BT/CH/CE/CS/EC/EE/EI/IT/ME-112 14PY102

Ha	ll Ti	cket Nu	ımber	••									
							Ι	7					
Ŧ		1/1V	B.Tech	(Regi	ular /	Sup	plem	ienta	ry – Repeat Exa	m) DEGRE	E EXAMIN	ATION	
Jar	luar	y, 2021									Commo	on to all bran	ches
Fir Tim	st Se e: Th	e meste r ree Hour	r s								Enginee	ering Physic Maximum: 60	2S -I Marks
Ansı Ansı	ver A ver A	ll Questic NY FOU	ons from R questi	e Part - ons fre	- A om Pc	art - E	3.					(1X12 = 12 N) (4X12=48 N)	Iarks) Iarks)
									Part - A				
1.	An	swer all c	uestion	S								(1X12=12 N)	(larks)
	a) h)	Define What is	cosine I	aw.	montin								
	0) c)	What is	coheren	by uni nce?	racuc)II ?							
	d)	What is	meantl	hv acti	ve m	ediun	n?						
	e)	What is	the prin	iciple	invol	ved in	n Hol	logra	nphy?				
	f)	Define	the prin	ciple in	nvolv	ed in	an o	ptica	l fiber.				
	g)	State G	auss's la	w in e	electri	city.		•					
	h)	What is	Hall co	efficie	nt?								
	i)	What is	resonai	nt freq	uency	in L	CR?						
	j)	Write a	ny two p	proper	ties of	f mat	ter w	'aves	3.				
	K)	State H	eisenbei	g s un	certa	inty p)rinci	iple a	applications.				
	1)	what is	physica	u signi	Incan	ce of	wav	e lui	$\mathbf{Part} = \mathbf{R}$				
2.	a)	Give the	e theory	of Fra	unho	ffer d	liffra	ction	due to single slit.	•			6M
	b)	Explain	briefly	the co	nstruc	ction	of M	ichel	lson's interferome	eter.			6M
3.	a)	Explain	the con	structio	on an	d ork	ing c	of a l	Nicol prism.				8M
	b)	Define o	quarter v	vave p	late a	nd ha	alf w	ave p	plate				4M
4	a)	Evoluin	the con	atruati	on on	d wo	rkinc	r of (ruby locar				6M
4.	a) h)	Explain	recordi	no and	repro	u wu nduct	ion o	$\frac{1}{2}$ of $\frac{1}{2}$	lography				6M
	0)	Expluin	recordin	ing und	repre	Junet	1011 0	i noi	lographij.				0101
5.	a)	What ar	e the pro	opertie	s of I	Laser	s?						4M
	b)	What is	accepta	nce an	gle of	f an c	ptica	al fib	er? Derive an exp	ression for it			6M
	c)	Write th	e applic	ations	of la	sers?							2M
6.	a)	With a r	neat diag	gram. e	explai	n the	con	struc	tion, working and	limitations of	of a cyclotro	n.	6M
	b)	Derive	the imp	edance	e of L	, C aı	nd R	in se	eries A.C. circuit.		5		6M
7		White N	[o o 11	t :		نہ اب	:4/	:	: f :				0N/
7.	a) b)	b) What		equation	ons a	na gr	ve its	s sigi	in expression for i	valagity of F	Mana		81VI 4 M
	0)			Juoma	gneu	c wav	/65: 1	Obta	in expression for		wave.		4111
8.	a)	Give the	e experii	nental	supp	ort fo	or de-	-Bro	glie's hypothesis.				6M
	b)	State an	d explai	n the I	Heise	nberg	g's ur	ncert	ainty principle.				6M
0	`	XX 71 · ·	. 1.			• ~		•	1				
9.	a)	what is	tunnelir	ng and	expla	ain So	cannı	ing ti	unneling microsco	ope.			6M
	b)	Derive S	Schrodin	nger tir	ne in	depei	ndent	t wav	ve equation.				6M

I/IV B.Tech (Regular) DEGREE EXAMINATION (First Semester) **Engineering Physics – I** (Common to all Branches)

Ti	me:	Three Hours	Maximum Marks: 60	
An	swe	r Question No.1 compulsorily	(1 x 12 = 12 Marks)	
An	swe	r ONE question from each unit	(4x12 = 48)	
1.	An	swer all questions	(12 x 1 = 12 Marks)	
	a)	Write the difference between interference and diffraction.		
	b)	What is meant by double refraction?		
	c)	What is Kerr effect?		
	d)	What is meant by population inversion?		
	e)	What is the principle involved in Holography?		
	f)	Define the principle involved in an optical fiber.		
	g)	State Gauss's law in magnetism.		
	h)	What is Hall effect?		

- i) Define quality factor.
- j) Write the properties of matter waves.
- k) State Heisenberg's uncertainty principle.
- 1) What is normalized wave function?

UNIT – I

2.	a) Give the theory of plane diffraction grating for normal incidence.	(6M)
	b) Explain briefly the working of Michelson's interferometer.	(6M)

(**OR**)

a) Explain the construction and working of a l	Nicol prism.	(8M)	
b) Plane polarized light is incident on a piece	e of quartz cut parallel	l to the axis. Find the	least thickness
for which the ordinary and extra-ordinary	rays combine to for	m plane polarized ligh	nt. Given $\mu_0 =$
1.5442, $\mu = 1.5533$ and $\lambda = 5 \times 10^{-5}$ cm	(4M)		
	 a) Explain the construction and working of a b) Plane polarized light is incident on a piece for which the ordinary and extra-ordinary 1.5442, μ = 1.5533 and λ = 5 x 10⁻⁵ cm 	 a) Explain the construction and working of a Nicol prism. b) Plane polarized light is incident on a piece of quartz cut paralle for which the ordinary and extra-ordinary rays combine to for 1.5442, μ = 1.5533 and λ = 5 x 10⁻⁵ cm (4M) 	 a) Explain the construction and working of a Nicol prism. (8M) b) Plane polarized light is incident on a piece of quartz cut parallel to the axis. Find the for which the ordinary and extra-ordinary rays combine to form plane polarized light 1.5442, μ = 1.5533 and λ = 5 x 10⁻⁵ cm (4M)

UNIT - II

b) Explain recording and reproduction of holography.	(6M)
(OR)	

5. a) What are the characteristics of Lasers? (4M) b) What is numerical aperture of an optical fiber? Derive an expression for it. (6M) c) Write the applications of Holography?

(2M)

UNIT-III

6.	a) With a neat diagram, explain the construction and working of a cyclotron.	(6M)
	b) Calculate the impedance of L, C and R in series A.C. circuit.	(6M)

(OR)

7. a) Write Maxwell equations in integral and differential form. (8M)b) What are electromagnetic waves? Obtain expression for velocity of electromagnetic wave.

(4M)

UNIT-IV

8.	a) Give the experimental support for de-Broglie's hypothesis.	(6M)
	b) State and explain the applications of Heisenberg's uncertainty principle.	(6M)

(**OR**)

9.	a) What is de-Broglie hypothesis? The K.E of neutron is 0.0	25 eV. Calculate its de-Broglie's
	wavelength.	(4M)
	b) Write a short note on Scanning tunneling microscope.	(8M)