते थे, इसलिए उन्होंने सन 1901 में शांतिनिकेतन नामक संस्था की स्थापना की। कला के इस महान संस्थान को कुछ समय बाद सरकार ने विश्वविद्यालय का दर्ज़ा दे दिया।

उनके उपन्यास, कहानियाँ और गीत मुख्य रूप से राजनीतिक और व्यक्तिगत विषयों से संबंधित हैं। गीतांजलि, गोरा और घरे-बाइरे उनकी सबसे प्रसिद्ध रचनाएं हैं। उनकी रचनाओं को दो राष्ट्रों ने अपने राष्ट्र गानों के रूप में चुना था: भारत का राष्ट्रगान "जन गण मन" और बांग्लादेश का राष्ट्रगान "आमार सोनार बांगला" दोनों गुरुदेव की कलम की ही देन हैं। श्रीलंका के राष्ट्रीय गान का मूल गीत भी श्री रवींद्रनाथ टैगोर ने ही लिखा था। गुरुदेव अपने जीवन में तीन बार महान वैज्ञानिक एल्बर्ट आइंस्टाइन से भी मिले।

रवींद्रनाथ टैगोर 1913 में साहित्य में नोबेल पुरस्कार जीतने वाले पहले भारतीय बने। उन्हें उनकी उत्कृष्ट रचना गीतांजलि के लिए यह पुरस्कार दिया गया। टैगोर ने गद्य और कविता के नए रूपों की शुरुआत की और बंगाली साहित्य में बोलचाल की भाषा के उपयोग को भी लोकप्रिय बनाया। उन्हें आधुनिक भारतीय उपमहाद्वीप का सबसे उत्कृष्ट व रचनात्मक कलाकार माना जाता है।

आत्मत्राण -

विपदाओं से मुझे बचाओ, यह मेरी प्रार्थना नहीं
केवल इतना हो (करुणामय)
कभी न विपदा में पाऊँ भय।

दुख ताप से व्यथित चित्त को न दो सांत्वना नहीं सही
पर इतना होवे (करुणामय)
दुख को मैं कर सकूँ सदा जय।

कोई कहीं सहायक न मिले
तो अपना बल पौरुष न हिले;
हानि उठानी पड़े जगत में लाभ अगर वंचना रही
तो भी मन में ना मानूँ क्षय।

मेरा त्राण करो अनुदिन तुम यह मेरी प्रार्थना नहीं
बस इतना होवे (करुणामय)
तरने की हो शक्ति अनामय।

मेरा भार अगर लघु करके न दो सांत्वना नहीं सही।
केवल इतना रखना अनुनय
वहन कर सकूँ इसको निर्भय।

नव शिर होकर सुख के दिन में
तव मुह पहचानूँ छिन-छिन में।
दुख रात्रि में करे वंचना मेरी जिस दिन निखिल मही
उस दिन ऐसा हो करुणामय
तुम पर करूँ नहीं कुछ संशय।

आत्मत्राण कविता का सार –: प्रस्तुत कविता महाकवि रवींद्रनाथ टैगोर द्वारा बांग्ला में लिखी गई थी। इसका हिन्दी में अनुवाद आचार्य हजारी प्रसाद द्विवेदी जी ने किया। प्रस्तुत कविता में कवि ने इस बात का वर्णन किया है कि ईश्वर केवल उनकी सहायता करते हैं, जो खुद अपनी सहायता करने की कोशिश करते हैं। जो मुसीबतों का सामना करते हुए अपने कर्तव्यों का पालन करते हैं, उन्हें ही जीवन के संघर्ष में जीत मिलती है।
अर्थात अगर आप बिना कुछ किये ये चाहें कि भगवान आपकी मुसीबतों को ख़त्म कर दें और आपको कभी कोई दुःख ना मिले, तो स्वयं भगवान भी आपके लिए कुछ नहीं करेंगे। आपको ईश्वर पर भरोसा रखते हुए, हमेशा अपनी मुसीबतों का सामना खुद से ही करना पड़ेगा, तभी ईश्वर आपको आत्मबल एवं शक्ति प्रदान करेंगे। जिससे आप तमाम मुसीबतों व कष्टों के बावजूद भी अंत में विजयी हो जाओगे और मुश्किलों के आगे कभी घुटने नहीं टेकोगे।
दुख ताप से व्यथित चित्त को न दो सांत्वना नहीं सही
पर इतना होवे (करुणामय)
दुख को मैं कर सकूँ सदा जय।

आत्मत्राण भावार्थ : आत्मत्राण कविता की प्रस्तुत पंक्तियों में कवि रवींद्रनाथ टैगोर ईश्वर से कहते हैं कि हे ईश्वर! मैं आपसे यह प्रार्थना नहीं करता कि आप मुझे मुसीबतों से बचाएँ। मैं तो आपसे यह विनती कर रहा हूँ, मुझे आप इतनी शक्ति दें कि मैं इन मुसीबतों को देखकर घबराऊँ ना और इनका डटकर सामना करूँ। जब मुझे दुःख झेलना पड़े, तो भले ही आप मेरे विचलित मन को सांत्वना ना दो। परन्तु, मुझे इतनी शक्ति अवश्य देना कि मैं उस दुःख पर विजय प्राप्त कर सकूँ।
कोई कहीं सहायक न मिले
तो अपना बल पौरुष न हिले;
हानि उठानी पड़े जगत में लाभ अगर वंचना रही
तो भी मन में ना मानूँ क्षय।
मेरा त्राण करो अनुदिन तुम यह मेरी प्रार्थना नहीं
बस इतना होवे (करुणामय)
तरने की हो शक्ति अनामय।

