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https://www.100test.com/kao_ti2020/126/2021_2022_GMAT_E8_80_83_E8_AF_95_c89_126835.htm Passage 46(This passage was written in 1984.)It is now possible to hear a recording of Caruso ' s singing that is far superior to any made duringhis lifetime. A decades-old way-cylinder recording of this great operatic tenor has been digitized,and the digitized signal has been processed by computer to remove the extraneous sound, or “ noise, ” introduced by the now “ ancient ” wax-cylinder recording process.Although this digital technique needs improvements, it represents a new and superior way ofrecording and processing sound which overcomes many of the limitations of analog recording. Inanalog recording systems, the original sound is represented as a continuous waveform created byvariations in the sound ' s amplitude over time. When analog playback systems reproduce thiswaveform, however, they invariably introduce distortions. First, the waveform produced duringplayback differs somewhat from the original waveform. Second, the medium that stores the analogrecording creates noise during playback which gets added to the recorded sounds.Digital recordings, by contrast, reduce the original sound to a series of discrete numbers thatrepresent the sound ' s waveform. Because the digital playback system “ reads ” only numbers, anynoise and distortion that may accumulate during storage and manipulation of the digitized signalwill have little effect: as long as the numbers remain recognizable, the original waveform will bereconstructed with

little loss in quality. However, because the waveform is continuous, while its digital representation is composed of discrete numbers, it is impossible for digital systems to avoid some distortion. One kind of distortion, called “sampling error,” occurs if the sound is sampled (i.e., its amplitude is measured) too infrequently, so that the amplitude changes more than one quantum (the smallest change in amplitude measured by the digital system) between samplings. In effect, the sound is changing too quickly for the system to record it accurately. A second form of distortion is “quantizing error,” which arises when the amplitude being measured is not a whole number of quanta, forcing the digital recorder to round off. Over the long term, these errors are random, and the noise produced (a background buzzing) is similar to analog noise except that it only occurs when recorded sounds are being reproduced.

272. Which of the following best describes the relationship of the first paragraph to the passage as a whole?

(A) The first paragraph introduces a general thesis that is elaborated on in detail elsewhere in the passage. (B) The first paragraph presents a concrete instance of a problem that is discussed elsewhere in the passage. (C) The first paragraph describes a traditional process that is contrasted unfavorably with a newer process described elsewhere in the passage. (D) The first paragraph presents a dramatic example of the potential of a process that is described elsewhere in the passage. (E) The first paragraph describes a historic incident that served as the catalyst for developments described elsewhere in the passage.

273. According to the passage, one of the ways in which analog recording systems differ

from digital recording systems is that analog systems(A) can be used to reduce background noise in old recordings(B) record the original sound as a continuous waveform(C) distort the original sound somewhat(D) can avoid introducing extraneous and nonmusical sounds (B)(E) can reconstruct the original waveform with little loss in quality 274. Which of the following statements about the numbers by which sound is represented in a digital system can be inferred from the passage?(A) They describe the time interval between successive sounds in a passage of music.(B) They model large changes in the amplitude of the initial sound with relatively poor precision.(C) They are slightly altered each time they are read by the playback apparatus.(D) They are not readily altered by distortion and noise accumulated as the digital signal is stored and manipulated. (D)(E) They are stored in the recording medium in small groups that can be read simultaneously by the playback apparatus. 275. Which of the following can be inferred from the passage about the digital approach to the processing of sound?(A) It was developed in competition with wax-cylinder recording technology.(B) It has resulted in the first distortion-free playback system.(C) It has been extensively applied to nonmusical sounds.(D) It cannot yet process music originally recorded on analog equipment. (E)(E) It is not yet capable of reprocessing old recordings in a completely distortion-free manner.

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