Reg. No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

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) Explain, how sound intensity varies with the distance from a point source (i) In a free field, (ii) in a reverberant field. 7

b) Discuss how the TL-value of a separating wall varies with its mass and thickness 4

c) A cracker on firing produces a sound level of 90 dB at a reference point. How many crackers can be simultaneously fired so that the sound level at the reference spot does not exceed 115 dB? 4

2 a) What is NRC number with reference to sound absorption calculations? 3

b) Discuss in detail the acoustical considerations to be made in the design of an auditorium. 12

3 a) Distinguish between air born and structure born noises 3

b) Explain the acoustical considerations to be made while designing office buildings. 5

c) What you mean by Acoustical Day time and Acoustical Night time. Explain the concepts of L_{eq} and L_{dn}. 7

PART B

Answer any two full questions, each carries 15 marks.

4 a) Discuss the advantages and disadvantages of day-lighting. 4

b) What are the general principles of design of windows for good day-lighting? 6

c) Explain the relevance and concept of design sky. 5

5 a) Make a neat sketch of skylights showing various components? 5

b) Write briefly about the efficacy and colour rendering property of Incandescent lamps, Compact florescent lamps, High-pressure Sodium Vapour lamps and Mercury vapour lamps 4

c) A point source of light has an intensity 2000 candela in the vertically downward direction. The intensity reduces with the angle and reaches 1000 cd at the horizontal direction (90 degrees with vertical). If the source is mounted 4m above the working plane, find the illumination due to this light source at points (i) Directly under the lamp (ii) at 3m away in the same plane. 6

6 a) Explain the procedure of design of Artificial lighting by lumen method. 7

b) Explain the phenomenon, glare. What are the types of glare? What are the common problems caused by glare? 4

c) What are the common types of lamps used for street lighting? What are the different types of pole arrangements used? 4

PART C

Answer any two full questions, each carries20 marks.

7	a)	Explain the concept of comfort zone based on Bio-climatic chart	7
	b)	What is Psychrometry? What are the usual input parameters to a Psychrometric chart? What are the various information we get from a Psychrometric chart?	7
	c)	Explain the terms Thermal conductivity, Thermal resistivity, Thermal conductance and Thermal resistance.	6
8	a)	Explain the modes of heat gain through a 3 mm plane window glass.	5
	b)	What is the significance of considering periodic heat flow through building components? Explain Time lag and decrement factor.	6
	c)	Explain the concept of shadow angles and shadow throws. How shadow throws are used in the design of shading devices?	9
9	a)	What do you understand by the term Solar Gain Factor? What is its significance?	6
	b)	What do you understand by the concepts Passive solar design, Active solar design and Active design?	8
	c)	Write briefly about LEED and GRIHA ratings for the evaluation of green buildings	6

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