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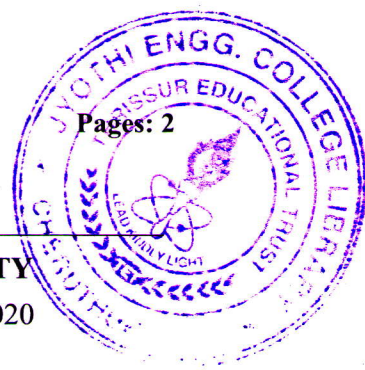
Pages: 2

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020



Course Code: CE365

Course Name: FUNCTIONAL DESIGN OF BUILDINGS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) With the help of a neat sketch, explain the characteristics of sound wave. (5)
Explain pure tone.
- b) Explain the inverse square law of sound. Examine velocity of sound in different media. (5)
- c) Explain sound intensity and its different units. How do you relate the different units? (5)
- 2 a) Discuss the audibility range of humans with a neat labelled sketch. (4)
- b) Using graphs, explain the free field and reverberant field behaviour of sound. (6)
Also, explain the unit of 1 Sabine.
- c) Explain reverberation time and its measurement. (5)
- 3 a) Explain the any four considerations for the acoustic design of an auditorium. (4)
- b) Discuss Transmission loss. Describe the steps to find the TL value of a solid wall when a circular hole is drilled through it. (6)
- c) Explain the effects of noise on humans and ways to control it. (5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Discuss purpose of lighting. . (4)
- b) Distinguish between daylighting and artificial lighting. (4)
- c) Explain day-light factor and its components. (7)
- 5 a) Explain the design parameters of daylighting design. Describe the steps involved in designing the number of fenestration in a building for a given daylight factor percent. . (11)
- b) Explain colour temperature and colour rendering index. . (4)

- 6 a) Explain effects of glare in lighting. (3)
- b) Illustrate lumen method of artificial lighting design for your classroom. Assume dimensions of the classroom as 12m x 9m x 3m, working plane height to be 0.9m and luminaire mounting height to be 2.4m, required illumination for a classroom as 300 lux and the luminaire to be consisting of two fluorescent lamps of 1500 lumens each. Take MF=0.65, SHR=1.5, UF=0.43. . (7)
- c) Discuss different forms of outside lighting. (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Discuss thermal comfort indices. (4)
- b) Discuss effective temperature and its significance. . (6)
- c) Describe the use of psychrometric chart. . (5)
- d) Compare and contrast between ET-CET Charts. (5)
- 8 a) Explain with a neat sketch the solar path diagram. (4)
- b) Discuss the important dates in a year due to apparent motion of the sun with respect to the earth. (5)
- c) Explain different heat flow processes in a building. Define the thermal quantities – thermal capacity and transmittance of a body. (6)
- d) Define solar angles Altitude and Azimuth. Explain solar gain factor. (5)
- 9 a) Describe the steps in heat gain/loss calculation of a building. (7)
- b) Explain the concept of periodic flow with a labelled neat sketch giving definitions of time lag and decrement factor. (4)
- c) Discuss the various climatic zones in India. Describe the design approaches for any one of these zones in detail. (4)
- d) Discuss significance of making buildings 'green'. (5)
