

## Final Exam Designing Healthy and Productive Workspaces and Buildings

1. What are some of the primary factors associated with healthy and productive workplaces and Buildings presented in this course?
  - a. Air Quality, Water Quality and Tobacco smoke
  - b. Biophilic environment, Covid 19 transmission factors and EMF exposure.
  - c. Noise levels, Views and Nutrition.
  - d. Dust, Noise levels and exercise
2. We spend up to \_\_\_\_\_ % of our time indoors as in the statement presented in the course?
  - a. 95
  - b. 90
  - c. 85
  - d. 80
3. ERV as presented in the course stands for \_\_\_\_\_ system and reduced energy costs?
  - a. Energy Resource Vector
  - b. Environment Resource Value
  - c. Energy Resource Value
  - d. Energy Recovery
4. Even low levels of lead in the drinking water are associated with cognitive impairment in children and \_\_\_\_\_ levels in adults are associated with Hypertension, lowered kidney function, nerve disorders, reproductive problems, risk factors for heart disease, reduced fetal growth in pregnant women.
  - a. low
  - b. high
  - c. very low
  - d. extremely low
5. The 2011–2012 U.S. National Health and Nutrition Examination Survey reported detectable serum PFAS concentrations in virtually all individuals - \_\_\_\_\_.
  - a. 30%
  - b. 50%
  - c. 70%
  - d. 97%

6. Select all that apply to the course statement: One study found 45 chemicals in multiple classes ( \_\_\_\_\_.) from the consumer and building materials in dust are associated with endocrine/hormone disruption, Cancer and reproductive toxicity.
- Phthalates and Phenols
  - Flame Retardants and Fluorinated Chemicals
  - Fragrances
  - All of the above
7. It is estimated that an adult can ingest \_\_\_\_\_ dust in a day.
- 1000mg
  - 500mg
  - 200mg
  - 100mg
8. In a study, office workers' exposure to blue-enriched fluorescent light (17,000 K ) vs. white light ( \_\_\_\_\_ K) reported greater alertness, better mood, concentration and sleep quality compared to working in standard office lighting \_\_\_\_\_ K.
- 5000
  - 4500
  - 4000
  - 3500
9. In a study - the 2016 Digital Eye Strain report - of 10,000 US adults they found \_\_\_\_\_ overall self-reported prevalence of digital eye strain symptoms.
- 24%
  - 35%
  - 50%
  - 65%
10. Participants finished tasks in the green offices faster than the lean offices with an increase of productivity of \_\_\_\_\_ in the green offices vs. the lean offices.
- 5%
  - 8%
  - 15%
  - 30%
11. \_\_\_\_\_ studies found that exposure to natural scenes rather than urban scenes decreased the tendency to discount the future or value the future less thus reducing behavior to make changes.
- One
  - Two
  - Three
  - Four
12. It is estimated that \_\_\_\_\_ people in the US have been exposed to noise levels between 55-60 dBA which increases the risk of heart disease and hypertension.
- 90 million
  - 100 million

- c. 120 million
  - d. 145 million
13. The exposure of children to environmental noise is associated with:
- a. Behavioral problems
  - b. Irritability
  - c. Fatigue, increased hyperactivity and emotional symptoms
  - d. All of the above.
14. Office workers are exposed to more noise and the resulting work interference because about \_\_\_\_\_% of offices in the United States now have open workspaces.
- a. 25
  - b. 50
  - c. 70
  - d. 90
15. Select the design factor (including coefficient) from the course to help reduce noise in an office: Sound reduction surfaces: Noise Reduction Coefficient (A **Noise Reduction Coefficient** is an average rating of how much **sound** an acoustic product can absorb.NRC):
- a. Ceilings: Open workspaces NRC .9
  - b. Ceilings: Conference and teleconference rooms 50% at NRC .5
  - c. Walls: Open workspaces 25% at NRC .5
  - d. Walls: Closed workspaces, conference and teleconference spaces 25% at NRC .5
16. Fill the blank with all that apply per summary: ...Biophilic indoor environment includes natural elements such as: \_\_\_\_\_...
- a. Plants, water, airflow, sunlight, natural materials
  - b. Biomorphic patterns
  - c. long-distance natural view
  - d. All of the above.
17. \_\_\_\_\_ studies in a meta-analysis, including 1492 samples indicate exposure to mobile phones was associated with reduced sperm motility and viability.
- a. 1
  - b. 2
  - c. 5
  - d. 10
18. Select all that apply to approaches to mitigate EMF exposure in workspaces and buildings presented in the course:
- a. Use hard wired routers instead of WiFi or keep WiFi routers at least 20' from people
  - b. Wiring inside buildings should be EMF shielded. Devices plugged in to outlets should be 3 prong/grounded
  - c. Don't use cell phones in crowded areas. Shield cell phones from EMF. Don't carry phones in pockets
  - d. All of the above

19. When the relative humidity is between \_\_\_\_\_% more of the virus is in the bigger droplet form which is heavy and falls to the ground after traveling a few feet.

- a. 20-50
- b. 30-50
- c. 30-60
- d. 40-60

20. The Covid 19 virus is viable on stainless steel surfaces for about \_\_\_\_\_ hours.

- a. 72
- b. 80
- c. 96
- d. 100