



ANALYSIS & APPROCH: IAS GEOGRAPHY MAINS PAPER 2010 / 2011

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Over the last few years , specially since 2007, we see that UPSC has brought in unexpected elements in the Geography mains papers, so as to reduce the “easily predictable pattern” of the earlier papers. It also tried to set the paper at a level requiring in-depth and broader understanding, while ensuring at the same time that question patterns were not too different from the previous year s’ papers and were strictly from within the syllabus.

All this has given the Geography optional subject’s preparation a twist and a new style needs to be taken up so as to fulfill the exam’s new requirements.

Few things that clearly needs to be understood here are

1. Geography paper is still strictly coming from the syllabus mentioned by UPSC. Every question, without any exception, is still directly related to the topics explicitly mentioned in the syllabus. All the questions are direct and mostly unrelated , unlike other optional like Pub Ad., Sociology, History etc. where almost all questions relate to more than 1 topic of the syllabus and require lot of cross linkages in the answers.
2. Despite of world map question having been removed from the paper I , Geography still is a highly scoring optional, as it was before 2000, when there was only one map question in paper I (where students had to choose between attempting EITHER the world map question OR the India map question , which was the question no. 1 of paper 1) and paper II having no map question. Even then Geography was amongst the highest preferred optional among UPSC Civil services aspirants.
3. Despite of a larger syllabus coverage required from the present aspirants, yet the questions are direct and unrelated from other topics of syllabus. Hence the students are not required to do much linkages between various parts of the syllabus. This makes the job easier for aspirants when compared to other optional subjects.
4. With a focused, smartly planned approach and proper coverage of the syllabus, it is still possible to score 325+ in Geography optional by putting in 2 months of preparation time putting in 3-4 hours a day for the optional.
5. It helps a lot in GS paper I and Paper II , in GS Geography , Social and environmental issues and some economic and international relations aspects related questions of the papers. This fact is well evident from the last few question papers where much more than 30 marks of conventional GS

Geography questions were asked. Specially recent trends take GS Geography related questions for more than 100 marks as in GS paper 2010.

6. The essay paper invariably has more than 1 essay topic option which is directly related to Geography syllabus, besides the partially and indirectly related topics. So just by modifying one's perspective in attempting the essay paper, with Geography option well covered, one can easily attempt and score close to 120 marks in essay paper, without any special preparation for various topics of essay.
7. So one can see that Geography optional takes care of more the 900 marks out of 2000 marks of Mains (written) exam, surely giving aspirants with geography optional an upper hand in term of utilizing their precious time for preparing for their other optional subject and remaining part of the GS syllabus.

Having said this, now let us make an in-depth analysis of the modifications introduced in the paper pattern by UPSC, specially over the last few years.

The UPSC having noticed the 'comfort level' that Civil services aspirants had achieved with the Geography optional till 2006 (in the following years it was the optional subject of the highest no. of aspirants taking up the Mains written exam, ranking 1st, as per UPSC's annual reports) they introduced some changes in mains 2007 and in the syllabus and question patterns from 2008 onwards. These changes were as following

Changes in the structure and pattern of the papers

- **2007** paper had the compulsory world map question in paper one asking all the locations from **Africa only**. Though the locations were moderate in nature but it **reduced the options for the students**. So in case some one had not covered Africa properly or not revised it at the last go, he was bound to fare badly in this compulsory question.
- 2007 December, the syllabus for 2008 mains had some modifications, that **eliminated some topics and introduced/expanded some other topics**. It also removed the compulsory world map question from the paper I.
- **Mains 2008** continued with the **compulsory map question** in paper I (probably for providing some comfort to aspirant preparing for long and for not bringing in abrupt changes). Here the change was that for correctly locating only 1 marks was given and students were asked to **write 40 words unlike the 10 words asked in previous papers**. So though the map question was there but **attempting this question was made tougher**.
- **Mains 2009** made the **world mapping question as an optional question**(question no. 2). The question too was not in the 'normally asked format' and required some special interpretation. In **paper II India** map contained locating 15 in place of 10 locations asked in earlier papers. So here **also the students were expected to know more**.
- **2009** - The compulsory question no. 1 was asked as 3 sub-questions of 20 marks each with no choices, so one had to write on all the three sub-questions. This **reduced the options**

with students for selective syllabus coverage and required them to have a comprehensive coverage of the syllabus as the sub- questions were taken from different main topics of the syllabus. Here to attempt this one question one required to have covered both geomorphology and environmental geography.