आत्मत्राण भावार्थ : आत्मत्राण कविता की प्रस्तुत पंक्तियों में कवि कहते हैं, अगर मुसीबत के समय कोई मेरी सहायता करने वाला ना हो, तो मुझे कोई परवाह नहीं। प्रभु! सिर्फ़ मेरा आत्मबल कभी कमजोर नहीं पड़ना चाहिए। अगर मुझे इस संसार में केवल धोखा व दुःख प्राप्त हो और मुझे हानि उठानी पड़े, तो भी मेरे मन में कोई अफसोस या मलाल नहीं होना

चाहिए। आगे कवि कहते हैं कि वे ईश्वर से यह नहीं चाहते हैं कि उनकी नाव ईश्वर पार लगा दें। वे तो बस ईश्वर से इतनी शक्ति पाना चाहते हैं कि वे अपनी नाव को स्वयं ही जीवन के तमाम तूफानों से निकाल कर किनारे तक पहुँचा सकें।

मेरा भार अगर लघु करके न दो सांत्वना नहीं सही।
केवल इतना रखना अनुनय
वहन कर सकूँ इसको निर्भय।
नव शिर होकर सुख के दिन में
तव मुह पहचानूँ छिन-छिन में।
दुख रात्रि में करे वंचना मेरी जिस दिन निखिल मही
उस दिन ऐसा हो करुणामय
तुम पर करूँ नहीं कुछ संशय।

आत्मत्राण भावार्थ : यहां कवि कह रहे हैं – हे प्रभु! आप भले ही मेरी मुसीबतों का भार कम कर के मेरी सहायता ना करो, लेकिन मुझे इतनी शक्ति ज़रूर देना कि मैं निर्भय होकर सभी मुसीबतों का सामना कर सकूँ। भगवान! आप मुझे ऐसी शक्ति दें कि अपने सुख के दिनों में भी मैं आपको एक क्षण के लिए भी ना भूल पाऊँ। दुःख से भरी काल-रात्रि में जब सभी मुझे धोखा दे दें और मेरी निंदा करें, तो ऐसी कठिन परिस्थितियों में भी कभी मेरे मन में आपके लिए तिनका-भर भी संदेह नहीं आए। हे भगवान! मैं सच्चे दिल से आपसे प्रार्थना करता हूँ कि आप मेरे रोम-रोम में ये सारी शक्तियाँ भर दें।

Worksheet

लघु उत्तरीय प्रश्न-

1. भारत के प्रथम नोबेल पुरस्कार विजेता का क्या नाम है?
2. किस रचना पर गुरुदेव को नोबेल पुरस्कार मिला?
3. अंग्रेजों द्वारा कौन सी उपाधि दी गई थी?
4. गुरुदेव के कुछ काव्य संग्रह का नाम बताइए?
5. गुरुदेव रविंद्र नाथ टैगोर के पिता का क्या नाम है।
6. कवि किससे भय न पाने की शक्ति ईश्वर से चाहता है।
7. गीतांजलि किसकी रचना है?
8. गुरुदेव रविंद्र नाथ टैगोर की पत्नी का नाम क्या है?
9. रविंद्र नाथ टैगोर को गुरुदेव की उपाधि किसने दी?
10. कभी सुख के दिन आने पर भी क्या याद रखना चाहता है।

बहुविकल्पी प्रश्न-

1. आत्मत्राण कविता में कवि किस पर जय करने के लिए ईश्वर से प्रार्थना करता है?
अहंकार भय क्रोध दुःख
2. विश्व गुरु के नाम से कौन प्रसिद्ध है?
शरद चंद बंकिमचंद्र रविंद्र नाथ टैगोर। निराला
3. कवि किससे बचाने की प्रार्थना ईश्वर से नहीं करता है?
विपदा से पौरूष से कर्म से अनुभव से
4. कवि किससे भय न पाने की शक्ति ईश्वर से चाहता है?
विपदा से पौरूष से कर्म से अनुभव से
5. क्षय का अर्थ है-
अपमान सम्मान पराजित विजित
6. तरने का क्या अर्थ है?
जीतना भरोसा करना मुक्त होना बंधन
7. सुख के दिन में भी कवि किस प्रकार रहना चाहता है?
उच्य मस्तक नत सिर प्रज्ञा सिर। इनमें से कोई नहीं
8. किस क्षेत्र में गुरुदेव को नोबेल पुरस्कार मिला?

विज्ञान भौतिकी साहित्य कला
9. किस वर्ष गुरुदेव ने शांतिनिकेतन विश्वविद्यालय की स्थापना की?
सन 1900 1901 में सन 1903 सन 1905
10. कवि गुरु रवींद्रनाथ ने सर या नाइट हुड की उपाधि का परित्याग किस घटना के कारण किया?
चौरी चौरा कांड जलियांवाला बाग हत्याकांड मुजफ्फरपुर हत्याकांड इनमें से कोई नहीं।

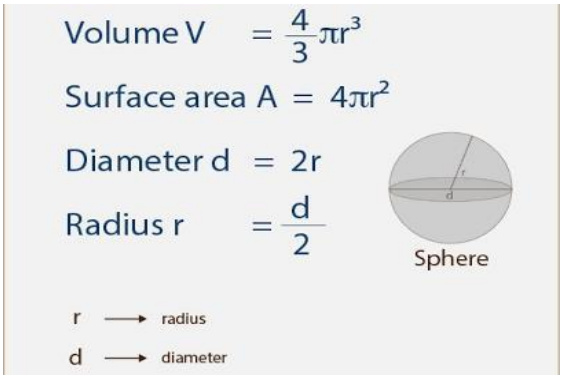
MATHEMATICS

Worksheet

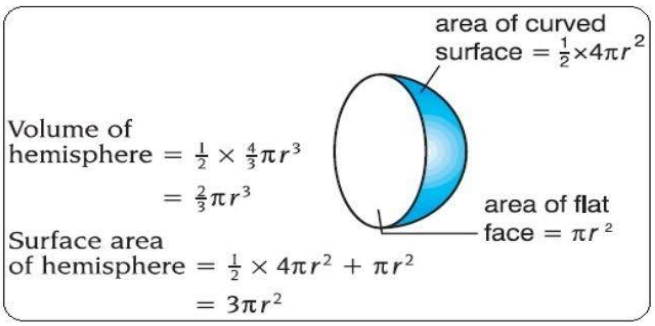
Chapter-Sphere

Summery:

- **SPHERE** :A sphere is defined as a set of points in three-dimension and all the points lying on the surface is equidistant from the centre.
- **Formulas related to sphere**:



- **HEMISPHERE**: When a plane cuts across the sphere at the centre or equal parts, it forms a hemisphere. We can say, a hemisphere is exactly half of a sphere. In general, a sphere makes exactly two hemispheres. One such good example of the hemisphere is our earth. Our earth consists of two hemispheres namely southern hemisphere and the northern hemisphere.



