Faculty of Science
Physics Department
First level (Faculty of Computers & Information)

(Exam in 2 pages)

Mark: 60 Marks
Date: 29/12/2022
First Term

Q1: Answer the following questions (MCQ):-

1. A semiconductor has generally .... valence electrons

A	5	B ✓	4
C	2	D	8

2. When a pentavalent impurity is added to a pure semiconductor, it becomes ....

A	an insulator	B	an intrinsic semiconductor
C	p-type semiconductor	B ✓	n-type semiconductor

3. In double slit experiment we observe............

A	Both interference and diffraction fringes	B ✓	Interference fringes only
C	Diffraction fringes only	D	Polarized fringes

4. A reverse biased pn junction has ....

A	very narrow depletion layer	B ✓	almost no current
C	very low resistance	D	large current flow

5. .... Phenomenon proves that nature of light is transverse

A ✓	Polarization	B	Diffraction
C	Scattering	D	Interference

6. In n-type materials, the minority carriers are ....

A ✓	Holes	B	Free electrons
C	Protons	D	Mesons

7. The Electric force vector is................ to the electric field.

A ✓	Parallel	B	Perpendicular
C	Helical	D	Intersect

8. Appearance of color in thin films is due to.............

A	Diffraction	B ✓	Interference
C	Dispersion	D	Polarization

9. Light on passing through a Polaroid is.............

A	plane polarized	B	un-polarized
C	circularly polarized	D	elliptically polarized ✓

10. The condition for constructive interference of two coherent beams is that the path difference should be...........

A	Integral multiple of $\lambda/2$	B	Integral multiple of λ
C	Odd integral multiple of $\lambda/2$	D	None of above

11. A two-slit interference experiment in which the slits are 0.500 mm apart and the screen is 4 m from the slits. The m =2 bright fringe is 4.25 mm from the central fringe. The wavelength (λ) of the light is..........(Writer the solution steps)

A	500 nm	B	600 nm
C	471 nm	D	none of these

12. In half wave rectification the average value of VP = 80 V is..........V

A	35.5	B	25.5
C		D	3.55

13. The blue colour of the sky is due to.............

A	Diffraction	B	Reflection
C	Polarization	D	Scattering

14. The equation of length contraction is...........

A	$l / l_o = \sqrt{1 - \dfrac{u^2}{c^2}}$	B	$l_o = l \sqrt{1 - \dfrac{u^2}{c^2}}$
C	$l = \dfrac{l_o}{\sqrt{1 - \dfrac{u^2}{c^2}}}$	D	$l_o = \dfrac{l}{\sqrt{1 - \dfrac{u^2}{c^2}}}$

15. Which one of the following cannot be polarized................

A	Radio waves	B	Ultraviolet rays
C	X-rays	D	Ultrasonic waves

Q2: Answer the following questions

1. Write about; Time Dilation phenomena according to special theory of relativity?

2. Deduce (with drawing), the Magnetic Field Due to a Current in a Long Straight Wire?

3. Explain; Moving charged particles in a constant magnetic field?

4. Explain (with drawing), the Models (Approximations) of diode?

5. Write short notes about (with drawing), polarization by Reflection?

End of Exam
With My Best Wishes
Dr/ Walid Ismail