- **In 2009** , Question no. 3 was broken into 3 sub–questions of 20 marks and question 4, 6 and 8 into 2 sub-questions, of 30 marks each **covering a larger part of the syllabus but at the same time requiring less explanation and hence practice for writing shorter, smarter answers as smaller questions were asked**. It also mixed questions from different main topics into single 60 marks question, requiring a more extensive coverage and eliminating chances for selectiveness.
- So in **2009**, unlike previous years where each paper had total 10 questions in 60 and 20 mark question , in 2009 paper I had total 17 questions in 20,30 and 60 marks format and covered from various parts of the syllabus, and also a mixing of questions ensured that just covering 6-7 main topics of each paper was now a thing of history. One was required to have done 8-9 main topics to attempt the paper fully. Somewhat similar was the case with paper II.
- In **2010**, the **world map question was not there**, so it was **systematically phased out** from 2007 to 2010.
- **2010** - The compulsory question in paper one was broken into 4 sub questions, all compulsory and all from 4 different main topic of the syllabus(geomorpho., climato., oceano. and environmental geog.), question no 5. The other compulsory question was broken into 5 sub-questions and asked from 4 main topics(perspective, population & settle., regional planning and models and theories).
- **2010** – question 2,3,4, 6,7,8 were each broken into 2 sub-questions each of 30 marks. Also mostly the sub-questions under one main question were from different main topics of the syllabus. So in **order to complete the paper one was required to have covered 9-10 topics** of , or we can say almost whole of, the syllabus. **There were in all 21 questions more than the already increased no. of 17 of 2009 paper**.
- **2010** – paper II – **the mapping compulsory Q. asked 15 out of 15 locations** , so there were **no choices and all locations were compulsory**, unlike 2009 where there were 15/20 locations do be done. So the mapping Q. became tougher. Even the second compulsory Q. asked 4 sub-questions of 15 marks each , all compulsory. The remaining questions were broken into 30 markers. So **a wider area of the syllabus was covered here also requiring an extensive syllabus coverage**.
- So in **2010** we saw that **Q.s for 12,15,20,30 and 60 marks were asked expecting the students to switch quickly between there answer writing style and also having done an extensive coverage of the syllabus**.

Qualitative changes in the paper

- The kind of questions asked were **still directly related to the syllabus** as one can see by glancing through it. Though the questions did go on to ask some smaller aspects related to the topics yet there was nothing very tough. Some questions were still , somewhat, copy of things asked in previous years' papers, only requiring a much crisper and leaner approach in content coverage and presentation, due to the question size.
- Some **newer topics are also added in the syllabus normally not available in the mostly available books**. These newer topics are **highly likely in the coming years' papers**. Also **content in a presentable format is required at preparation level only so as to easily convert in a desirable answer**.
- India Map questions require a more comprehensive coverage as option of choosing between locations does not exist any more.

Strategy to handle the paper

In addition to thoroughly covering the syllabus, one needs to work on presenting the content in a relevant manner. For this here should be clarity in covering a topic and awareness about the various related aspects of the topic so as to pick and chose the most relevant aspects based on the requirements of the exam. Even proper diagrammatic representations should be done for clearer and impressive explanation.

