

Reg. No.

Question Paper Code

12129

**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023**

Second Semester

**Civil Engineering**

**20BSPH204 - PHYSICS FOR CIVIL ENGINEERING**

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

- |  | <i>Marks,<br/>K-Level, CO</i> |
|--|-------------------------------|
| 1. How are sound waves classified?                       | 2,K1,CO1                      |
| 2. State Weber-Fechner law.                              | 2,K1,CO1                      |
| 3. Define luminous intensity.                            | 2,K1,CO3                      |
| 4. State inverse square law in Photometry.               | 2,K1,CO3                      |
| 5. What is called fenestration? Give two examples.       | 2,K1,CO4                      |
| 6. Mention the applications of thermal insulation.       | 2,K2,CO4                      |
| 7. What is chilled water plant?                          | 2,K1,CO5                      |
| 8. Explain briefly the need for shading devices.         | 2,K2,CO5                      |
| 9. Mention few units for the measurement of earthquakes. | 2,K2,CO6                      |
| 10. Differentiate P-waves and S-waves.                   | 2,K2,CO6                      |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Derive the expression for growth and decay of the energy density inside a hall and hence deduce Sabine's Mathematical relation for reverberation time of a hall. 13,K2,CO1
- OR**
- b) Explain the various factors affecting the architectural acoustics of a building and their remedy. 13,K2,CO1
12. a) State Cosines law and derive the expression for intensity of illumination. 13,K2,CO3
- OR**
- b) Write in detail about the day light design and measurements in the buildings. 13,K2,CO3
13. a) Explain in detail how heat gain and heat loss estimations are carried out for a building. 13,K2,CO4

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

**12129**

**OR**

- b) Describe the factors affecting thermal performance of buildings. *13,K2,CO4*
14. a) Discuss the principles of natural ventilation, ventilation measurements and design for natural ventilation. *13,K2,CO5*

**OR**

- b) Explain in detail the different types of air-conditioning systems. *13,K2,CO5*
15. a) Discuss the various earthquake hazards and explain the disaster mitigation after earthquake. *13,K2,CO6*

**OR**

- b) Explain deterministic seismic hazard analysis and probabilistic seismic hazard analysis. *13,K2,CO6*

**PART - C (1 × 15 = 15 Marks)**

16. a) What are shape memory alloys? Explain their characteristics and applications with necessary diagrams. *15,K2,CO2*

**OR**

- b) Explain thermal, mechanical, electrical and chemical properties of ceramic materials. *15,K2,CO2*