

**Question 1**  
Correct  
1.00 points out of 1.00  
Flag question

Please make sure you run these commands now to create, check, and then enter this **act6** directory

**Correct**

Marks for this submission: 1.00/1.00.

**Question 2**  
Correct  
1.00 points out of 1.00  
Flag question

In this case, we want to specify a travel time curve for P waves. How would you write an option to specify just the P wave phases? You do not need to write out the whole `taup_curve` command, just the option and the argument you would specify for that particular phase.

Your answer is correct

**Correct**

Marks for this submission

**Question 3**  
Correct  
1.00 points out of 1.00  
Flag question

Correct  
Marks for this submission: 1.00/1.00.

**Question 4**  
Correct  
1.00 points out of 1.00  
Flag question

Correct!

Correct

Marks for this submission: 1.00/1.00.

**Question 5**  
Correct  
1.00 points out of 1.00  
Flag question

Correct  
Marks for this submission: 1.00/1.00.

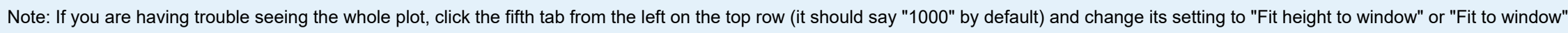
**Question 6**  
Correct  
1.00 points out of 1.00  
See Question 6

Correct  
Marks for this submission: 1.00/1.00.

**Question 7**  
Correct  
1.00 points out of 1.00  
Flag question

Correct  
Marks for this submission: 1.00/1.00.

**Question 8**  
Correct  
1.00 points out of 1.00  
Flag question



Marks for this submission: 1.00/1.00.

**Question 9**  
Correct  
1.00 points out of 1.00  
Flag question

Correct  
Marks for this submission: 1.00/1.00.

Question 10  
Correct  
1.00 points out of 1.00  
Flag question

Correct  
Marks for this submission: 1.00/1.00.

**Question 11**  
Correct  
1.00 points out of 1.00

Your answer is correct  
Correct  
Marks for this submission

Question 12  
Correct  
1.00 points out of 1.00

Marks for this submission: 1.00/1.00.

Question 13

Correct  
1.00 points out of 1.00  
Flag question

3. Seismic Wave Ray Paths

We should take a closer look at why the travel time curve stops at this distance. To do so, we can plot the ray paths for P waves that travel about 100 degrees in distance. We will use the `taup_path` program to make this plot. As with `taup_curve`, please use the `-help` option to list the instructions for this command. For `taup_curve`, we used the `-ph P` option to show the P-wave, but in this case we want to use `-ph ttp` in order to get all possible P wave variants no matter how they might interact with boundaries in the Earth (I like to think of `ttp` standing for ToTal P). We also want to run this command for an earthquake at a depth of 0 km. How would we specify the depth option?

Answer: `taup_path -ph ttp -h 0` ✓

Check

Ok, but you do not need to write out the whole `taup_path` command, just the option you would specify for a depth of 0.

Correct  
Marks for this submission: 1.00/1.00.

Question 14

Correct  
1.00 points out of 1.00  
Flag question

What option will produce a GMT script for us?

Answer: `-gmt` ✓

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 15

Correct  
1.00 points out of 1.00  
Flag question

What option would specify ray paths that go 100 degrees to help us understand why the travel time curve stops near that distance?

Answer: `-deg 100` ✓

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 16

Correct  
1.00 points out of 1.00  
Flag question

Which of the following is the correct command with options?

- Select one:
- ☐ a. `taup_path -ph ttp -deg 100 -gmt -dep 0`
  - ☒ b. `taup_path -ph ttp -deg 100 -gmt -h 0` ✓
  - ☐ c. `taup_path -ph ttp -deg 100 -GMT -h 0`
  - ☐ d. `taup_path -ph ttp -deg 100 -GMT -dep 0`
  - ☐ e. `taup_path -ph P -deg 100 -gmt -h 0`
  - ☐ f. `taup_path -ph P -deg 100 -GMT -h 0`
  - ☐ g. `taup_path -ph P -deg 100 -GMT -dep 0`
  - ☐ h. `taup_path -ph P -deg 100 -gmt -dep 0`

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 17

Correct  
1.00 points out of 1.00  
Flag question

After you run this command, a new file called `taup_path.gmt` will be produced. Which of the following would correctly run this script?

