**Part 1: You will hear part of an interview with a music journalist called Pip Rogers and a musician called Heath Francis about the renewed popularity of vinyl records. For questions 1-6, choose the best answer (A, B, C or D). (20 points) perspective on proficiency**

**Interviewer**: Hello, and welcome to the programme, where this week we are discussing the comeback of the old-fashioned records, or vinyl records, as they are sometimes called. With me are music journalist

Pip Rogers, and musician Heath Francis, Can we start with you, Pip? How significant is this revival?

**Pip**: Well, last year, over nine million vinyl records were sold in the US. The last time sales were that high was a quarter of a century ago. More and more musicians are releasing vinyl records, and sales of these records now generate more income for some artists than YouTube. Many people believed that the

technological innovations of the last 15 years had spelt the end of the vinyl industry. Q1 **The threat posed by CDs back in the 1990s was enough to make most record labels shut down their factories- in fact, I was unaware there were any left at all. But amazingly. a few did keep running**, and of course they're now having a hard time keeping up with the demand.

**Interviewer**: And Heath, why do you think this old technology is popular again?

**Heath**: Well, in this digital era where you have free and instant access to practically every kind of music ever made, music has become another disposable commodity. Q2 **But I think now there's a growing desire to make music something you can own. touch. display in your home**. It requires some effort of course -you need all the equipment - a turntable, amplifier, speakers and records need careful treatment. But there's an aspect of working harder for something that gives it more value.

**Interviewer**: Is it mainly older consumers buying them out of nostalgia?

**Pip**: Not at all. Half of vinyl record buyers are under 25. Lots of bands currently popular with teenagers have had huge success with their vinyl releases. Q3 **There's a new generation out there. discovering a different way of relating to their favorite music and liking it**. For people that grew up with vinyl, your record collection was a way of signaling your musical tastes. But also the limitations of vinyl turn the act of listening into something very fresh. You're in a room, listening to an album in its entirety from beginning to end - every track - in the order the artist intended. It's a far cry from listening randomly to tracks on a playlist of a hundred songs as you're walking to school.

**Interviewer**: And Heath, what is your reaction, as a musician, to this growing trend?

**Heath**: I really welcome it, as do most musicians, I think. You see, its become increasingly difficult to make a living with so much music now freely available. Even with streaming sites that charge for access to songs, most of the profit goes to the site owners. Some singers have removed all their work from one streaming service in protest. If successful singers in music today feel they're losing out. what hope is there for the rest of us? I don't think the solution is to eliminate free access to music, which would probably be impossible anyway, but rather to offer fans something they can't get free off the Internet, something of beauty and value that they'll want to pay for.

**Interviewer**: And what about the future, Pip? Will vinyl sales keep increasing?

**Pip**: Well, there’s been a continual rise in demand for over a decade now and it certainly doesn't look like it’s going to slow down any time soon. Having said that though, one of the obstacles to increasing sales is, as I mentioned before, the lack of manufacturing facilities. Q4 **The technology is expensive and creating new record pressing plants will require massive investment from record companies. The question is - are they prepared to do that**? It is, of course, possible that the popularity of vinyl will go down. I've heard it said that every trend comes back once before it disappears forever. But personally, I doubt that’s the case here.

**Interviewer**: You're both huge fans of vinyl. Could you ever see yourselves giving up digital music altogether?

**Heath**: Absolutely not. I enjoy its benefits, I may hear a song with a beat that inspires me and in a second, I Q5 can **send that to the other members of my band and get their reactions**.

**Pip**: For my work, it's essential I have instant access to all the new music out there. What really makes my life easier **is being able to share tracks with mv colleagues and get feedback before deciding** whether to write about a particular new release or not. I tend to listen to stuff on my office computer primarily - rather than when I'm out and about.

**Part 2: Listen to a podcast onclimate changeand decide whether the following statements are True (T), False (F), or Not Given (NG) according to what you hear. (10 points)**