For example taking up the Q. 2.a. from paper I of 2010, an ideal way to attempt this Q. will be as follows

Q. Bring out the relevance of seismic study in determining the structure of the interior of the earth.

Model format: (Though the answer could be written in much less word, here a elaborate explanation is given for easy understanding of students new to this topic)

- The hypothesis of the **earlier thinkers like Harold Jeffery, Daly, Suess, A. holmes** did not bring out clearly facts about the interior of the earth.
- In modern views as **direct factual information is not available therefore modern studies are based on Indirect evidences**. Modern views can be divided into 3 groups
 - a) Artificial sources
 - b) Views from origin of the earth
 - c) Seismic waves
- **Seismic waves** due to natural or man induced earthquakes travel through the earth as along the earth's surface. By using seismograph, a graphic recording of the earthquake waves or vibrations is made, and scientists are able to get some idea of the kind or rocks which are found below the earth's surface.
- This is the most widely accepted, scientific and the only reliable sources to study earth's interior.

- **Different waves:**

a. *Primary waves (Longitudinal) (Phrases)*

- Travel fastest through solid material. (Crust, Mantle, Inner core).
- Travel through Liquid material. (Liquid outer core).

b. *Secondary waves. (Sheaves).*

- Cannot travel through. Liquid (i.e. outer core).

c. *Surface waves:* Travel along earth's surface and travel longest distances and are most destructive. Surface waves are also found in P and S wave shadow zones.

- **Seismic waves have 2 properties that make them particularly useful in revealing the earth's internal structure.**

a. **Seismic waves are reflected when they strike the interface between two different materials having different**

- (i) **Elastic properties**
- (ii) **Density**

b. **Bend or refract in different medium with slower speed.**

- **Must Write:** The interior of the earth is a controversial topic, without a complete clarity on the internal structure.
- **Explanation based on Seismic studies:**

It is observed that whenever an earthquake occurs creating primary, secondary and surface waves, there is a clearly demarcated region on the other side of the globe, where P waves and S waves are not observed i.e., they don't reach this zone after crossing through the earth's interior (P and S wave Shadow Zones).

Now, if earth's interior was having *uniform density*, then the waves should have passed through earth's interior without reflection or refraction and if the interior is not of uniform density then these 2 phenomenon will occur.

Based on observations, P wave and S wave shadow zones have been found as shown.

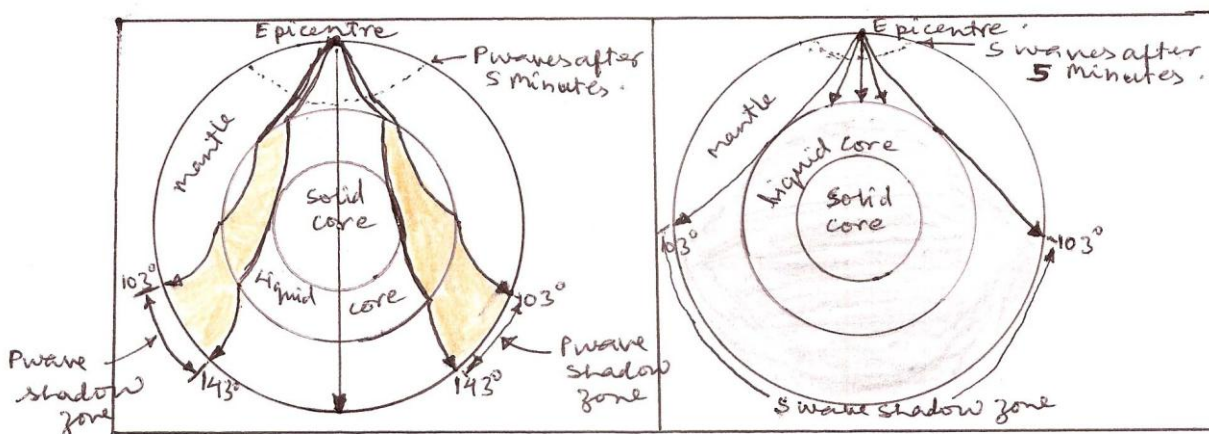


Fig. 6 P waves through earth's cross section and shadow zones

Fig. 7 S wave through earth's cross section and respective shadow zone.