- Select one:
- ☒ a. `chmod +x taup_path.gmt`
  - ☐ b. `chmod +x taup_path.gmt`
  - ☐ c. `chmod +x taup_path.gmt`
  - ☐ d. `chmod +x taup_path.gmt`

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 18

Correct  
1.00 points out of 1.00  
Flag question

Now you should look at the plot you created. Which command would be the best one to view the plot?

- Select one:
- ☐ a. `gedit taup_curve.pdf`
  - ☐ b. `gedit taup_path.pdf &`
  - ☒ c. `gv taup_path.pdf &` ✓
  - ☐ d. `gedit taup_path.gmt !`
  - ☐ e. `gv taup_path.gmt`
  - ☐ f. `gv taup_path.pdf !`

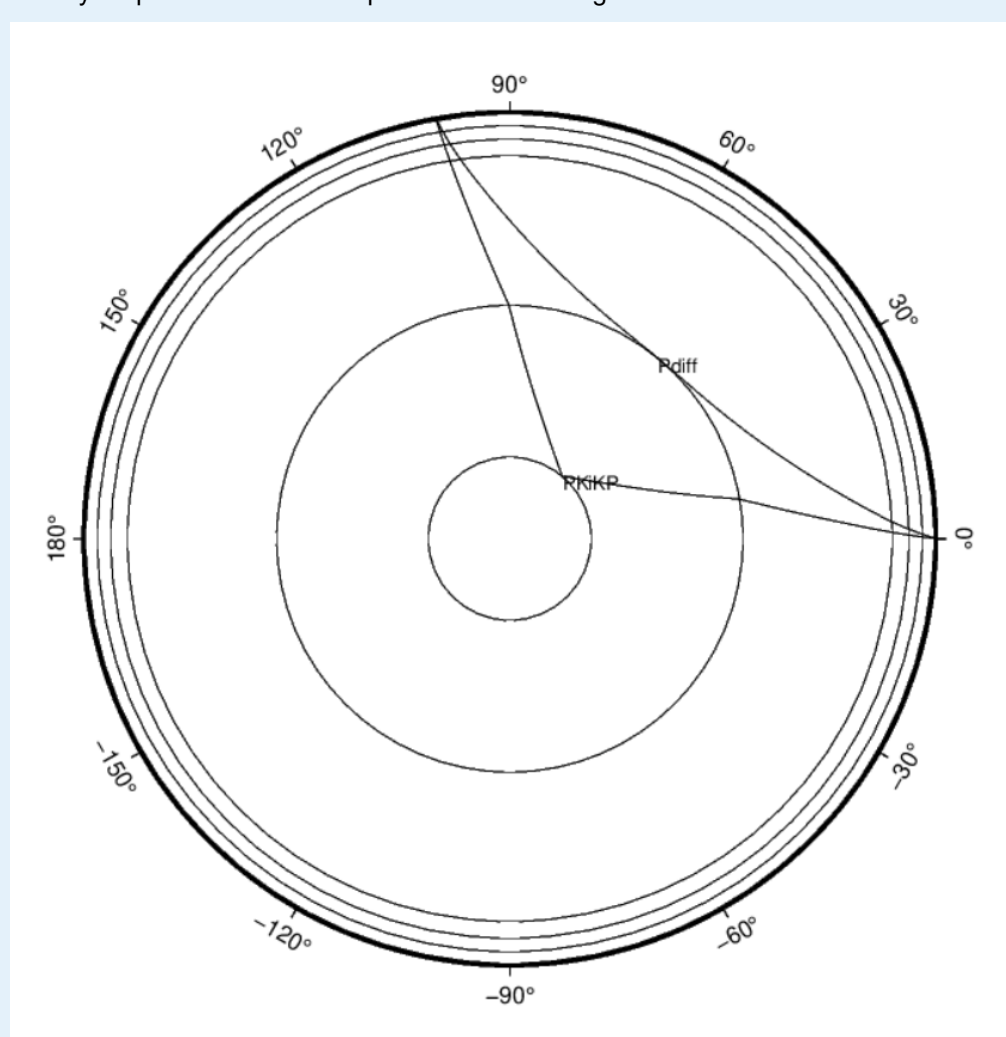
Check

Correct  
Marks for this submission: 1.00/1.00.

