

Online Assessment (Even Sem/Part-I/Part-II Examinations 2019 - 2020)

Course Name - Physical Optics

Course Code - BOPTO 204

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Answer all the questions. Each question carry one mark.

9. 1. The phenomenon of separation of white light into its component colours is called

Mark only one oval.

- dispersion
- refraction
- reflection
- radiation

10. 2. According to Huygens' principle, light is a form of

Mark only one oval.

- particle
- rays
- wave
- radiation

11. 3. Plane polarized light can be produced by

Mark only one oval.

- reflection at polarizing angle
- Nicol prism
- Piles of plates
- All of these

12. 4. From the polarization of light, one can conclude that

Mark only one oval.

- light is a transverse wave
- light is a longitudinal wave
- light can bend while facing a sharp edge of an object
- None of these

13. 5. The optic axis is a direction along which

Mark only one oval.

- the O-ray travels faster than the E-ray
- the E-ray travels faster than the O-ray
- both O-ray and E-ray travel with the same velocity
- None of these

14. 6. A Nicol prism can act as a

Mark only one oval.

- polarizer
- analyzer
- both polarizer and analyzerpiness
- None of these

15. 7.

A ray of light in a dense medium of refractive index 1.4 approaches the boundary between the given medium and air at an angle of $\theta = \sin^{-1}(0.8)$, then the ray will be

Mark only one oval.

- totally absorbed
- internally reflected
- emerging at an angle greater than $\sin^{-1}(0.8)$
- showing an arbitrary behaviour

16. 8. Polaroid sunglasses decrease glare on a sunny day because

Mark only one oval.

- block a portion of light
- refract the light
- have a special colour
- completely absorb the light

17. 9. For constructive interference, the phase difference is an even multiple of

Mark only one oval.

 $\pi/2$

Option 1

 $\pi/4$

Option 2

 π

Option 3

None of these

18. 10. Two waves having intensities in the ratio of 9:1 produce interference. The ratio of maximum to minimum intensity is equal to

Mark only one oval.

10:8

9:1

4:1

2:1

19. 11. The centre of the Newton's rings for the transmitted system of a monochromatic source of light is

Mark only one oval.

- dark
- partially dark
- bright
- None of these

20. 12. Fraunhofer diffraction arises when the source of light and screen is effectively at

Mark only one oval.

- finite distance
- infinite distance
- semi-infinite
- None of these

21. 13. The resolving power of a grating, having N number of total rulings, in n th order is

Mark only one oval.

- n/N
- nN
- N/n
- None of these

22. 14. The nature of the wave front due to a point source of light is

Mark only one oval.

- Spherical
- Plane
- cylindrical
- None of these

23. 15. Fluorescence is the

Mark only one oval.

- emission of excited electrons that keep the original spin
- emission of excited electrons where the light lasts a long time
- absorption of excited electrons that change the spin
- emission of excited electrons that change the spin

24. 16. The wavelength of He-Ne laser is

Mark only one oval.

- 632.8 nm
- 600 nm
- 532.8 nm
- 500 nm

25. 17. The fluorescence intensity increases with all of the following except

Mark only one oval.

- Rigidity
- Planarity
- No. of rings
- Dissolved oxygen

26. 18. The ratio of Einstein's A and B coefficient is proportional to

Mark only one oval.

$$\nu$$

Option 1

$$\nu^2$$

Option 2

$$\nu^3$$

Option 3

$$\frac{1}{\nu^3}$$

Option 4

27. 19. The metastable state has a mean life-time in the order of

Mark only one oval.

$$10^{-3} s$$

Option 1

$$10^{-1} s$$

Option 2

$$10^{-4} s$$

Option 3

$$10^{-2} s$$

Option 4

28. 20. Solid angle is expressed in terms of

Mark only one oval.

radians / meter

radians

steradians

degree

29. 21. A lamp of power 200 candle is hung 4 m above the centre of circular area (diameter=5 m). The illumination at centre of the area is

Mark only one oval.

- 13.5 lux
- 12.5 lux
- 17.5 lux
- 10.5 lux

30. 22. The S.I unit of Luminance is

Mark only one oval.

- Candela
- Lux
- Candela/m
- Candela/meter²

31. 23. In a quarter-wave plate, the path difference between the O-ray and E-ray is

Mark only one oval.

 $\lambda/4$

Option 1

 $\lambda/2$

Option 2

 2λ

Option 4

0

32. 24. The number of optic axes in a uniaxial crystal is

Mark only one oval.

1

2

3

4

33. 25. Light interacts with matter as

Mark only one oval.

- Wave
- Particle
- both wave and particle
- rays

34. 26. The least distance of distinct vision for a young adult with normal vision is

Mark only one oval.

- 25 m
- 20 m
- 25 cm
- 20 cm

35. 27. The example of nearly monochromatic light is

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- sodium vapour lamp
- GLS lamp
- tube light
- mercury vapour lamp

36. 28. Luminous efficiency of a fluorescent tube is

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- 5-10 lumens/watt
- 15-20 lumens/watt
- 30-40 lumens/watt
- 60-65 lumens/watt

37. 29. Radiant efficiency of the luminous source depends on

Mark only one oval.

- shape of the source
- temperature of the source
- wavelength of light rays
- all of these

38. 30. Inverse square law for illuminance is valid for

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- isotropic point source
- cylindrical source
- search light
- all types of sources

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