

ASSIGNMENT QUESTION DEC 2024 EXAMINATION

B.SC PHYSICS

SEMESTER I

NAME OF THE COURSE : Properties of Matter and Acoustics (JMPH11)

1. a) Define the following elastic constant's (o) young's modulus, (k) Bulk modulus, (G) Rigidity modulus & poisson ratio.

(or)

b) Derive the expression for Bending moment and depression at the loaded end of the cantilever.

2. a) Briefly describe how will you determine surface tension using jager's method.

(or)

b) Derive Sabine's reverberation formula.

NAME OF THE COURSE : Algebra and Different Equation (JEMA11)

- 1.a) Show that $4(x^2 - x + 1)^3 = 27x^2(x - 1)^2$ is a standard reciprocal equation.

(OR)

b) Increase the roots of the equation $4x^5 + 13x^2 + 57x - 10 = 0$ by 2.

- 2.a) Solve $x + 2(xp - p) + p^2 = 0$.

(OR)

b) Find the Laplace transform of $xe^{-x} \cos x$.

NAME OF THE COURSE : Physics for everyday life (JSPH11)

1. a) Define spring scales? Write down the construction and working of spring scales.

(or)

b) What is a Polaroid camera? Describe the details of film development.

2. a) Explain the construction and working of a vacuum cleaner.

(or)

b) Describe a short note on photovoltaic cell and its general applications.

NAME OF THE COURSE : Introductory Physics (JFPH11)

1.a) Give a detailed note on vector addition and subtraction.

(or)

b) Elaborate on different types of forces.

2. a) Write short notes on laws of conservation of momentum and energy.

(or)

b) Explain about free, damped and forced oscillations.

SEMESTER II

NAME OF THE COURSE : Heat, Thermodynamics and Statistical Physics

JMPH21

1.a) What is specific heat capacity ? Brief about specific heat capacity of gases at constant pressure C_p and constant volume C_v .

(or)

b) Define carnot's engine. Elaborate on its construction, working and efficiency.

2. a) Give an detailed note on different modes of the transfer.

(or)

b) Derive Mancurll – Boltzmann statistics energy distribution law.

NAME OF THE COURSE : Vector Calculus and Fourier Series (JEMA21)

1.a) Find ϕ if $\nabla\phi$ is $(6xy + z^3)\vec{i} + (3x^2 - z)\vec{j} + (3xz^2 - y)\vec{k}$

(OR)

b) Show that the following vector point functions are irrotational.

$$(3x^2 + 2y^2 + 1)\vec{i} + (4xy - 3y^2z - 3)\vec{j} + (2 - y^3)\vec{k}$$

2.a) Evaluate $\iint (x^2 + y^2)dx dy$ over the region for which x,y are each greater than or equal to 0 and $x + y \leq 1$.

(OR)

b) If $f = (x^2 - y^2)\vec{i} + 2xy\vec{j}$, evaluate $\int_C f \cdot dr$ along the curve C in the x-y plane given by $y = x^2 - x$ from the point (1,0) to (2,2).

NAME OF THE COURSE : Home Electrical Installation (JSPH21)

- 1.a) Discuss the difference between AC and DC.
(or)
- b) Write about the roles of step-up and step down transformer.
2. a) What is Energy consumption and how do you calculate EB bills.
(or)
- b) Write an short note on electrical safety and suggest some tips to avoid electrical shock.

NAME OF THE COURSE : Physics of Music (JSPH22)

- 1.a) Write down the definition and units of velocity, frequency, wavelength and time period.
(or)
- b) Describe the laws of vibrations in a stretched string.
2. a) Briefly explain the mechanism of vocal sound production.
(or)
- b) How the recording's of music and sound stored in magnetic wire tape recorders ?

SEMESTER III

NAME OF THE COURSE : Mechanics (JMPH31)

1.a) Explain the classical theory of gravitation using Newton's and keepers.

(or)

b) Give an detailed note on conservation of linear and angular moment am.

2. a) Write about the general theorems of moment of inertia with examples in rigid body dynamics.

(or)

b) Discuss the principles of ritual work and D'Alemberts principles.

NAME OF THE COURSE: Allied Chemistry for Physical Science– I

(JECH31)

1. (a) Applications of radioisotopes - carbon dating, rock dating and medicinal applications.

(OR)

(b) Synthesis, properties and uses of silicones.

2. (a) Preparation, properties of pyrrole and pyridine.

(OR)

(b) Chromatography: principle and application of column, paper and thin layer chromatography.

NAME OF THE COURSE : Instrumentation Physics (JNPH31)

1.a) Define measurement and different units of measurements .

(or)

b) Elaborate an detailed note on statistical analysis .

2. a) Define electrode materials and its types.

(or)

b) What are the classifications of displays, Explain LED in detail note .

NAME OF THE COURSE : Maintenance of Electrical appliances (JSPH31)

1.a) What are basic electric components both action and passion components?

(or)

b) Explain the principle and working of water purifier .

2. a) Explain the basics and working of microware oven .

(or)

b) Explain the basics and working of electric iron & immersion rod.