Question 19

Correct  
1.00 points out of 1.00  
Flag question

Does your plot show the same patterns as this image?



- Select one:
- ☒ a. Yes ✓
  - ☐ b. No

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 20

Correct  
1.00 points out of 1.00  
Flag question

This plot shows the P wave ray paths if we were to slice the Earth in half. What is the maximum total distance in degrees shown in this plot? I'm not asking about the distance where the ray path goes, I'm asking about the maximum distance possible in this plot. Be careful, it is not labeled so you have to figure it out.

Answer: `360` ✓

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 21

Correct  
1.00 points out of 1.00  
Flag question

Some of the Earth's major boundaries are marked as concentric circles in this view. Which of the following boundaries are marked in this plot?

- Select one or more:
- ☐ a. Inner core discontinuities
  - ☒ b. Boundary between the inner and outer core ✓ 1 of 5 correct answers
  - ☒ c. The core-mantle boundary ✓ 1 of 5 correct answers
  - ☐ d. Lower mantle discontinuities
  - ☒ e. Upper mantle discontinuities ✓ 1 of 5 correct answers
  - ☐ f. Outer core discontinuities
  - ☒ g. Boundary between the upper and lower mantle ✓ 1 of 5 correct answers
  - ☒ h. The surface of the Earth ✓ 1 of 5 correct answers

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 22

Correct  
1.00 points out of 1.00  
Flag question

Which boundaries are the P wave ray paths reflecting off of in this plot?

- Select one or more:
- ☐ a. Lower mantle discontinuities
  - ☐ b. Inner core discontinuities
  - ☒ c. The core-mantle boundary ✓ 1 of 2 correct answers
  - ☒ d. Boundary between the inner and outer core ✓ 1 of 2 correct answers
  - ☐ e. Boundary between the upper and lower mantle
  - ☐ f. Outer core discontinuities
  - ☐ g. Upper mantle discontinuities

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 23

Correct  
1.00 points out of 1.00  
Flag question

Which layer has a slower velocity than the one above it?

- Select one:
- ☐ a. Lower mantle
  - ☐ b. Upper mantle
  - ☒ c. Outer core ✓
  - ☐ d. Inner core

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 24

Correct  
1.00 points out of 1.00  
Flag question

The answer to the previous question is an important reason why not much seismic energy travels along the deeper ray path shown in the plot. So let's focus on the shallower ray path since most of the energy travels along that path. Which layer is expected to have the greatest impact on the travel time based on how much the seismic wave spends traveling through it?

- Select one:
- ☐ a. Upper mantle
  - ☐ b. Outer core
  - ☐ c. Inner core
  - ☒ d. Lower mantle ✓

Check

Correct  
Marks for this submission: 1.00/1.00.

Question 25

Correct  
1.00 points out of 1.00  
Flag question

How would this help explain why the travel time curve ends at 100 degrees? Read the choices carefully!

- Select one:
- ☒ a. The outer core creates a shadow zone. To get distances larger than 100 degrees, the ray path would have to go through the slower liquid outer core, which would cause it to turn downward and end up at a further distance than expected. ✓ Correct!
  - ☐ b. The outer core creates a triplication. To get distances larger than 100 degrees, the ray path would have to go through the faster liquid outer core, which would cause it to turn upward and end up at a further distance than expected.
  - ☐ c. The lower mantle creates a shadow zone. To get distances larger than 100 degrees, the ray path would have to go through the slower liquid lower mantle, which would cause it to turn downward and end up at a further distance than expected.
  - ☐ d. The inner core creates a magnetic anomaly. To get distances larger than 100 degrees, the ray path would have to go through the slower liquid inner core, which would cause it to turn downward and end up at a further distance than expected.

Check

Your answer is correct.

Correct  
Marks for this submission: 1.00/1.00.

Finish review

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