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S.B. Roll No.....

APPLIED PHYSICS-II

2nd Exam/Common/2154/5423/May'18

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. a) Fill in the blanks. **10x1=10**

i. Relative permittivity of air is……
ii. Frequency of direct current is……
iii. …… mirror is used as a rear view mirror in vehicles.
iv. Output of He-Ne laser is a …… wave.
v. ……. are majority carriers in p-type semiconductor.

b) State True or False.

vi. Dielectrics decrease the capacity of parallel plate capacitor.
vii. EMF is the difference of potential between two electrodes in open circuit.
viii. In a microscope, focal length of objective lens is greater than eye-piece.
ix. Total internal reflection (TIR) is used in optical fibers.
x. Zener diode is used in stabilizing the circuits.

c) Multiple choice questions. **5x1=5**

i. A well cut diamond appears bright due to
   a. It emits bright light b. scattering of light
   c . total internal reflection d. it emits luminous particles.
ii. Electric lines of force at positive point charge are
   c. circular anti-clockwise b. radial outward c. circular clockwise d. radial inward
iii. Two resistances of 9 Ω and 18 Ω are connected in series. Equivalent resistance is
   a. 20 Ω b. 27 Ω c. 9 Ω d. 2 Ω
iv. To increase the range of an ammeter, we used to connect a suitable
   a. low resistance in parallel b. low resistance in series
   c. high resistance in parallel d. high resistance in series
v. LASER is based on the principle of
   a. total internal reflection b. refraction
   c. population inversion d. spontaneous emission

SECTION-B

Q2. Attempt any six questions. **6x5=30**

a. An object is placed at 35 cm from a concave mirror of focal length 70 cm. Determine the position and nature of image formed.
b. What is total internal reflection (TIR)? Explain one of its applications.
c. Write the properties of electric lines of force.
d. What are the differences between EMF and potential difference of a cell?
e. State Lenz's laws in electromagnetic induction.
f. State Kirchoffs laws.
g. What is depletion layer in p-n junction?
h. What is population inversion?

SECTION-C

Attempt any three questions. **3x10=30**

Q3. State and prove Gauss law.

Q4. Derive lens formula for thin convex lens in case of real image.

Q5. a) 3 equal resistances are arranged in series and then they are arranged in parallel. Find out the ratio of R_s/R_p where R_s is equivalent resistance in series and R_p is equivalent resistance in parallel
b) State Ohm's law. What is the effect of temperature on resistance of conductor?

Q6. Explain principle, construction and working of moving coil galvanometer.

Q7. a) Differentiate between n-type and p-type semiconductors.
b) What is Ruby laser? Explain its working with diagram.

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