

**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025**

Second Semester

**Department of 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

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. What unit is used to measure sound intensity? (a) Hertz                      (b) Decibel                      (c) Sabine                      (d) OWU	1	K1	CO1
2. Which factor affects the acoustics of a building? (a) Building material      (b) Room shape      (c) Furnishings      (d) All of the above	1	K1	CO1
3. Composites are materials made by (a) Heating metals to high temperatures      (b) Freezing materials (c) Combining more than one materials      (d) Melting plastics	1	K1	CO2
4. Ceramic fibres are primarily used for: (a) Thermal insulation      (b) Electrical conduction (c) Thermal conduction      (d) Structural support	1	K1	CO2
5. The cosine law in photometry is used to describe: (a) The reflection of light      (b) The transmission of light (c) The absorption of light      (d) The distribution of light intensity	1	K1	CO3
6. What is the primary cause of visual field glare? (a) Insufficient light in the visual field      (b) Excessive light in the visual field (c) Colour deficiency      (d) Reflection of light from surfaces	1	K1	CO3
7. Which factor does not affect the thermal performance of buildings? (a) Building orientation      (b) Window type      (c) Paint colour      (d) Insulation quality	1	K1	CO4
8. Thermal comfort in buildings is typically determined by: (a) Humidity levels      (b) Air movement      (c) Temperature      (d) All of the above	1	K1	CO4
9. Natural ventilation is primarily influenced by: (a) Wind pressure and thermal buoyancy      (b) Mechanical fans (c) Air conditioning units      (d) Insulation type	1	K1	CO5
10. What is the estimated age of the Earth? (a) 2.5 billion years      (b) 3.5 billion years      (c) 4.5 billion years      (d) 5.5 billion years	1	K1	CO6

**PART - B (12 × 2 = 24 Marks)**

Answer ALL Questions

11. Define sound intensity level.	2	K1	CO1
12. What is absorption coefficient?	2	K1	CO1
13. Mention any four properties of metallic glasses.	2	K2	CO2
14. What is ferroelectric ceramic material? Give any two examples.	2	K1	CO2
15. What does radiometry measure?	2	K1	CO3
16. Which method is commonly used for measuring daylight in a space?	2	K1	CO3
17. Define thermal insulation.	2	K1	CO4
18. What does the term 'fenestration' refer to in building design?	2	K1	CO4
19. Which type of window is commonly used for improved ventilation?	2	K1	CO5
20. State the principle of air conditioning.	2	K2	CO5
21. What are the causes of earthquake?	2	K1	CO6

22. Define Rayleigh waves. 2 K1 CO6

**PART - C (6 × 11 = 66 Marks)**

Answer ALL Questions

23. a) Derive Sabine's formula for reverberation time of a hall. 11 K2 CO1

**OR**

b) Explain about the factors affecting acoustics of the building and its remedies. 11 K2 CO1

24. a) Describe the structure, properties and applications of Shape memory alloys. 11 K2 CO2

**OR**

b) Explain composites and their classification in detail. 11 K2 CO2

25. a) Describe the Photopic, Mesopic and Scotopic vision in detail. 11 K2 CO3

**OR**

b) Discuss the measurement and implications of the luminous efficiency function in lighting design. 11 K2 CO3

26. a) Discuss the concepts of thermal insulation and its benefits. 11 K2 CO4

**OR**

b) Discuss the factors affecting thermal performance of the building with remedies. 11 K2 CO4

27. a) Describe the principle of natural ventilation with neat diagrams. 11 K2 CO5

**OR**

b) Describe the components and functioning of a chilled water plant. 11 K2 CO5

28. a) Describe the different types of seismic waves and their characteristics. How these waves are recorded and analyzed using seismographs? 11 K2 CO6

**OR**

b) Describe the distribution of volcanoes around the world. What are the primary causes of volcanic activity and how do tectonic processes play a role? 11 K2 CO6