If the temperature outside changes by half a degree, you won't even feel it. Such a small change is almost imperceptible to human senses. Q1 **But half a degree of global temperature change could be little short of the end of the world we recognise**. Or at least the world humanity has inhabited for the last few millennia. In 2015, governments agreed a deal in Paris to stop global warming rising past 2 degrees and to try to keep it below 1.5 degrees. So what's in half a degree? At 1.5 degrees, there would still be some precious rainforests, polar bears and coral reefs on planet Earth, albeit seriously diminished. Sea levels would rise, but relatively slowly, so major cities like London, Jakarta and Mumbai have a better chance of continuing life as normal. Drought and flooding would be at a level where food production can keep up with population growth. Millions of extra climate refugees could stay at home and others could avoid starvation. Getting to this world isn't impossible, it means cutting greenhouse gas emissions by half within a decade. And then being carbon neutral by mid-century. So we'd be closing coal power stations instead of building new ones and every car would be electric. We'd be restoring forests instead of cutting them down, and even aircraft would be carbon neutral. Q2 **It's not impossible, but it is unlikely. The fossil fuels lobby is powerful. Some heads of state even deny the reality of climate change**. Transforming the global energy system will take time, and trillions of dollars of investment. But it's also an opportunity. So if we're too slow and instead of 1.5, we get the extra half degree - what then? According to the latest IPCC report, in a world two degrees warmer, you'd go diving in the tropical seas but the flourishing coral reefs are gone. Instead, you would likely see a graveyard of rubble and algae. Q3 **Back on land, heatwaves are becoming increasingly deadly, with approximately 65 million extra people exposed to exceptional heatwaves each year**. Imagine yourself at the North Pole, but all you see is open water. The polar bears are gone along with the sea ice that used to be their home. You take a boat to the edge of Greenland, but that frozen wasteland is thawing. Huge meltwater rivers thunder into the ocean, where they add to the rising sea levels that are beginning to flood the world's coastlines. Take a trip to Miami, Mumbai or Melbourne and you'll probably need a boat. Q4 **Faced with the rising seas, 10 million people could be forced to pack up and move. Global harvests would also suffer, and in developing countries especially the number of people experiencing water scarcity doubles. This would be a world of increasing poverty and human misery**. All for what? For half a degree. And for a few more years of coal smoke stacks and oil industry profits. The choice is ours, but not for long. Every bit of warming, every year, every choice matters. But like a desert mirage, the 1.5 degree world is receding into the distance with every year we delay. If carbon emissions keep growing for decades to come, then even two degrees looks hopeful. Q5 **That's a world - a darker world - of flood, fire and conflict that we can barely even imagine. We can still choose that half a degree window between unsettling dream and full-blown nightmare. But it's closing fast.** Thanks for watching. Don't forget to subscribe and click the bell to receive notifications for new videos. See you again soon.

**Part 3. Listen to a talk about the unique characteristics of glass and fill each blanks with NO MORE THAN FOUR WORDS. (20 points)**

In this day and age, glass is pretty much ubiquitous. It’s an integral part of our smartphones, high speed fiber optic cables, windows...the list goes on. And yet, even though we’re surrounded by it, scientists are still puzzled by glass, and why it forms it way it does. Through studying glass, researchers have realized that there could be an ideal form that may never be attainable— but they’re still on a quest to find it. There are more types of glass than the silica variety you’re most familiar with. Glass is technically any Q1 **rigid** **amorphous solid**, meaning its atoms and molecules aren’t arranged in an orderly structure, but rather in whatever random arrangement they happened to be in when the material cooled and solidified. It’s as though a liquid just stopped moving all of a sudden. Unlike ice, where the water molecules Q2 **tug on** each other and lock themselves into a repeating crystal pattern, as glass cools, its molecules Q3 **contract** until they stop moving altogether. And that’s weird—because in theory, if it were a liquid that has stopped flowing because it was cold, you should be able to still give it a squeeze and change its shape. I would not recommend you squeeze glass to give this a try, it’s rigid and it’ll cut ya. You may have heard that because of this, glass is like an endlessly flowing liquid, and that’s sort of true... but only in the strictest sense. One study from 2017 estimated that if a cathedral were to stand at room temperature for a billion years, it’s glass would flow just Q4 **a single nanometer**. Another research team from Spain examined samples of 110 million-year-old amber, a naturally occurring variety of glass Q5 **derived from tree sap,** and found that over its long existence it had become about Q6 **2% denser.** Decades ago, researchers came up with an idea: if glass could still flow and settle, then maybe it could reach a hypothetical ideal state, where the randomly flowing molecules happened to arrange themselves as dense and orderly as possible. This “ideal glass” could explain why glass is a liquid with molecules that can’t flow. But to achieve it in reality, through the usual method of cooling a liquid until it hardened, meant cooling it impossibly, or even infinitely slowly. This would give the molecules a chance to settle into their lowest energy arrangement. Glass made this way would have Q7 **entropy as low as a crystal’s.** Paradoxically, randomness could produce order. Ideal glass would have properties very different from the glass we’re used to. For one, it would have a lower heat capacity when cooled to near absolute zero. Non-ideal glass is thought to be riddled with two-level systems, bunches of molecules that can go back and forth between two equally stable arrangements. Near absolute zero, even when crowded by surrounding molecules, these two-level systems can Q8 **quantum tunnel between configurations**, absorbing heat in the process. But if ideal glass is already in the most stable configuration possible, there is no second form it can switch to, so its heat capacity drops. Amazingly, while we haven’t found the ideal glass we’re searching for, we have gotten closer. Q9 That’s thanks to a very different glassmaking technique that makes use of **vapor deposition**, where glass is built one molecule at a time. The result is ultra-stable glass that’s not as orderly as the hypothetical ideal, but still denser and more stable than any glass we’ve made before. Scientists are also searching for the perfect form of glass virtually. Thanks to advancements in computer processing power and modeling techniques, simulations that look for the ideal arrangement have gotten exponentially faster. In the end, we may never be able to make ideal glass, but we’re curious and we're diligent, and we’re going to keep trying. Q10 You may have heard that old cathedral glass is thicker at the bottom because it’s **sagged over time**. In reality, that’s just due to the technique used to make the glass. We’re struggling to make common glass better, but we may be able to make graphene out of common trash. For more on that check out my episode here. Are there any other material mysteries you’d like us to cover? Let us know down in the comments, make sure to hit that subscribe button, and as always, thanks for watching Seeker. We’ll see you next time.