Based on these waves, it is concluded that while passing through the interior, these waves have gone through *Reflection* and *Refraction*. A certain change of velocity is also observed, giving a somewhat clear picture of earth's interior.

Further the relationship between seismic wave's velocity and earth's interior has been studied. It has given a much more elaborated insight into the earth's interior.

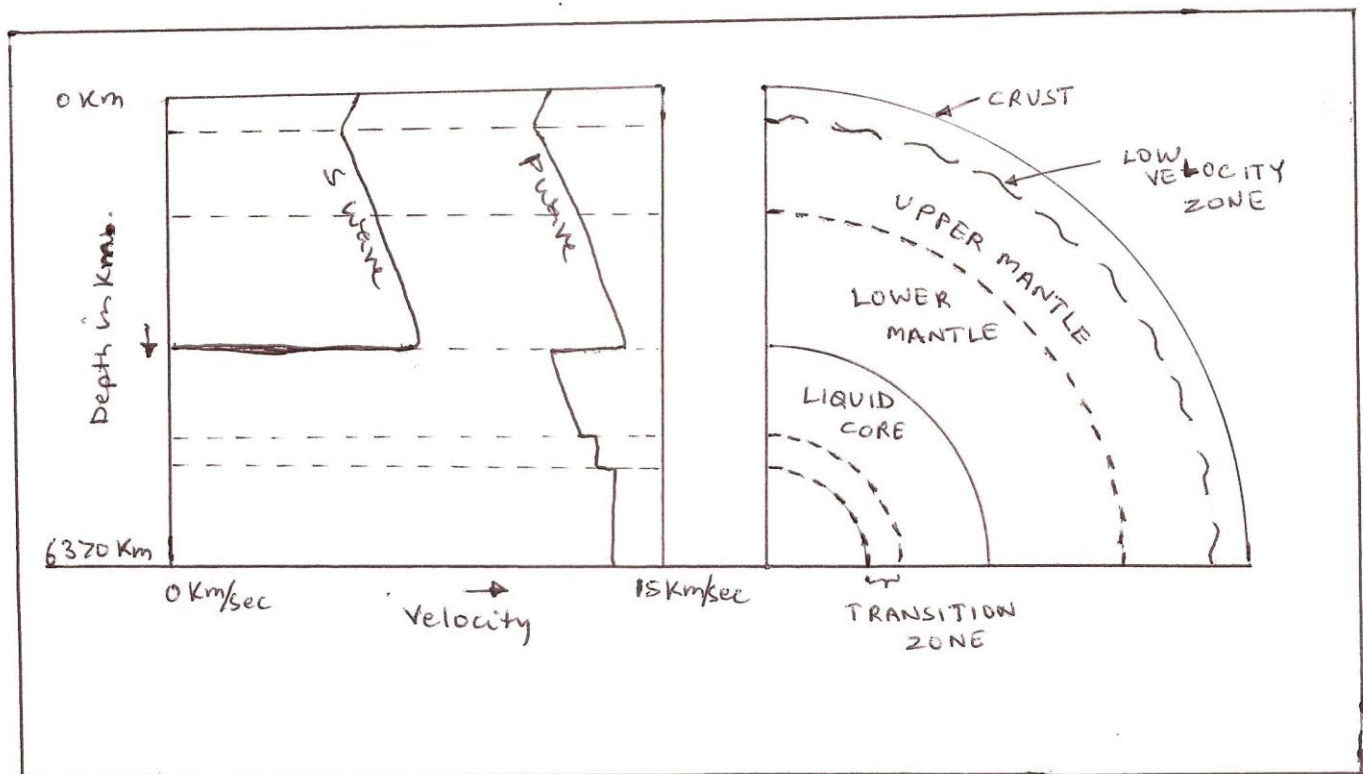


Fig. 9. Relationship between seismic wave's velocity and Interior of the earth.

