Reg. No.															

Question Paper Code	13699

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

Civil Engineering

20BSPH204 - PHYSICS FOR CIVIL ENGINEERING

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	_____ is the frequency range of audible sound for humans. (a) 1-20 Hertz (b) 20-20kiloHertz (c) Above 20 kilo Hertz (d) None of the these	1	K1	CO1
2.	Which of the following material is commonly used for sound absorption? (a) Glass (b) Concrete (c) steel (d) Acoustic panels	1	K1	CO1
3.	_____ is an application of shape memory alloys. (a) Aerospace structures (b) Medical devices (c) Actuators (d) All of the above	1	K1	CO2
4.	What is a characteristic property of ferroelectric ceramics? (a) Permanent magnetization (b) Spontaneous electric polarization (c) High thermal conductivity (d) Low electrical conductivity	1	K1	CO2
5.	The unit of luminous flux is _____ (a) Lux (b) Lumen (c) Candela (d) Watt	1	K1	CO3
6.	Which factor affects the daylight factor in a room? (a) Window size and orientation (b) Room color and reflectance (c) Outdoor illuminance (d) All of the above	1	K1	CO3
7.	_____ is the primary purpose of thermal insulation in buildings. (a) To reduce heat gain (b) To reduce heat loss (c) To reduce both heat gain and heat loss (d) To increase energy consumption	1	K1	CO4
8.	Which of the following is a benefit of shading devices in buildings? (a) Increased heat gain (b) Reduced cooling load (c) Increased energy consumption (d) Reduced daylighting	1	K1	CO4
9.	What is the function of a fan coil unit in an air conditioning system? (a) To cool the air (b) To heat the air (c) To distribute air (d) To control temperature	1	K1	CO5
10.	The primary cause of earthquake is -------- (a) Volcanic eruptions (b) Plate tectonics (c) Weathering (d) Erosion	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	State Weber-Fechner law.	2	K1	CO1
12.	Write any two factors affecting the acoustics of buildings?	2	K1	CO1
13.	What are the advantages of using metallic glasses?	2	K2	CO2
14.	Mention two applications of high alumina ceramics.	2	K1	CO2
15.	Distinguish between radiometry and photometry.	2	K2	CO3
16.	What is glare, and how can it be minimized?	2	K2	CO3
17.	What are the benefits of natural ventilation in buildings?	2	K1	CO4
18.	How does thermal mass help in reducing energy consumption in buildings?	2	K2	CO4
19.	What is the purpose of cooling load calculation in air conditioning system design?	2	K2	CO5
20.	List out any two benefits of using variable refrigerant flow (VRF) systems in buildings.	2	K1	CO5

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

21.		What is the purpose of a seismograph in earthquake monitoring?	*2*	*K1*	*CO6*
22.		Any two effects of volcanic eruptions on the environment.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Define absorption coefficient. Derive an expression for the absorption coefficient of a material from Sabine's formula.	*11*	*K2*	*CO1*
		OR			
	b)	Explain about noise pollution and its control measurements.	*11*	*K2*	*CO1*
24.	a)	Discuss the advantages and limitations of fiber-reinforced composites.	*11*	*K2*	*CO2*
		OR			
	b)	Describe the manufacturing methods for ceramics, slip casting and isostatic pressing.	*11*	*K2*	*CO2*
25.	a)	Derive the inverse square law for illuminance and explain its significance in lighting design.	*11*	*K2*	*CO3*
		OR			
	b)	Discuss the principles of daylighting design, including window size, orientation, and placement and Explain how these factors affect indoor illuminance.	*11*	*K2*	*CO3*
26.	a)	Discuss the importance of thermal insulation in building design and operation, including its benefits and types.	*11*	*K2*	*CO4*
		OR			
	b)	Explain the principles of natural ventilation and discuss its advantages and limitations.	*11*	*K2*	*CO4*
27.	a)	Describe the components and operation of a central air conditioning system.	*11*	*K2*	*CO5*
		OR			
	b)	Describe the components and operation of a chilled water plant and discuss its advantages and limitations.	*11*	*K2*	*CO5*
28.	a)	Explain the structure of the Earth's interior, including the crust, mantle, outer core, and inner core, and discuss their characteristics.	*11*	*K2*	*CO6*
		OR			
	b)	Describe the different types of seismic waves generated by earthquakes, including P-waves, S-waves, and surface waves, and explain their characteristics.	*11*	*K2*	*CO6*