

B.Sc. DEGREE EXAMINATION APRIL 2007
BRANCH I - MATHEMATICS
SECOND SEMESTER

REG. No. _____

COURSE : **ALLIED – CORE**
PAPER : **GENERAL PHYSICS – II**
TIME : **30 MINS.**

MAX. MARKS : 30

SECTION - A

TO BE ANSWERED IN THE QUESTION PAPER ITSELF

ANSWER ALL QUESTIONS:

(30 x 1 = 30)

I CHOOSE THE CORRECT ANSWER:

- The relation between charges and potentials of a system of conductors is
a) $V_i = \frac{1}{2} P_i Q_j$ b) $V_i = \frac{1}{2} \sum P_i Q_j$ c) $V_i = \frac{1}{2} \sum_{j=1}^N P_{ij} Q_j$
- The capacitance of a conductor is
a) $\frac{Q}{R}$ b) $\frac{Q}{V}$ c) $\frac{V}{Q}$
- Potentiometer is used to measure
a) potential differences b) current differences c) capacitance differences
- For a current carrying conductor in a magnetic field, the direction of force is
a) Normal to current i and parallel to B
b) Parallel to current i and field B
c) Normal to current i and field B
- Force on a moving charge in a magnetic field is equal to
a) $qvB\sin\theta$ b) $qiB\sin\theta$ c) $qrB\sin\theta$
- The failure of a lens to form a point image of a point object on the axis is called
a) Spherical aberration
b) Monochromatic aberration
c) Chromatic aberration
- Newton's rings are formed as a result of
a) Polarisation b) Interference c) diffraction

8. Fraunhofer diffraction takes place, when
 a) Source and screen are at infinite distance and screen is at infinite distance from the aperture.
 b) either the source or the screen or both at finite distances from the diffracting from the aperture.
 c) Source is at finite distance and screen is at infinite distance from the aperture.
9. A 20cm long tube containing sugar solution rotates the plane of polarization by 11° . If the specific rotation of sugar is 66° , the strength of the solution is
 a) 83.3 g/cm^3 b) 8.33 g/cm^3 c) 0.833 g/cm^3
10. The type of spectrum emitted when matter in free atomic state is excited
 a) Line spectrum b) Band spectrum c) Continuous spectrum
11. The width of the depletion layer of a junction
 a) decreases with light doping
 b) is increased under reverse voltage
 c) is independent of applied voltage
12. Zener break down occurs
 a) due to thermally generated minority carriers
 b) in lightly doped junctions
 c) due to rupture of covalent bond
13. For a full wave rectifier, the efficiency of rectification is maximum when
 a) $R_f = R_L$ b) $R_f \gg R_L$ c) $R_f \ll R_L$
14. The decimal equivalent of binary 1001 is
 a) 5 b) 7 c) 9
15. OR gate is for
 a) addition b) multiplication c) complement

II FILL IN THE BLANKS:

16. The space around the current carrying conductor is defined as the site of a _____.
17. The condition for minimum spherical aberation for two lenses separated by a distance is _____.
18. In the Newton's ring experiment, the radii of the bright rings are proportional to the square root of the _____ natural numbers.
19. To minimize the ripple, _____ circuit is used.
20. In Boolean algebra $A + A =$ _____.

III STATE WHETHER TRUE OR FALSE:

21. In the relation $q=K\theta$, K is called as amplification factor.
22. The pair of conjugate points in the lens system free from spherical aberration and coma are called aplanatic points.
23. An arrangement consisting of a small number of parallel slits of unequal width and separated from one another by equal opaque spaces is called a diffraction grating.
24. In the diode, reverse bias current will be in micro ampere range.
25. NOT gate is for multiplication.

IV ANSWER ONE OR TWO SENTENCES:

26. Mention Maxwell's electromagnetic equations.
27. What is Fraunhofer diffraction?
28. What is optical activity?
29. Define the dynamic resistance of a junction diode.
30. Multiply 1011×101 .

