University of Mumbai

Sample Question Paper

Examination – 2020 Semester -I

0212_R12_FE_I_FEC202_QP1

1)What is the half angular width of the central bright maximum in the Fraunhofer diffraction pattern of a slit of width 12 X 10-7m when the slit is illuminated by monochromatic light of wavelength 6000 Å.

A. 20°

B. 30°

C. 40°

D. 50°

2) The angular separation between the central maximum and first order minimum of the diffractions pattern due to a single slit of width 0.25 mm, when light of wavelength 5890 Å is incident normally on the slit, is _____

A. 7.1 minute

B. 8.1 minute

C. 9.1 minute

D. 10.1 minute

3) Monochromatic light of wavelength 590 nm is incident normally on a plane diffraction grating having 4×10^5 lines m^{-1} . An interference pattern is produceD.

What is the highest order visible in this interference pattern?

A. 2

B. 3

C. 4

D. 5

4) A diffraction grating has 4000 lines per cm. The angle between the central maximum and the third order maximum is $36^{\emptyset}$. What is the wavelength of the light?

A. 240 nm
B. 490 nm
C. 570 nm
D..620 nm

5) In multimode graded index fibre, light rays travel _____ in different parts of the fibre.

A. at different speeds

B. with same speed

C. both a and b

D. none of the above

6) In the population inversion

A.The number of electrons in higher energy state is more than ground state

B.The number of electrons in lower energy state is more than higher energy state

C. The number of electrons in lower energy state and higher energy state are same

D. None of them

7) Which of the laser have very low efficiency

A. Ruby

B. He- Ne

C. Semiconductor

D. Ammonia gas laser

8) The method of achieving population inversion in He- Ni Laser is

A. Optical pumping

B. inelastic Scattering

C. forward biasing

D. chemical reaction

9)In a semiconductor laser ,the doping concentration is so high that the Fermi level in N type diode lies

A. Center of energy gap

B. Top of valence band

C. Bottom of conduction band

D. Inside the conduction band

10). If a hologram is illuminated by white light it will form

A. Colorful image

B. will not form image

C. Single color image

D. red image in black and white

11. . Nanobiotechnology deals with materials of the size _____ m.

A. 1 / 100000000

B. 1 / 10000000

C. 1 / 1000000000

D. 1 / 10000000000

12. What are the approaches used in making nano systems?

A. Top down.

B. Bottom up.

C. Both a and B.

D. Neither a nor b

13. TEM is _____.

A. Transmission Electron Microscope.

B. Transmit Electron Microscope.

C. Transmission Electrical Microscope.

D. Transmit Electrical Microscope.

14. In a Young's double-slit experiment the center of a bright fringe occurs wherever waves from the slits differ in the distance they travel by a multiple of:

A. a fourth of a wavelength

B. a half a wavelength

C. a wavelength

D. three-fourths of a wavelength

15. **In a Young's double-slit experiment, the slit separation is doubled. To maintain the same fringe spacing on the screen, the screen-to-slit distance D must be changed to:**

A. D/2

B. D/ 2

C. D^2

D. 2 D