A Reg. No. : | | | | | | | | | | |

Question Paper Code: 52006

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Second Semester

Civil Engineering

15UPH206 – BUILDING PHYSICS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. The ratio of change in length per unit length is known as CO1-R

   (a) linear strain (b) linear stress (c) logitudinal stress (d) lateral strain

2. A line perpendicular to the plane of bending on which the centre of curvature of all the bent filaments lie is called CO1 -R

   (a) bending couple (b)axis of bending

   (c) plane of bending (d)bending moment

3. The existense of sound in a room even after the source of sound is cut off is called as CO2 -R

   (a) echelon effect (b) echo (c) reverberation (d) reverberation time

4. Inside noise can be minimized by CO2- R

   (a) using double doors and windows (b) airconditioning the hall

   (c) using double walls (d) covering the floor with carpet

5. NDT stands for CO3-R

   (a) near destructive testing (b) nanodimensional testing

   (c) non-detectable testing (d) non destructive testing

6. Liquid penetrant method is based on CO3 -R

(a) viscosity (b) surface tension (c) capillary action (d) dusting

7. Displacement of a particle executing simple harmonic motion is CO4 -R

(a) $y=a\cos\omega t$ (b) $y=a\sin\omega t$ (c) $y=a\cot\omega t$ (d) $y=a\sec\omega t$

8. In damped vibration, amplitude of vibration CO4 -R

(a) decreases (b) increases

(c) is zero (d) decreases and then increases

9. The versatility of nanomaterials is due to CO5- R

(a) high surface to volume ratio (b) low density ratio

(c) high density ratio (d) low surface to volume ratio

10. Topology details of a specimen can be examined by CO5 -R

(a) optical microscope (b) scanning electron microscope

(c) analytical microscope (d) transmission electron microscope

PART – B (5 x 2= 10Marks)

11. State Hooke's law CO1- R

12. A cinema hall has a volume of 7500 m^3 and it is required to have a reverberation of 1.2 s. Compute the total absorption in the cinema hall CO2 -App

13. Recognize two merits of liquid penetrant method of testing CO3 -R

14. Define time period CO4- R

15. Distinguish between top-down and bottom-up approach. CO5- Ana

PART – C (5 x 16= 80Marks)

16.	(a)	With the aid of stress – strain diagram analyze the elastic characteristics of a material of your choice.	CO1- Ana	(16)
		Or		
	(b)	Describe the various factros affecting the elastic properties of materials.	CO1 -U	(16)
17.	(a)	Deduce a mathematical expression to compute the reverberation time of a hall based on Sabine's theory.	CO2 -U	(16)
		Or		
	(b)	Discuss the different factors affecting the acoustics of buildings along with remedies.	CO2 -U	(16)
18.	(a)	Elaborate the ultrasonic flaw detector based on pulse echosystem through transmission and reflection modes.	CO3 -U	(16)
		Or		
	(b)	Sketch the block diagram of thermography and list its applications.	CO3 -U	(16)
19.	(a)	Explain the following concepts (i) Damped harmonic motion (ii) Resonance	CO4 -U	(16)
		Or		
	(b)	Explain the three wave characteristics.	CO4 -U	(16)
20.	(a)	Explain the synthesis of nano particles by ball milling and sol-gel techniques	CO5- U	(16)
		Or		
	(b)	Describe the principle, describe the construction and working of transmission electron microscope. Also mention its applications.	CO5- U	(16)