{This diagram leads to the conclusion of **low velocity zone**. Further the gradual increase in velocity of P and S waves can be attributed to the gradual increase in the density of the mantle. After reaching the depth of 2900 km, there is a marked decrease in the velocity of P waves, while S waves vanishes. This confirms the change in medium from solid to liquid. This core mantle boundary is called **Guttenberg discontinuity**.

Further increase in P wave's velocity is due to increase in density of the Liquid outer towards earth's centre. There also exists a *transition zone from Liquid to Solid*, represented by marked change in velocity. This is followed by sudden increase in velocity confirming the solid core. Density of inner core does not vary much as there is not much change in P wave's velocity.

These studies also confirm the presence of what *Strahler and Strahler* call as, **MOHO** (A contraction of the name of the seismologist A. Mohorovicic). Detected by abrupt increase in speed of earthquake waves, when passing through crust – mantle boundary.

Conard also speaks of a, not yet universally accepted. **Conard discontinuity**, dividing crust further into upper and lower crust. (note that much of the content in above bracket{} could be directly depicted through the diag. cutting down on much of the written explanation)

The final picture, based on all these observations is as given.

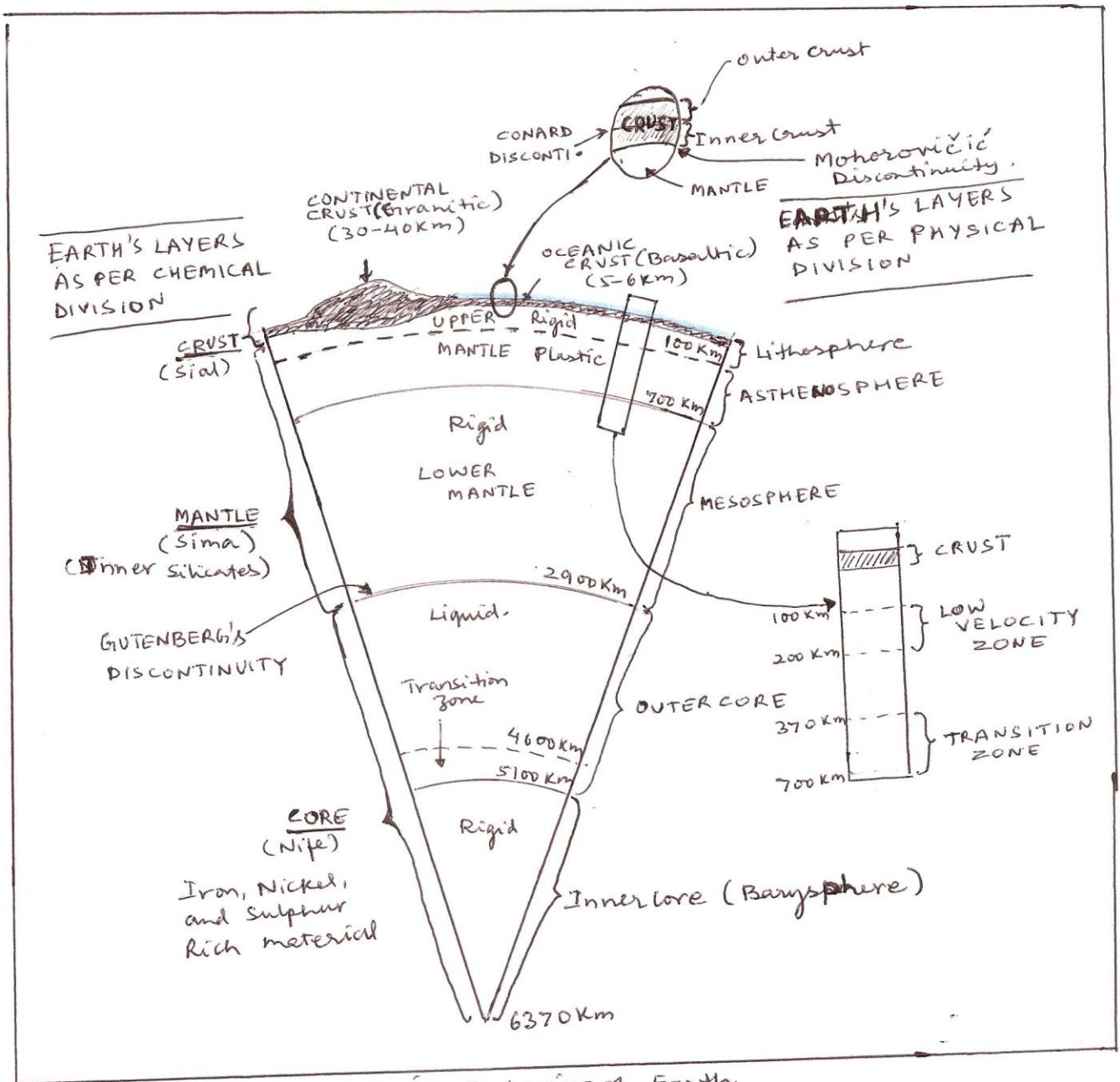


Fig. 8. Cross-section showing Interior of Earth.

Physical State based division of earth:

As per *Strahler and Strahler*, based on brittleness, strength or plastic behavior.

Lithosphere: upper 80-100 km (rigid, single uni cool) layer), divided into plates, quite complex beneath continents.

Asthenosphere: upto 300-400 kms depth, rocks here behave both as, solid plastic and solid elastic.

Merosphere: All mantle below the asthenosphere has semi-molten state.

Barrysphere: Solid, inner core.

Chemical composition based division of earth:

Crust – SiAl

Mantle – SiMa

Core – NiFe

The upper layer has higher uranium and Thorium, which declines after 100 km, the rate of increase of temperature decreases, towards centre.

Temperature variation Rate of increase of temp.

For first 100 kms $12^{\circ}\text{C}/\text{km}$.

Next 300 km $2^{\circ}\text{C}/\text{km}$.

Rest $<1^{\circ}\text{C}/\text{km}$.

