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Question Paper Code: U2P06

B.E./B.Tech. DEGREE EXAMINATION, MAY 2024

Second Semester

Civil Engineering

21UPH206- BUILDING PHYSICS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which of the following is not a method of heat transfer? CO2-U
(a) Radiation (b) Conduction (c) Convection (d) Insulation
2. In which of the following are the particles closest together? CO2-U
(a) solid (b) liquid (c) gas (d) fluid
3. An organ pipe closed at one end has a fundamental frequency of 1500Hz. CO1-App
The maximum number of overtones generated by this pipe, which a normal person can hear is?
(a) 12 (b) 9 (c) 6 (d) 4
4. If fundamental frequency is 50 and the next successive frequencies are 150 CO2- U
and 250, then it is _____
(a) A pipe closed at both ends (b) A pipe closed at one end
(c) An open pipe (d) A stretched string
5. Which of the following is a metallic glass? CO2- U
(a) Argon (b) Crypton (c) Nickel (d) Gold
6. Phases of shape memory alloys CO2- U
(a) Martensite (b) Austenite (c) both a and b (d) only a
7. Porcelain is a type of _____ ceramic. CO6-U
(a) white ware (b) stone (c) abrasive (d) cement

8. Which of the following is not a step in making ceramics? CO6-U
 (a) Powder pressing (b) Sintering (c) Alloying (d) Vitrification
9. A Carbon monoxide sensor made of zirconia uses which characteristic to detect any change? CO2-U
 (a) Capacitance (b) Resistivity (c) Activity (d) Permeability
10. On both ends of the CNTs, which carbon nanostructure is placed? CO2-U
 (a) Graphite (b) Diamond (c) C₆₀ (d) Benzene

PART – B (5 x 2= 10Marks)

11. Give a short note on Heat Exchange processes between a building and the external environment CO2-U
12. Mention the Classification of sound waves based on the frequency CO2-U
13. Give a short note on pseudo elasticity CO2-U
14. Mention the chemical properties of ceramics CO2-U
15. Mention the applications of nano phase materials. CO2-U

PART – C (5 x 16= 80Marks)

16. (a) Outline some methods of thermal insulation of buildings CO2-U (16)
 Or
 (b) A slab of material length 1m, area of cross section is 5m². One end of the slab is at 100⁰c and other end at 50⁰c. Calculate the thermal conductivity of the slab. CO1-App (16)
17. (a) A hall has a volume of 5000 m³. It is required to have reverberation time of 1.5 second. What should be the total absorption in the hall ? CO5-App (16)
 Or
 (b) A hall has a volume of 2265 m³. Its total absorption is equivalent to 92.9 m² of open window. What will be the effect on reverberation time if audience fills the hall and there by increases the absorption by another 92.9 m². CO5-App (16)
18. (a) Explain the preparation, types and properties of metallic glasses CO2-U (16)
 Or
 (b) Explain the properties of shape memory alloys CO2-U (16)

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| 19. | (a) | Describe the classification of ceramics | CO2-U | (16) |
| | | Or | | |
| | (b) | Explain fiber reinforced plastics | CO2-U | (16) |
| 20. | (a) | Explain scanning electron microscope | CO2-U | (16) |
| | | Or | | |
| | (b) | Explain the properties of Nano phase particles | CO2-U | (16) |

