OR

ry fueTtu vfHkn';d ,o efuLdl yl dh lfp= 0;k[;k dhft,A

Explain oil immersion objectives and meniscus lens with suitable diagram.

ç'u 3- f}&fLyV 0;frdj.k i;kx e fÝUt pkMkb dk eku Kkr dhft,A

Determine the fringe-width in double slit interference experiment.

OR

jy vioukd ekih dh ljpuk] dk;i.kkyh ,o mi;kx dh lfp= 0;k[;k dhft,A

Explain Rayleigh refractometer's construction, working and application with suitable diagram.

ç'u 4- tku lyV D;k g\ bl dl fufer djr g\ n'kkb, fd n o tku dh f=T;k ikÑfrd l[;k d oxey d lekuikrh gkrh gA

What is zone plate? How it is constructed? Show that the radius of n^{th} zone is square root of the natural number.

OR

vory xfVx d fl)kr ,o dk;i.kkyh dh lfp= 0;k[;k dhft,A

Explain principle and working of concave grating with diagram.

ç'u 5- gfy;e&fuvku ylj dh ljpuk] dk;fof/k ,o fo'k"krk, fyf[k,A

Write the construction, working and application of Helium-Neon Laser.

OR

vkbUlVhu d A o B x.kkdk d e/; lc/k 0;RiUu dhft,A

Derive expression between Einstein's coefficients A and B.

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Roll No..... Total No. of Sections : 03

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Annual Examination - 2019

B.Sc. Part - II

PHYSICS

Paper - II

WAVES, ACOUSTICS AND OPTICS

Max.Marks : 50

Time : 3 Hrs. **Min.Marks : 17**

Vhi ;k [k.M ^v* e nl vfry?kŸkjh i'u gS] ftUgs gy djuk vfuok;Z gA [k.M ^c* e y?kŸkjh ç'u ,oa [k.M ^l* e nh?k mŸkjh ç'u gSA [k.M ^v* dk lcl igyk gy djsA

Note : Section 'A', containing 10 very short-answer-type questions, is compulsory. Section 'B' consists of short-answer-type questions and Section 'C' consists of long-answer-type questions. Section 'A' has to be solved first.

Section - 'A'

fuEukfdr vfry?kŸkjh ç'uk d mŸkj ,d ;k nk okD;k e nA

Answer the following very short-answer-type questions in one or two sentences. **(1x10=10)**

ç'u 1- dyk ox ,o leg ox d e/; lc/k fyf[k,A

Write the relation between phase velocity and group velocity.

ç'u 2- ijkJ0; ,o viJ0; rjx fdl dgr g\

Define ultrasonic and infrasonic waves.

ç'u 3- QjeV d pje ekx d fl)kr dk dFku fyf[k,A

Write the statement of Fermat's principle of extremum path.

ç'u 4- uf=dk e fdl yl dk i;Dr djr g\

Which lens is used in eyepiece?

ç'u 5- v/;kjki.k fdl dgr g\

What is superposition?

P.T.O.

ç'u 6- Qch-ijkV 0;frdj.kekih ,o bVkyku e e[; vrj D;k g\
What is main difference between Fabry Parot interferometer and etalon?

ç'u 7- fooru dh ifjHkk"kk fyf[k,A
Define diffraction.

ç'u 8- xfVx D;k g\
What is grating?

ç'u 9- dyklc) rjx fdl dgr g\
What is coherent waves?

ç'u 10- ylj dk vfo"dkj fdl oKkfud u fd;k FkkA
Name the scientist who invented LASER.

Section - 'B'

**fuEukfdr y?k mÙkjh; ç'uk d mÙkj 150&200 'kCn lhek e n
Answer the following short-answer-type questions with word limit 150-200 (3x5=15)**

ç'u 1- ,d fofe; rjx lehdj.k $\frac{d^2\psi}{at^2} = V^2 \frac{d^2\psi}{dx^2}$ dk 0;qRiUu dhft ,A

Deduce the one dimensional wave equation $\frac{d^2\psi}{at^2} = V^2 \frac{d^2\psi}{dx^2}$.

OR

lkukj fudk; dk fl)kr fyf[k,A
Write the principle of sonar system.

ç'u 2- idkf'kd fudk; d i/kku fcUnvk ij lf{kIr fVIi.kh fyf[k,A
Write short notes on cardinal point of an optical system.

OR

VyhQkVk yl D;k g\ bldh dk;fof/k le>kb;A
What is telephoto lens? Explain its working.

ç'u 3- iryh fQYe e 0;frdj.k n[ku d fy, pkM lkr dh vko';drk D;k gkrh g \ lfp= Li"V dhft ,A
Explain necessity of a broad source to observe interference in thin film with suitable diagram.

OR

gfMUtj fÝUtk ij lf{kIr fVIi.kh fyf[k,A
Write short notes on Haidinger fringes.

ç'u 4- tku lyV D;k g\ bld fl)kr dk o.ku dhft ,A
What is zone plate? Explain its principle.

OR

idk'k d /ko.k l vki D;k le>r g\ lk/kkj.k ,o /kfor idk'k e vrj Li"V dhft ,A
What do you mean by polarisation of light? Distinguish between polarised and normal light.

ç'u 5- v)pkyd ylj ij y?kfVIi.kh fyf[k,A
Write short notes on semiconductor laser.

OR

ylj it dh e[; rhu fo'k"krk, ,o mi;kx fyf[k,A
Write three important characteristics and application of LASER.

Section - 'C'

**fuEukfdr nh?k mÙkjh; ç'uk d mÙkj 300&350 'kCn lhek e n
Answer the following long-answer-type questions with word limit 300-350 (5x5=25)**

ç'u 1- ,d leku Mkjh e vuiLFk rjxk dh pky Kkr dhft ,A
Obtain an expression for the speed of transverse waves in uniform string.

OR

/ofu d ijkoru] vioru ,o fooru dh lkn`gj.k ryukRed 0;k[;k dhft ,A
Explain reflection, refraction and diffraction of sound comparatively with suitable example.

ç'u 2- ,do.kh foiFku fdl dgr g \ ;g fdru idkj dk gkrk g\ fdlh ,d dh 0;k[;k dhft , A
What is monochromatic aberration? What are the different kinds of this aberration? Explain any one of them.

P.T.O.