| PRN No. RB1281T006 | Total No. of Questions: 06 |
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QP Code:

**JSPM's**

**Rajarshi Shahu College of Engineering, Tathawade, Pune- 411033**

**(An autonomous institute affiliated to Savitribai Phule Pune University)**

**Examination: Mid Semester Examinations (MSE)**

**Semester: I** **Academic Year: 2023-24**

**Class: F. Y. B. Tech. (All Programs)**

**Department: Engineering Sciences and Humanities**

**Subject Code: ES-1206** **Subject Name and pattern: Physics for Engineers (2023)**

**Duration: 1 Hour** **Max. Marks: 30 Marks**

**Instructions to the Candidates**

1. Solve Q.1or Q.2 , Q.3 or Q.4 and Q.5 or Q.6.
2. Assume suitable and necessary data wherever required.
3. Neat diagram must be drawn wherever necessary.

| Q. No. | | | Marks | BL | CO |
|---|---|---|---|---|---|
| 1 | a | What is damped oscillations? Discuss various types of damped oscillations with examples. | 4 | BL2 | CO1 |
| | b | What are springs? Discuss their types | 3 | BL2 | CO1 |
| | c | A body of mass 100 gm is suspended from a rigid support by a light spring, which performs a linear SHM in vertical direction. If the force constant of the spring is $4.9\times10^3$ dyne/cm, calculate the frequency of the SHM. | 3 | BL3 | CO1 |
| | | **OR** | | | |
| 2 | a | Write characteristics of shock wave.(any four) | 4 | BL1 | CO1 |
| | b | Distinguish between free and forced oscillations. | 3 | BL2 | CO1 |
| | c | A particle of mass 0.2 kg is held between two rigid supports by two springs of force constants 10 N/m and 4 N/m. If the particle is displaced along the direction of length of the spring. Calculate the frequency of vibrations. | 3 | BL3 | CO1 |
| 3 | a | What is Photometry and Radiometry? State the radiation quantities with unit. | 4 | BL2 | CO2 |
| | b | State and explain Sabine formula. | 3 | BL2 | CO2 |
| | c | Calculate the total absorption of cinema hall, whose volume is 8000 $m^3$ and reverberation time required is 1.8 sec. | 3 | BL3 | CO2 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | What is noise? Explain the types of noise | 4 | BL2 | CO2 |
| | b | State Cosine law and Inverse square law | 3 | BL1 | CO2 |
| | c | Calculate the reverberation time of hall having volume 5000 $m^3$ and surface area of sound absorbing material is 3500 $m^2$ Given average coefficient of absorption 0.078 OWU | 3 | BL3 | CO2 |
| 5 | a | Discuss the types of Optical fiber on the basis of Single and Multimode. | 4 | BL2 | CO3 |
| | b | Explain any three properties of laser. | 3 | BL2 | CO3 |
| | c | Calculate the numerical aperture and acceptance angle for an optical fiber with core and cladding refractive indices being 1.48 and 1.45 respectively | 3 | BL3 | CO3 |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a | Explain in brief importance of Physics in your respective branch. | 4 | BL2 | CO3 |
| | b | Explain the application of laser for LIDAR. | 3 | BL2 | CO3 |
| | c | Calculate the angle of acceptance of a given optical fiber such that Light rays can travel through the fiber. Data given: $\mu_1 = 1.563$, $\mu_2 = 1.498$. | 3 | BL3 | CO3 |

**********BEST of LUCK**********