- **Formulas related to hemisphere**:

Worksheet

1. The length of radius of spherical gas balloon increases from 7 cm to 21 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in two cases.
2. 127 whole 2 by 7 square centimetre of sheet is required to make a hemispherical bowl. Find the length of diameter of the forepart of the bowl.
3. Three spheres made of copper having the lengths of 3cm, 4cm and 5cm radii are melted and a large sphere is made. Calculate the length of radius of the large sphere.
4. The curved surface of a solid metallic sphere is cut in such a way that the curved surface area of the new sphere is half of that previous one. Calculate the ratio of the volumes of the portion cutoff and the remaining portion of the sphere.

5. Calculate how many marbles with lengths of 1 cm radius may be formed by melting a solid sphere of iron having 8 cm length of radius.

Physical Science (Physics)

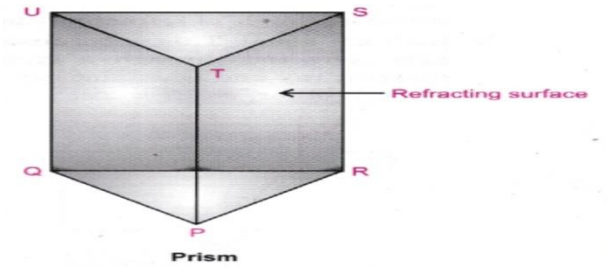
Chapter-Light

Summery:

Prism

Prism is a homogeneous, transparent, refracting material (such as glass) enclosed by two inclined plane refracting surfaces at some fixed angle called refracting angle or angle of the prism.

It has two triangular bases and three rectangular lateral surfaces which are inclined to each other as shown in the given figure. It has six vertices and nine edges. Since base of this prism is in triangular shape, it is called a triangular prism.

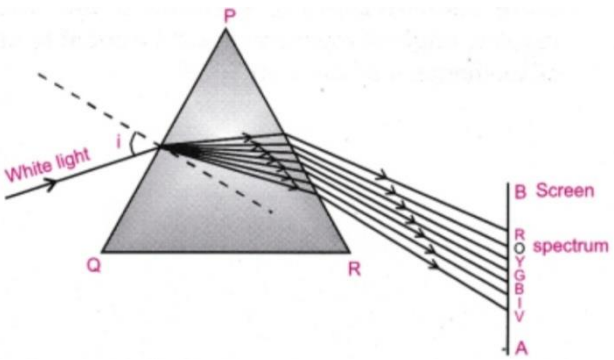


Prism

In the given figure of prism:
Triangular bases are PQR and TUS.
Three rectangular lateral surfaces are PQUT, PTSR, QRSU.
Six vertices are P, Q, R, S, T and U.
Nine edges are RS, PT, QU, UT, ST, US, QR, QP and RP.

Some Important Facts About The Triangular Prism:

It is a polyhedron, with two parallel faces called bases. The other faces are always parallelograms. It is named by the shape of its base.
An oblique ray of light suffers two refractions on passing through a triangular prism and hence, deviates through a certain angle from its original path.
The angle between the incident ray and emergent ray is called the angle of deviation.
Angle of deviation depends upon the angle of prism, angle of incidence, and nature of material of the prism.
When angle of incidence increases, angle of deviation decreases, till it becomes minimum at a particular angle of incidence. The minimum value of the angle of deviation for a triangular prism is called the angle of minimum deviation.
The refracted ray becomes parallel to the base of the prism under the minimum deviation position.

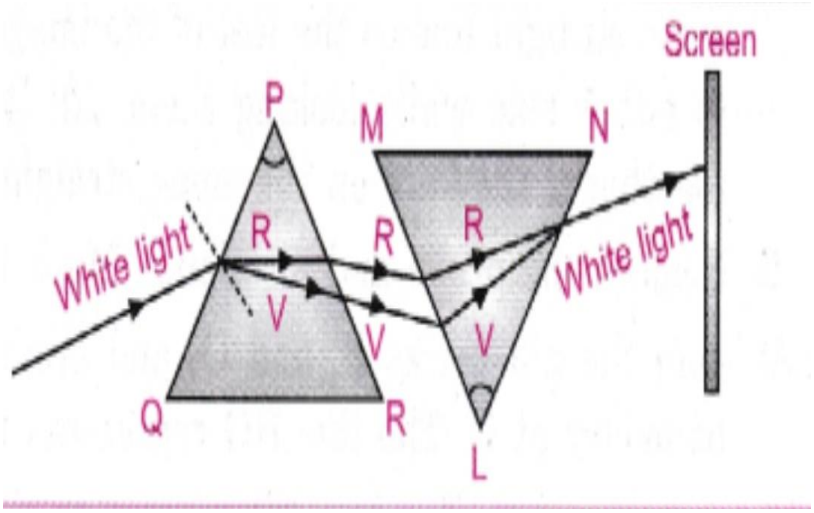


When a beam of white light is incident on one of refracting surfaces of the prism, it splits into a band of seven colours. This phenomenon exhibited by the prism is called dispersion of light. The band of coloured components of a light beam is called its spectrum.

