

Course: B. Tech.

Branch: All

Semester: II

Subject Code & Name: BTBS202P (Engineering Physics)

Max Marks: 60

Date: 14/07/2023

Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		
A)	Define Damped Vibrations. Set up differential equation for damped vibrations.	(CO1) (Remember & Understand)	6
B)	Explain the construction, working for production of ultrasonic waves using Piezoelectric oscillator.	(CO1) (Understand)	6
C)	State any two applications of ultrasonic waves. Calculate the length of iron rod which can be used to produce ultrasonic waves of 20 KHz. Density of iron is $7.23 \times 10^4 \text{ kg/m}^3$, Young's modulus is $11.6 \times 10^{10} \text{ N/m}^2$	(CO1) (Remember & Understand)	6
Q.2	Solve Any Two of the following.		
A)	In Newton's rings, derive an expression for diameter of n^{th} bright ring and dark ring.	(CO2) (Understand)	6
B)	Explain the construction & working of Ruby laser.	(CO2) (Understand)	6
C)	Explain the structure of optical fiber with suitable diagram. Calculate the numerical aperture of a optical fiber with core index $n_1=1.61$ and cladding index $n_2=1.55$	(CO2) (Remember & Understand)	6
Q. 3	Solve Any Two of the following.		
A)	With neat diagram, explain the construction & working of Bainbridge mass spectrograph.	(CO3) (Understand)	6
B)	Write short note on Geiger Muller Counter.	(CO3) (Understand)	6
C)	State Heisenberg's Uncertainty Principle with formula.	(CO3)	6

If the uncertainty in position of an electron is 4×10^{-10} m, Calculate the uncertainty in its momentum. ($h=6.62 \times 10^{-34}$ J Sec) (Understand)

Q.4 Solve the following questions.

A) Calculate Atomic Packing Fraction for SC, BCC and FCC lattices. (CO4) 6
(Understand)

B) Explain Continuous X-ray spectra. (CO4) 6
Calculate the wavelength of X-rays when a potential difference of 30 KV is applied between filament and anode. (Understand)

Q. 5 Solve Any Two of the following.

A) Explain Diamagnetic, Paramagnetic and Ferromagnetic materials with examples and diagram. (Understand) 6

B) Distinguish between Type I and Type II superconductors. (Understand) 6

C) Derive an expression for conductivity of Intrinsic and extrinsic (P Type & N Type) Semiconductors. (Understand) 6

***** End *****

<https://www.batuonline.com>
Whatsapp @ 9300930012
Send your old paper & get 10/-
अपने पुराने पेपर्स भेजे और 10 रुपये पायें,
Paytm or Google Pay से