Temperature at the core is around 3000°C . Pressure at core is nearly 3500 kilobar.]

(note that much of the content in the square bracket [] could be avoided if fig. 8 is drawn.)

- Understanding based on these will help better understand what keeps the planet warm, the volcanoes burbling, the continents drifting and the magnetic fields generating – All things that contribute to *enabling life*'.

End of model format

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Keeping as the base, the newly evolved requirements of the exam, we have thoroughly realigned our complete Geography content.

- The **content is made leaner, crisper and direct to-the-point**.
- The flow of explanation and presentation is managed as required in the answer format.
- Most of the topics are covered in the answer format in a few pages, **covering them not in the scholastic perspective as done in books**. They are completely aligned to the competition's requirements
- The written content is fully supported by **simple hand drawn diagrams** which should be exactly replicated in the exam. The **well reputed from which these diagrams are taken are also mentioned alongside so that aspirants can mention the source of the diagrams** also which makes a very good impression on the examiner. This unique feature helps aspirants to make real valuable difference in their answers.

- **Point-wise presentation** of content is done wherever required so as to make conversion into answers easy.
 - Topics are explicitly covered as mentioned in the syllabus so as to make a clarity of what is to be written in which answer. This sequencing is also a unique feature , thoroughly segregating the topics from each other and mentioning all points related to each topic at one place, for ease of use.
 - The **India map list and 30 -40 word details are thoroughly covered** making it one of the most comprehensive list available, yet keeping it appropriately relevant and manageable.
 - Interactive support is provided by the Geography faculty who has prepared the content fully and hence personal guidance will be given for preparation whenever required.
 - This makes it the most sought after interactive distance learning program for Geography optional for UPSC civil services exam. It has helped many students with no background in Geography to score well by putting in 2 to 2 and a half month of concerted effort.
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