Glass prism shows different refractive indices for different colour components of white light due to varying speed of different colours. Therefore, different colours emerge out through the prism along different directions and becomes distinct.

The order of colours from the base of the prism is Violet, Indigo, Blue, Green, Yellow, Orange and Red. It can be learnt by the word VTBGYOR.

Violet colour deviates through the maximum angle and red colour deviates through the minimum angle. The combination of two inverted prisms placed together shows the recombination spectrum of white light.



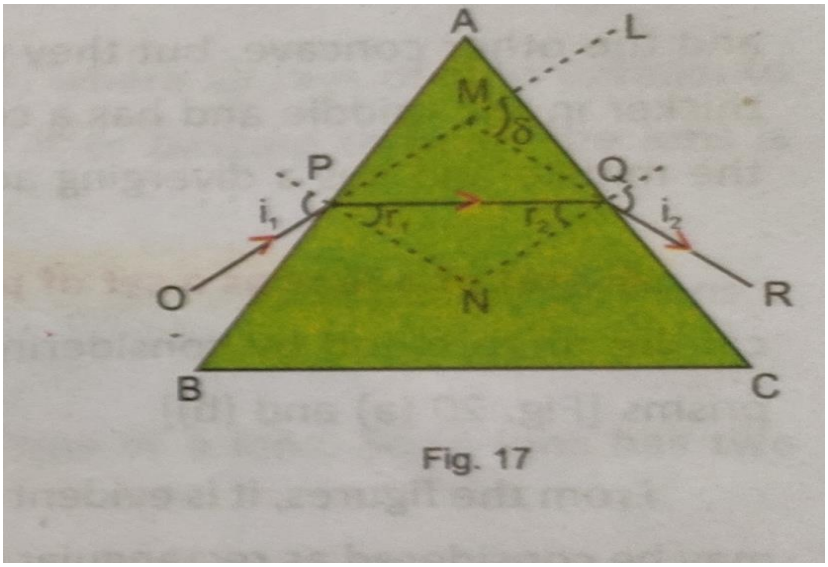


Fig. 17

Relation between angle of prism and angle of deviation

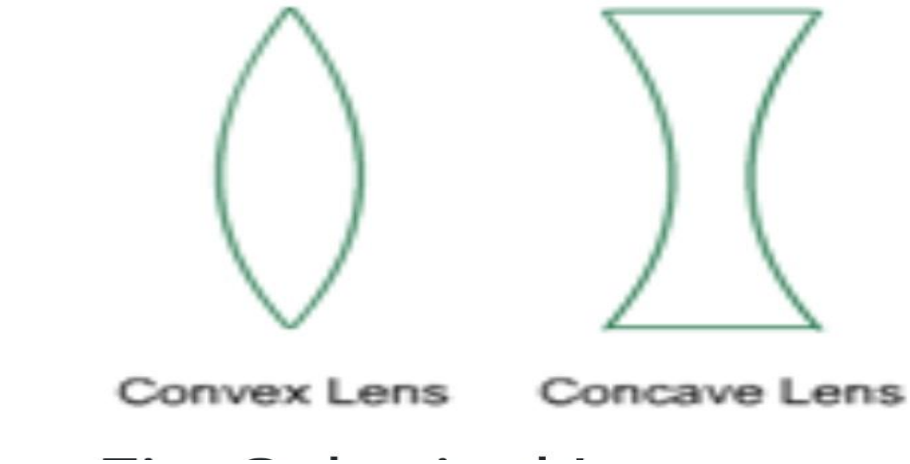
From quadrilateral APNQ
Angle APN = angle AQN =90 degree
Angle PNQ + Angle PAQ =180 degree
But in triangle PNQ, angle PNQ=180 - (r1+r2)
Or 180 - (r1+r2) +A =180
Angle of deviation is
Angle MPQ +angle MQP
=(angle MPN - r1) + (angle MQN - r2)

=i1+i2 - A

LENS

Convex lens:
A lens having two spherical surface bulging outwards is called Convex Lens. It is also known as biconvex lens because of two spherical surface bulging outwards.

Concave lens:
A lens having two spherical surface bulging inwards is called Concave Lens. It is also known as biconcave lens because of two spherical surface bulging inwards.



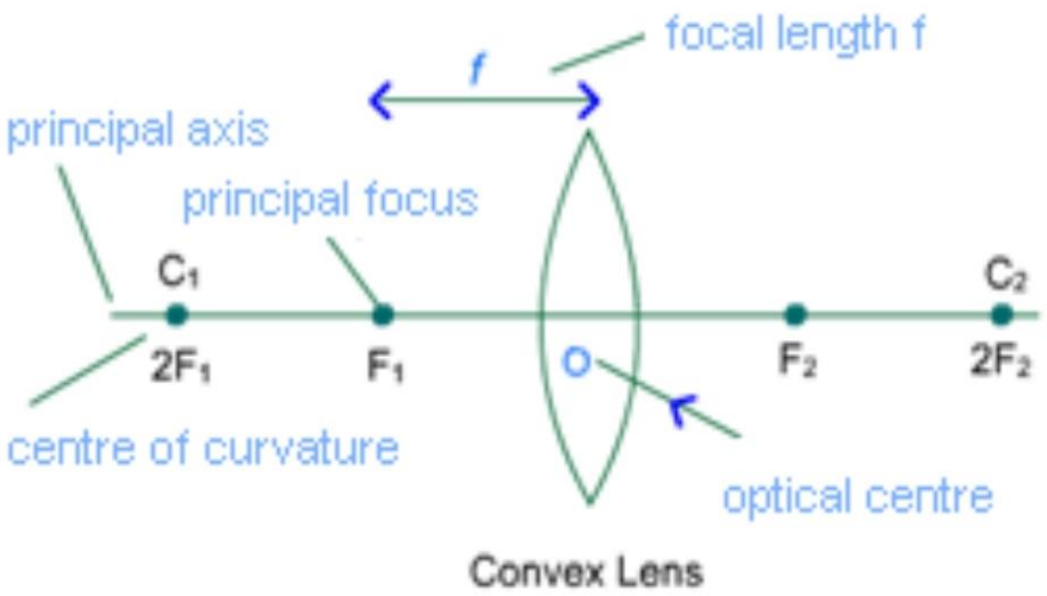


Fig: Convex Lens

Centre of curvature: The centre of sphere of part of which a lens is formed is called the centre of curvature of the lens. Since concave and convex lenses are formed by the combination of two parts of spheres, therefore they have two centres of curvature.

