C.U.SHAH UNIVERSITY Winter Examination-2018

Subject Name : Physics-II

| Subject Code :4SC02PHC1 | | Branch: B.Sc. (All) | |
|-------------------------|-------------------|-----------------------|------------|
| Semester : 2 | Date : 25/10/2018 | Time : 02:30 To 05:30 | Marks : 70 |

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

| Q-1 | | Attempt the following questions: | (14) |
|-----|------------|---|------|
| - | a) | Draw the symbols of P.N.P. and N.P.N.transistors. | 01 |
| | b) | What is the full form of L.E.D.? | 01 |
| | c) | Draw the symbol of L.E.D. and Photo Diode. | 01 |
| | d) | Define X-rays. | 01 |
| | e) | What do you know about the mass of α -particle, β -particle and γ -rays? | 01 |
| | f) | What do you know about the charge of α , β and γ radiations? | 01 |
| | g) | Define the unit cell. | 01 |
| | h) | What is the threshold intensity of the sound? | 01 |
| | i) | For a radioactive element, write the relation between the decay constant λ and the | |
| | , | half-life time τ . | 01 |
| | j) | What is the function of a rectifier? | 01 |
| | k) | What is the difference between a half wave rectifier and a full wave rectifier? | 01 |
| | l) | Which type of diode is used in the voltage regulating stabilizers? | 01 |
| | m) | State the working principle of a photo diode. | 01 |
| | n) | Write the formula of the average life time for a radioactive element. Identify each term of it. | 01 |

Attempt Any Four questions from Q-2 to Q-8

| Q-2 | | Attempt all questions | (14) |
|-----|--------------|---|------|
| | (A) | State Bragg's Law. Prove it deriving necessary formula and figure. | 06 |
| | (B) | Define:Dispersion, Reflection, Refraction, Interference and Diffraction of light. | 05 |
| | (C) | Distinguish between Constructive interference and Destructive interference. | 03 |

| Q-3 | Attempt all questions | (14) |
|-----|--|------|
| (A) | Distinguish between Crystalline Solids and Non-Crystalline-Amorphous Solids. | 04 |



| | (B) | Explain "The 7 Crystal Systems & 14 Bravais Lattices" with figure diagram. | 07 |
|-----|---------------------|---|------|
| | (C) | What are the Bravais lattice and Non-Bravais lattices? Give figures. | 03 |
| Q-4 | | Attempt all questions | (14) |
| | (A) | Discuss: Properties, characteristics and applications of X-rays. | 07 |
| | (B) | Discuss: Applications of X-rays. | 07 |
| Q-5 | | Attempt all questions | (14) |
| C | (A) | With a neat diagram, narrate the production of X-rays using Coolidge Tube. | 07 |
| | (B) | What is a P-N junction diode? Discuss Forward and Reverse biasing of a diode with | 07 |
| | (-) | circuit diagram and explain the characteristics. | |
| Q-6 | | Attempt all questions | (14) |
| - | (A) | What is a rectifier? Explain a full wave rectifier in detail giving circuit diagram, construction, working and mathematical analysis. | 07 |
| | (B) | Name different types of transistor configurations. Discuss in detail any one of them. | 07 |
| Q-7 | | Attempt all questions | (14) |
| • | (A) | Compare the properties of \propto , β and γ radiations. | 07 |
| | (B) | What are Miller Indices? Illustrate the steps to find out Miller indices of a Crystal | 07 |
| | | plane with necessary diagram. | |
| Q-8 | | Attempt all questions | (14) |
| • | (A) | Explain the working of a transistor. | 07 |
| | (B) | Write a short note on Principle and working of Zener Diode as a voltage regulator. | 07 |
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