Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April / May – 2017**

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| **Code :** | **14MT2029** | **Duration :** | **3hrs** |
| **Sub. Name :** | **STUDIO ACOUSTICS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. |  | Discuss in detail the 5 general requirements of a good studio. Mention and explain the steps to be taken to build confidence in the client in using studio. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Calculate the SPL for sound waves with rms pressure amplitude of 1Pa, 2Pa and 2µPa. | CO2 | 10 |
| b. | Explain Inverse square law. If a loudspeaker radiates one hundred milliwatts (100mW), what is the sound intensity level (SIL) at a distance of 1m, 2m and 4m from the loudspeaker? How does this compare with the sound power level (SWL) at the loudspeaker? | CO2,3 | 10 |
| 3. | a. | Explain Interaural Time difference and Interaural Intensity difference being a cue for direction in a given environment. | CO2 | 10 |
|  | b. | Write short notes on Loudness perception of Human ear. | CO1 | 10 |
| (OR) | | | | |
| 4. |  | Design a Schroeder’s one dimensional diffusers with prime number 13. Draw the elevation of the prime number quadratic residue based well depths and mention the frequency range that would be diffused by the panel if the dimensions of the depths of 1 unit would 1m. | CO3 | 20 |
| 5. |  | Write short note on Reverberation Time. Explain with a neat diagram the methodology by which it is calculated. | CO1 | 20 |
| (OR) | | | | |
| 6. |  | Calculate the average RT60 for a room with the given specifications:  Dimensions: 20ft x 15ft x 10ft  Treatment: Ceiling – Acoustic Tiles  Flooring – wood  Two adjacent walls – Gypsum board: ½ inch  Other walls – Concrete block, coarse   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Material | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | | Gypsum Board: 1/2inch | 0.29 | 0.10 | 0.05 | 0.04 | 0.07 | 0.09 | | Wood | 0.15 | 0.11 | 0.10 | 0.07 | 0.06 | 0.07 | | Acoustic Tiles | 0.07 | 0.21 | 0.66 | 0.75 | 0.62 | 0.49 | | Concrete block, coarse | 0.36 | 0.44 | 0.31 | 0.29 | 0.39 | 0.25 | | CO2,3 | 20 |
| 7. |  | What are the four aspects required to isolate a room? Explain each one of them in detail. | CO1 |  |
| (OR) | | | | |

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| 8. |  | Identify the type of studio mentioned below. Explain how different the recording done will be if sound is recorded from position A and directed towards B and when recording is done from position B and directed towards position A. | CO2,3 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Discuss the various ways of dealing with the low frequency resonances early reflections, lateral reflection and other peculiarities in a small scale recording studio setup. | CO2,3 | 20 |