One centre of curvature is usually denoted by C1 and second is denoted by C2.

Focus: Point at which parallel rays of light converge in a concave lens and parallel rays of light diverge from the point is called Focus or Principal Focus of the lens.

Principal Axis: Imaginary line that passes through the centres of curvature of a lens is called Principal Focus.

Optical centre: The central point of a lens is called its Optical Centre. A ray passes through optical centre of a lens without any deviation.

Radius of curvature: The distance between optical centre and centre of curvature is called the radius of curvature, which is generally denoted by R.

Focal Length: The distance between optical centre and principal focus is called focal length of a lens. Focal length of a lens is half of the radius of curvature.

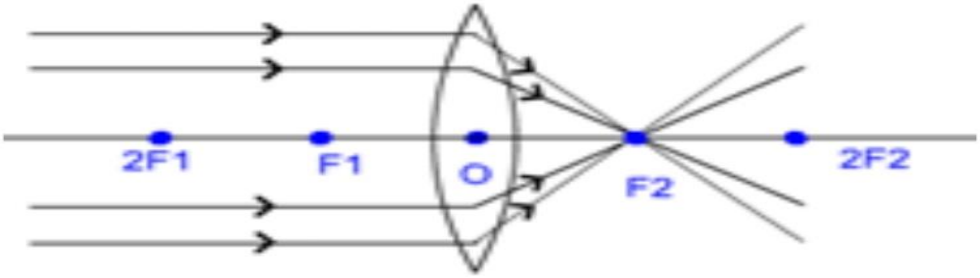


Fig: Converging Lens

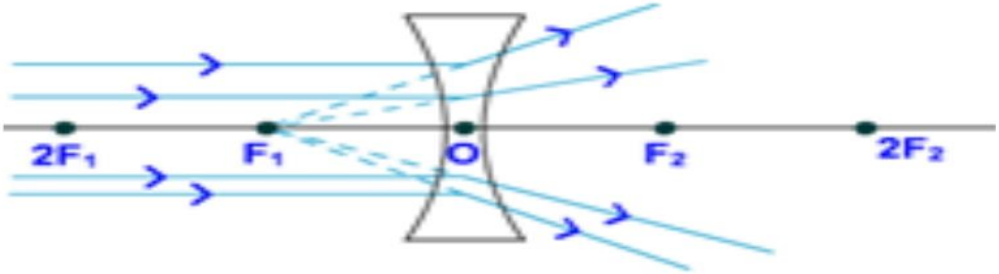


Fig: Diverging Lens

Worksheet:

1. With suitable figure described angle of prism and refracting plane of prism.
2. Establish the relation between angle of prism and angle of deviation
3. What type of material is used to make prism?
4. Why dispersion is occurred?
5. What is first focus point and second focus point of a lens?
6. What is optical centre of a lens?
7. What is magnification power of a lens?
8. Give some examples of using convex and concave lens.
9. Describe principal axis and radius of curvature of a lens.
10. In which position of an object makes a virtual magnified image in a convex lens.

PHYSICAL SCIENCE (CHEMISTRY)

Chapter-Inorganic Chemistry in the laboratory and in Industry

Summery:

Topic-Hydrogen Sulphide (Detailed Explanation)

Laboratory Preparation of Hydrogen Sulphide:

- **(i)** **Reagents Required:** (1) Ferrous Sulphide (FeS) (2) dilute Sulphuric Acid (H_2SO_4) or dilute Hydrochloric Acid (HCl)
- **(ii)** **Condition:** Ferrous Sulphide reacts with dilute Sulphuric acid (1:1) or dilute Hydrochloric acid at room temperature to give Hydrogen Sulphide.
- **(iii)** **Reaction:** $FeS + H_2SO_4 \longrightarrow FeSO_4 + H_2S\uparrow$
- **(iv)** **Drying agent:** H_2S can't be dried by using basic drying agent like quick lime etc (Why?) Itis dried by using acidic drying agent. Phosphorous Pentaoxide (P_2O_5), which is an acidic oxide, is used as the drying agent. (Any other drying agent can you use? Guess)
- **(v)** **Collection:** The gas is highly soluble in water. So, it can't be collected over water. It is collected by upward displacement of air. (Why?)

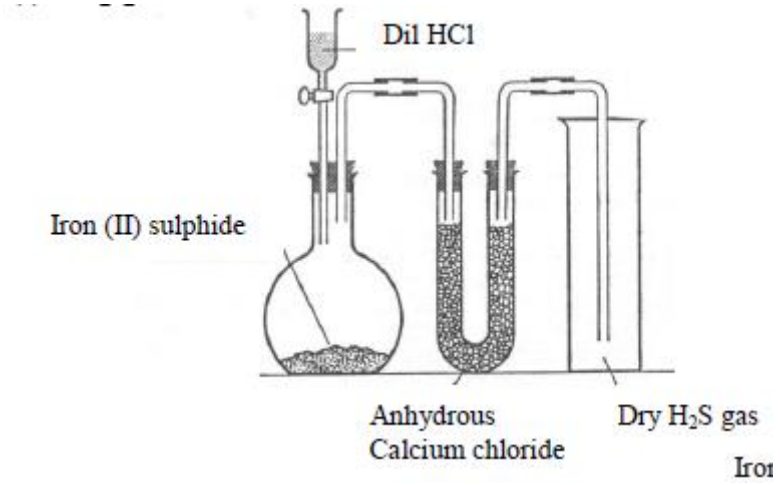


Fig: Schematic Representation of Laboratory Preparation of H_2S

Preparation of Hydrogen Sulphide in Kipp's Apparatus: In Kipp's apparatus only those gases are prepared which are produced by using a solid and a liquid reagent like H_2S. (Can you give any other example?)

