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| Bon Secours College for Women Nationally Accredited with “A” Grade by NAAC (Affiliated to Bharathidasan University, Trichy-24) Recognized by UGC Under Section 2(f) & 12 (B)    Vilar Bypass, Thanjavur-613 006. |

**DEPARTMENT OF PHYSICS**

**II MATHS & II CHEMISTRY - ALLIED PHYSICS-I - RACSY07A**

**2 Marks**

1. Define centre of gravity
2. What is hemisphere? What will be the centre of gravity of a hollow hemisphere?
3. State the laws of floation
4. What will be the condition for floating bodies
5. What do you mean by the stability of floating bodies
6. Define metacentre
7. What is metacentric height
8. Define centre of buoyancy
9. Define stable equilibrium
10. Define unstable equilibrium
11. Write the range of audible frequency
12. Define periodic motion
13. Define oscillatory
14. Define simple Harmonic motion. Give two examples.
15. Define Amplitude
16. What are the factors affect the Lissajous figure
17. Draw the Lissajous figure for the phase difference π/2 & 3π/4
18. Give the applications of Lissajous figure
19. What is ultrasonic & infrasonic waves
20. Define Acoustics of Buildings
21. Write any two essential features about the good acoustics
22. What is reverberation and reverberation time
23. Write the range of reverberation time for good acoustic of building
24. Write the Sabine’s Formula
25. What is Decibel
26. What are the factors affect the Acoustics of buildings
27. Define phon
28. What is diffusion
29. Write down the Fick’s law of diffusion
30. Define coefficient of Diffusivity
31. What is meant by semi-permeable membranes
32. What is osmosis
33. Define dialysis
34. Define osmotic pressure
35. What do you mean by semi-permeable membranes
36. Define dialysis
37. What is molecular elevation of the boiling point
38. What is molecular depression of the freezing point
39. State Newton’s law of cooling
40. Define caloric value of a fuel
41. What is conduction
42. Define temperature gradient
43. Define thermal conductivity
44. What is good and bad conductors
45. Give an example for a good and bad conductor of heat
46. Define Stefan’s law of radiation
47. Define Solar constant
48. What is the approximate surface temperature of sun
49. What is meant by visible region
50. Write the range of electromagnetic spectrum
51. What is the wavelength region of vacuum ultra-violet region
52. What is the frequency and wavelength range for UV & Visible region
53. Which radiation is used to cure ricket
54. Name the scientist who studied IR and UV rays
55. Write the sources of IR waves
56. In what range of electromagnetic spectrum human eye gives more response
57. What are the rays is used to sterilize the rooms
58. Write the three parts of the Infrared region
59. Give the detective limit of human eye in the EM spectra approximately in wavelengths
60. What is Raman effect
61. Compare Stokes & Antistokes lines
62. Give two applications of Raman effect
63. Define Rayleigh Scattering
64. Write the differences between elastic & inelastic scattering
65. What is Rayleigh Scattering
66. Write the components of Optical fibre
67. What do you mean by multimode fibre optic communication
68. Write a note on the improvement of fibre optic communication
69. Define numerical aperture
70. What is acceptance angle
71. What is bundle
72. What is coherent bundle
73. What is incoherent bundle
74. What is modulation
75. Define Demodulation
76. Define Total Internal reflection

**FIVE MARK QUESTIONS**

1. Deduce the general formula for the determination of centre of gravity
2. Show that the centre of gravity of a solid cone will be at a depth (3/4)h from its vertex
3. Discuss the condition for the stability of a floating body
4. Describe how the metacentric height of a ship is determined
5. Derive an expression for the particle executing S.H.M
6. Find an expression for the displacement of a particle executing S.H.M
7. Find the resultant of two S.H.Ms act in a straight line
8. Discuss about Lissajous figure
9. Describe a simple arrangement to demonstrate the Lissajou’s figures
10. How will you compare the frequencies of two forks using Lissajou’s figure
11. Describe how will you determine the frequency of a fork using Lissajou’s figure
12. List the properties of ultrasonic waves
13. Write a note on acoustics of buildings
14. Write a note on Reverberation
15. Derive Sabine’s formula
16. Mention the factors that affect the acoustics of bulding
17. What are the requisites for good acoustics of an auditorium
18. Describe hot wire microphone method for the determination of intensity of sound
19. State and explain Fick’s law of diffusion
20. What are the analogy between diffusion and heat conduction
21. Describe an experiment to determine the coefficient of diffusion
22. State and explain the laws of osmotic pressure
23. Describe an experiment to find the osmotic pressure
24. What are the difference between osmosis and diffusion
25. State and explain Newton’s law of cooling
26. How will you verify Newton’s law of cooling
27. State and explain Stefan’s law of radiation
28. State Stefan’s law and describe an experiment to determine Stefan’s constant
29. Calculate the surface temperature of the sun
30. Write a note of electromagnetic spectrum
31. Write a note on spectral response of human eye
32. Mention the uses of ultra violet rays
33. List out the uses of infra-red rays
34. Give the theoretical explanation for Raman effect
35. Describe single mode and multi-mode optic fibre
36. Derive an expression for numerical aperture
37. What are the advantages of Fibre optic sensor
38. Describe temperature sensor
39. Explain multi-mode fibre optic sensor

**TEN MARK QUESTIONS**

1. Determine the position of centre of gravity of solid hemisphere
2. Find the position of centre of gravity of a hollow hemisphere
3. Derive an expression for the resultant of two S.H.M. at right angles to each other. Discuss the different cases
4. How ultrasonic waves are produced by magnetostriction method and piezo-electric method
5. Mention the application of ultrasonic waves
6. Explain Decibel and phon
7. Briefly discuss Berkeley and Hartley method to determining osmotic pressure
8. Write a short note on elevation of boiling point
9. Derive an expression for the depression of freezing point
10. How to determine the molecular weight of a substance from the elevation of the Boiling point
11. How to determine the molecular weight of a substance from the depression of the freezing point
12. Describe an experiment to determine the specific heat capacity of liquid using Newton’s law of cooling
13. Explain how Bomb calorimeter is used to determine the caloric value of a fuel
14. How will you determine it is the case of poor conductor using Lee’s disc method
15. Give an account of UV and IR Spectroscopy
16. Give the experimental study of Raman effect
17. Write an essay on Fibre optic communication system.
18. Mention the advantages of fibre optic communication.