S.No. : 338

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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 00139 Roll No. | | | | | | | | | | |

B. Arch. Examination 2021-22

(Even Semester)

ACOUSTICS

Time : Three Hours] *[Maximum Marks : 50*

Note :– (i) Attempt any five questions.

(ii) Question No. 1 is compulsory.

(iii) All questions carry equal marks.

(iv) Assume any missing data.

1. An auditorium, have rectangular shape, has its dimensions at 40 m × 20 m × 15 m (ht). The interior surfaces of the auditorium are covered by the following materials :

Cement plaster walls	= 1000 sqm,	$\alpha = 0.02$
Concrete floor	= 800 sqm,	$\alpha = 0.03$
Celotex ceiling	= 800 sqm,	$\alpha = 0.50$

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Curtains on walls	= 330 sqm,	$\alpha = 0.40$
Empty seat	=	$\alpha = 0.22$/seat
Occupied seat	=	$\alpha = 0.35$/seat

The capacity of auditorium is 1000 seats. Determine number of absorbing units, time of reverberation and extra-absorbent units, (for an optimum time of reverberation of 1.0 seconds) if required, for the following audience factors :

(a) No audience

(b) Full audience

(c) Audience factor as one-third

2. Descrieb with neat sketches in detail the various considerations needed in the design of an auditorium.

3. Write short notes on any four the following :

(a) Human threshold of pain in respect of noise levels

(b) Acoustical materials

(c) Absorption coefficient

(d) Transmission loss

(e) Sabine's formula for determining reverberation time.

4. Differentiate between the following :

   (a) Reverberation and formation of echoes

   (b) Sound foci and dead spots

   (c) Indoor noise and outdoor noise

   (d) Air-borne noise and structure borne noise

5. Explain in detail the different types of sound absorbents.

6. Discuss the behaviour of sound in an enclosure, with the help of examples and neat sketches.

7. Explain in detail the electric sound systems.

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