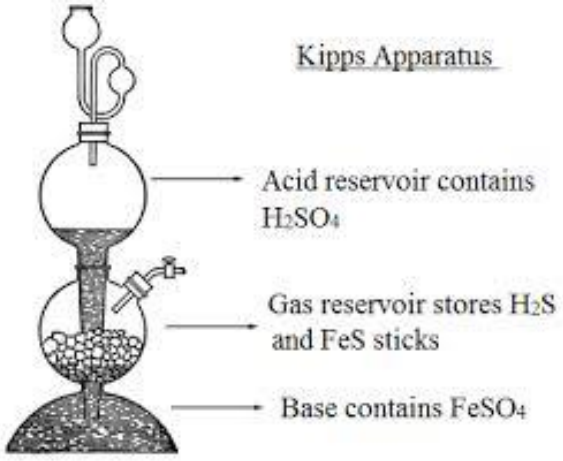


Fig: Schematic Representation of Preparation of H_2S in Kipp's Apparatus

(Mechanism of Kipp's apparatus will be discussed in the class)

Physical Properties of H_2S:

- **(i)** **Odour:** It has an odour of rotten eggs.
- **(ii)** **Density:** It is 1.2 times heavier than air.

(iii) Solubility: It is very much soluble in cold water, but almost insoluble in hot water.

(iv)

Chemical properties of H_2S:

(i) Nature of aqueous solution: Aqueous solution of H_2S is slightly acidic in nature. It acts as a dibasic acid in aqueous solution. It ionises in two steps:

$$H_2S \rightarrow H^+ + HS^- \text{ (bi-sulphide ion)}$$

$$HS^- \rightarrow H^+ + S^{2-} \text{ (sulphide ion)}$$

So, it reacts with base like NaOH to give salt and water. (Write down the reactions. Can you guess how many salts will be produced by H_2S and what are the types of the salts?)

(ii) Reaction with oxygen: H_2S burns in oxygen with a bluish flame. The products vary with different concentration of Oxygen present.

For example: (a) When the concentration of oxygen is very low then we get yellow deposition of Sulphur along with water vapour.

$$2H_2S + O_2 \rightarrow 2H_2O + 2S$$

(b) In normal air the gas burns with bluish flame and we get Sulphur along with Sulphur Di-oxide and water vapour.

$$2H_2S + 2O_2 \rightarrow 2H_2O + S + SO_2$$

(c) It gives SO_2 and water vapour when the ratio of H_2S and Oxygen is 2:3.

$$2H_2S + 3O_2 \rightarrow 2H_2O + 2SO_2$$

(iii) Reducing Property:

(a) When H_2S gas is passed through acidified Potassium Dichromate solution, H_2S reduces orange $K_2Cr_2O_7$ solution to green Chromium Sulphate and itself get oxidised to Sulphur which forms a yellow ppt.

$$K_2Cr_2O_7 + 4H_2SO_4 + 3H_2S \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + 3S + 7H_2O$$

(b) When H_2S gas is passed through acidified Potassium Permanganate solution, it reduces purple coloured $KMnO_4$ to colourlessManganousSulphate and itself get oxidised to Sulphur which forms yellow ppt.

$$2KMnO_4 + 5H_2S + 3H_2SO_4 \rightarrow K_2SO_4 + MnSO_4 + 5S + 8H_2O$$

(c) When H_2S gas is passed through yellow coloured Ferric Chloride solution then H_2S reduces $FeCl_3$ to give green coloured Ferrous Chloride and itself get oxidised to Sulphur.

$$2FeCl_3 + H_2S \rightarrow 2FeCl_2 + 2HCl + S$$

(iv) Precipitation Property: H_2S gives characteristic coloured ppt. with soluble metallic salt solution. For example:

(a) When H_2Sgas is passed through blue vitriol ($CuSO_4$) solution then it gives black ppt. of Copper Sulphide.

$$CuSO_4 + H_2S \rightarrow \downarrow CuS + H_2SO_4$$

(b) When H_2S gas is passed through colourless Silver Nitrate solution then it gives white ppt. of Silver Sulphide.

$$2AgNO_3 + H_2S \rightarrow \downarrow Ag_2S + 2HNO_3$$

(c) When H_2S gas is passed through colourless Lead Nitrate solution then it gives yellow ppt. of Lead Sulphide.

$$Pb(NO_3)_2 + H_2S \rightarrow \downarrow PbS + 2HNO_3$$

Identification of H_2S gas: A filter paper soaked in Lead acetate turns black when comes in contact with H_2S gas.

$$(CH3COO)_2Pb + H_2S \rightarrow PbS \text{ (Black)} + 2CH_3COOH$$

Identification of Sulphide (S^{2-}) ion in solution: Sulphide ion can be detected by Sodium Nitropruside solution. The solution turns violet in presence of S^{2-} ion.

$$Na_2S + Na_2[Fe(NO)(CN)_5] \longrightarrow Na_4[Fe(CN)_5NOS]$$

Antidote of H_2S: Higher concentrationof H_2S gas is very injurious to health. Very dilute Chlorine solution acts as the antidote.

