COMMON SECOND REVISION TEST - 2020

STANDARD - XII

**Time : 3.00 hrs**   **Physics**   **Marks: 70**

I.   **Answer all the questions. Choose the correct answers:**   **15 x 1 = 15**

1. For light incident from air on a slab of refractive index 2, the maximum possible angle of refraction is,
   - a) 30°   b) 45°   c) 60°   d) 90°

2. A plane glass is placed over a various coloured letters (violet, green, yellow, red). The letter which appears to be raised more is
   - a) red   b) yellow   c) green   d) voilet

3. A ray of light strikes a glass plate at an angle 60°. If the reflected and refracted rays are perpendicular to each other, the refractive index of the glass is
   - a) $\sqrt{3}$ b) 3/2   c) $\sqrt{\dfrac{3}{2}}$ d) 2

4. Which of the following is a biaxial crystal?
   - a) calcite   b) quartz   c) mica   d) ice

5. The threshold wavelength for a metal surface whose photoelectric work function is 3.313eV is
   - a) 4125 $\overset{o}{A}$ b) 3750 $\overset{o}{A}$ c) 6000 $\overset{o}{A}$ d) 2063 $\overset{o}{A}$

6. The cut-off wavelength of x-rays from an x-ray tube of accelerating potential 20,000V.
   - a) 62 $\overset{o}{A}$ b) 6.2 $\overset{o}{A}$ c) 0.62 $\overset{o}{A}$ d) 0.062 $\overset{o}{A}$

7. The ratio of the wavelengths for the transition from n = 2 to n = 1 in Li^{++}, He^+ and H is
   - a) 1 : 2 : 3   b) 1 : 4 : 9   c) 3 : 2 : 1   d) 4 : 9 : 36

8. 1 Rydberg equals to
   - a) -13.6eV   b) -13.6V   c) -13.6MeV   d) 13.6eV

9. In β^+ decay
   - a) proton number is decreased by one   b) neutron number is decreased by one
   - c) proton number is decreased by two   d) neutron number is decreased by two

10. The brain potential of a silicon diode is approximately
    - a) 0.7V   b) 0.3V   c) 2.0V   d) 2.2V

11. The given electrical network is equivalent to

   - a) AND gate   b) OR gate   c) NOR gate   d) NOT gate
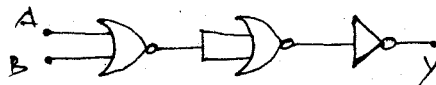
12. The signal is affected by noise in a communication system.
    - a) At the transmitter   b) At the modulator   c) In the channel   d) At the receives

13. The loss of strength of a signal while propagating through a medium is known as
    - a) attenuation   b) range   c) modulation   d) all of these.

14. The materials used in Robotics are
    a) Aluminium and silver   b) Silver and gold
    c) Copper and gold   d) Steel and aluminium

15. The gravitational waves were theoretically proposed by
    a) Conrad Rontgen   b) Mari Courie   c) Albert Einstein   d) Edward Purcell

II. Answer any 6 questions. (Question number. 17 is compulsory)   **6 x 2 = 12**

16. Obtain the relation between phase difference and path difference.

17. A microscope has an objective and eyepiece of focal lengths 5cm and 50 cm respectively with tube length 30cm. Find the magnification of the microscope in the near point focusing.

18. Define work function of a metal. Give its unit.

19. Define impact parameter.

20. What is half life of nucleus? Give the expression.

21. What do you mean by doping?

22. What is skip distance?

23. What are sub atomic particles?

III. Answer any 6 questions. Question No. 27 is compulsory.   **6 x 3 = 18**

24. Differentiate between Fresual and Fraunhofer diffraction.

25. Differentiate between polarised and unpolarised light.

26. Obtain the expression for De Broglie wavelngth of electrons.

27. What are the limitations of Bohr atom model?

28. Calculate the number of nuclei of carbon-14 undecayde after 22,920 years if the initial numbmer of carbon - 14 atoms is 10,000. The half-life of carbon - 14 is 5730 years.

29. What are the applications of LED?

30. What are the applications of RADAR?

31. What is the difference between Nano materials and Bulk materials?

IV. Answer all quesstions: **5 x 5 = 25**

32. a) Obtain the equations for radius of illumination (or) Snell's window. **(OR)**
    b) Briefly explain the principle and working of electron microscopoe.

33. a) Discuss the Millikan's oil drop experiment to determine the charge of an electron. **(OR)**
    b) Discuss about simple microscope and obtain the equations for magnification for near point focusing and normal focusing.

34. a) Explain the construction and working of a full wave rectifier. **(OR)**
    b) Obtain the law of radioactiivity.

35. a) Elaborate on the basic elements of communication system with the necessary block diagram.
    (OR)
    b) State and prove De Morgan's first and second theorems.

36. a) Discuss the applications of nanomaterials in various fields. **(OR)**
    b) Give the construction and working and applications of photoemissive cell.