Worksheet:

1) Write down the name of the reagents and formula of the reagents used for the laboratory preparation of Hydrogen Sulphide.
2) Write down the principle and the balanced chemical equation for the laboratory preparation of H_2S.
3) Name other few gases that can be prepared in Kippp's apparatus.
4) How H_2S gas is collected and why? (Or, Why H_2S gas is not collected over water?)
5) Name the reagent used to dry H_2S.
6) H_2S can act as a dibasic acid-Explain. (Or, H_2S can form two different salts-Explain.)
7) What happens when H_2S is burnt in oxygen?
8) Give example of reducing property of H_2S.
9) What happens when (write down with balanced chemical equation):
    a) H_2S gas passed through acidified potassium dichromate solution.
    b) H_2S gas is passed through acidified potassium permanganate solution.
    c) H_2S is passed through ferric chloride solution.
    d) H_2S gas is passed through copper sulphate solution.
    e) H_2S gas is passed through lead nitrate solution.
    f) H_2S gas is passed through silver nitrate solution.
10) Why silver jewellery turns blackened after using for long days?
11) Oil paintings turn black after a long day. –Why?
12) How to identify H_2S gas?
13) How sulphide ion can be detected?

LIFE SCIENCE

Chapter- Heredity

Summery:Heredity: The transfer of characters from one generation to other generation is called Heredity.

Heredity: The changes imbibed in the offspring (children) and siblings (brothers and sisters) of a Biparental (Male and Female) sexual reproduction is known as Variation. Like variation in eye color, hair color etc.

Mutation: The suddenchange that occurs in our DNA sequence, either due to mistakes when the DNA is copied or as the result of environmental factors such as UV light and cigarette smoke.

Genetics: The scientific study of genes, heredity and variation is known as genetics.

Father of Genetics: Gregor Johann Mendel.

Some Important Terms in Genetics

- **Genes:** Point on a chromosome that controls the trait.
- **Allele**: Alternate forms of a gene/factor. A or a
- **Genotype**: combination of alleles an organism has. (genetic traits)
- **Phenotype**: How an organism appears. (physical traits)
- **Dominant**: An allele which is expressed (masks the other).
- **Recessive**: An allele which is present but remains unexpressed (masked)
- **Homozygous**: Both alleles for a trait are the same.
- **Heterozygous**: The organism's alleles for a trait are different.

Mendel's Experiment with pea plant

Monohybrid cross: The **cross** between two **monohybrid** traits (TT and tt) is called a **Monohybrid Cross**. **Monohybrid cross** is responsible for the inheritance of one gene.

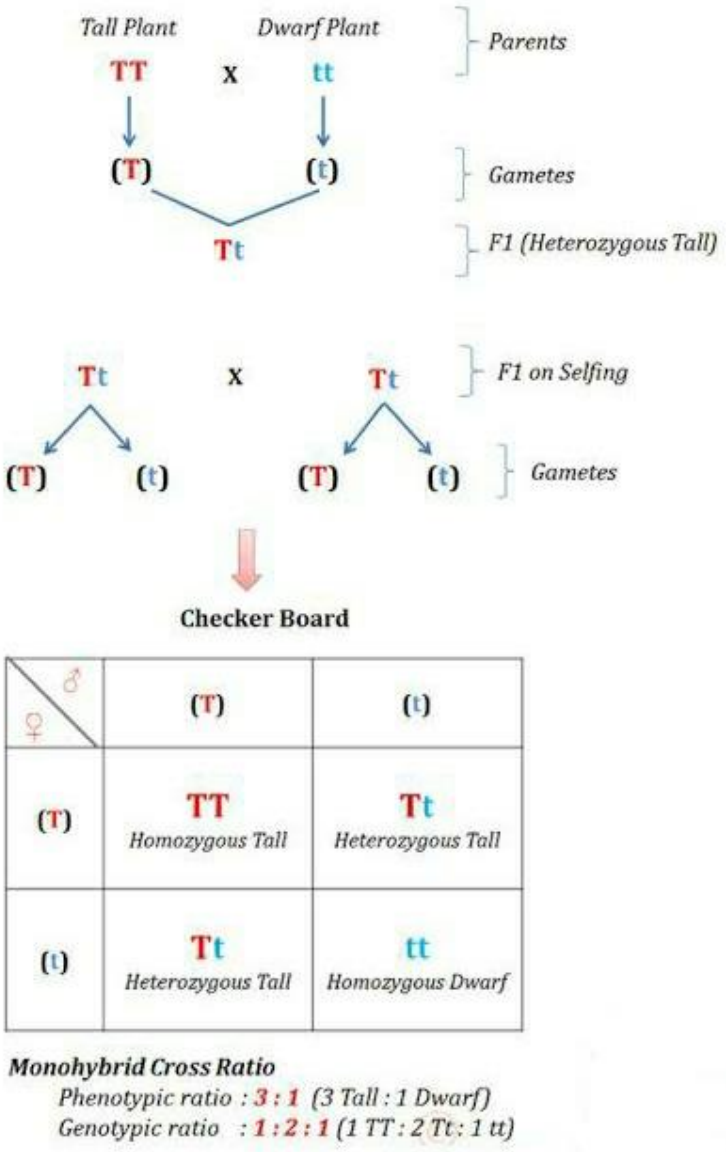
Dihybrid cross:A is a **cross** between two different lines/genes that differ in two observed traits. According to **Mendel's** statement, between the alleles of both these loci there is a relationship of completely dominant - recessive traits.

The seven pairs of characteristics found in Pea plants

- Pea shape (round or wrinkled)
- Pea color (green or yellow)
- **Pod shape** (constricted or inflated)
- Pod color (green or yellow)
- Flower color (purple or white)
- **Plant size** (tall or dwarf)
- Position of flowers (axial or terminal)

Monohybrid cross

Mendel made cross between Pure Tall plant (**TT**) and Pure Dwarf (**tt**). Here '**T**' is representing a dominant character and '**t**' is representing recessive character.



Law of Dominance: Mendel's **law of dominance** states that: "When parents with pure contrasting traits are crossed together, only one form of trait appears in the next generation. The hybrid offspring will exhibit only the **dominant** trait in the phenotype." **Law of dominance** is known as the first **law** of inheritance.

Law of Segregation: states that allele pairs separate or **segregate** during gamete formation and randomly unite at fertilization.

Worksheet:

1. **<u>Answer in a single sentence:</u>**
    a. How many characters of pea were chosen by Mendel?
    b. What is the phenotypic ratio of Mendel's Monihybrid cross?
    c. Give a difference between character and trait.
    d. What do you mean by homozygous character?
    e. What will be the percentage of the pea plants obtained from a cross between a hybrid tall (Tt) and a pure tall (TT).

2. **<u>Define the following(with examples):</u>**
    a. Homozygous
    b. Dominant
    c. Filial generation
    d. Variation

e. Mutation

3. **Answer the following:**
   a. State Mendel's Laws of Segregation.
   b. Discuss the inter relationship between variation, mutation and heredity.
   c. State any four reasons behind Mendel's success.
   d. What do you mean by monohybrid cross. Explain Mendel's Monohybrid cross with a checker board.

HISTORY

Chapter- Resistance and Rebellion (Characteristics and Analysis)

Summery:

Indigo Revolt: After the revolt of 1857 it was the most important revolt of indigo cultivators against the indigo planters.It was started in 1859 and continued for about one year.The demand of indigo produced in India increased in European markets.By the charter act of 1833 the monopoly of company on the trade of Indigo abolished. Indigo planters started cultivation in Bengal and started to opress the peasants to force them to cultivate only indigo on their land. They provided them an advance payment called 'Dadan' for the cultivation of indigo.

In 1830A.D .British government passed regulation v and regulation vii and forced the peasants to cultivate only indigo. Against this the peasants started their revolt called indigo revolt.

This revolt was started from the village named Chaugachha of Krishnanagar belonging to Nadia district of West Bengal. Leaders of the revolt were Vishnu Charan Biswas, Digambar Biswas Mahesh Chandra Chattopadhyay, Ram RatanMallickk, RafiqueMandal.It spread to Malda ,Murshidabad ,Barasat, Faridpur ,pabna and Khulana.

Peasants attacked at the residences of indigo planters,British officials,moneylenders and got fired there. Lastly with the help of British army it was forcefully ended.

In 1860, British government passed the regulation XI by which peasants were forced to pay as economic compensation to the indigo planters. It caused more aggression to the peasants.

Lastly, in 1860, Indigo Commission was formed by British.In its reports the unsatisfaction of peasants was declared legal against the operation of Indigo planters.Same year regulation viii was passed by which it was declared that peasants to be not force to cultivate Indigo.

Harishchandra Mukherjee ,the editor of Hindu Patriot published the oppression of Indigo planters .DinbandhuMitra also given importance in his play Neel Darpan .Michael Madhusudan Dutta translated Nil Darpan into English by which British also came to know about the opperassion of Indigo planters against peasants .Christian missionaries also supported the Indigo peasants.

Worksheet

(A) Answer the following questions in one or two words:. 1 Marks

1. When did Indigo revolt start?
2. Where did Indigo Revolt start first?
3. When was Indigo Commission formed?
4. Who was the editor of Hindu Patriot?
5. Who translated Nil Darpan into English?

(B) Answer the following in short (2 to 3 sentences):. 2 Marks

1. What is importance of charter act of 1833?
2. Name the regulations passed by British related to Indigo revolt.
3. Who were Indigo planters?
4. What was the Dadani system?
5. Name some leaders of Indigo revolt.
6. Name the centres of Indigo revolt.

(C) Answer the following (7 to 8 sentences): 4 Marks.

1. What were the causes of Indigo Revolt?
2. What were the cultural effects of Indigo revolt?

GEOGRAPHY

Chapter-Regional(INDIA)

Summery:

**Indian sub continent

Neighbouring countries of India like, Nepal, Bhutan, Bangladesh, Srilanka, Myanmar, China, Pakistan, Afghanistan have many cultural Physical and social similarities. Location,population and size of India is also a great advantage.All these countries of Asia are known as Indian Sub Continent. Many if these are also members of SAARC

**SAARC

SAARC stands for South Asian association for Regional Cooperation.It's Headquater is at Kathmandus,Nepal.It has member countries like Nepal, Bhutan, India,Bangladesh,Pakistan, Afghanistan, Myanmar,Moldivs.It provides a platform for mutual understanding among South Asian countries and to work together in a spirit of trust,friendship and mutual understanding.It aims to promote the welfare of people of South Asian and

,to improve their economic condition,social progress and cultural development.Every year a summit is organized by SAARC nations where the problems and backwardness is discussed.Also some cultural events like games and sports are organized yo develop the fellow felling and friendship.

SAAPTA

It stands for South Asian preferential trade arrangement.It is an organization which deals with trade and commerce among SAARC countries.

PENINSULA

The land which is surrounded by water on its three sides are known as Peninsula.Indian peninsula is washed y Arabian sea at the west coast,Bay of Bengal at the east coast and Indian ocean at the South

Importance

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*Help coastal and international water way transport
*People are capable in fishing
*People are efficient in fishing
*Growth of ship building industries
*Act as natural water boundary
It is connected with mainland,so can get connected by other means of communication.
GEOGRAPHICAL IMPORTANCE OF INDIA

1.Location
2. Three sides water bairer
3.Variedrelief
4.Tropical monsoon Climate
5.Natural vegetation

6.Soil
7.Fishing
8 Exploration of minerals
9. Fertile agricultural land
10 Cradle of ancient civilization

Worksheet:

1. What is the standard meridian of India?
2. Name the states of India through which standard meridian is passing.
3. Name the states through which Tropic of Cancer is passing.
4. What is the head quarter of SAARC?
5. What are the importance of SAARC?
6. State the Geographical importance of India.
7. What is the East west and north south extension of India?