

City College

Internal Examination 2021

Physics (Hons. + Gen.) CBCS Semester 4

Paper: SEC-B

Old Syllabus

Topic: Renewable Energy and Energy Harvesting

Full Marks: 20; Time: 1 Hour

Answer any ten questions from the following:

[2 × 10 = 20]

1. What is the need of renewable sources of energy?
2. Which materials are used as nuclear fuels?
3. What are the basic components of a solar water heater?
4. How much energy does earth surface receive from solar radiation?
5. What is the basic operating principle of solar air conditioning system?
6. Draw the current -voltage graph of a solar cell.
7. What is a wind turbine?
8. Which devices are used to capture oceanic mechanical energy?
9. How to get maximum wind power from a wind farm?
10. How tidal energy is generated using a tidal lagoon?
11. How electricity can be generated using osmotic power?
12. What is ocean thermal energy conversion process?
13. What is the origin of geothermal energy?
14. Mention two geothermal energy sources.
15. How does piezoelectric motor work?

Answer scripts must be emailed to sem4gcityphysics@gmail.com (for Gen. student) or sem4hcityphysics@gmail.com (for Hons. student) within 15 minutes of the end of the examination.

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Internal Examination 2021

Physics (Hons. + Gen.) CBCS Semester 4

Paper: SEC-B

New Syllabus

Topic: Electrical Circuits and Network skills

Full Marks: 20; Time: 1 Hour

Answer any ten questions from the following:

[2 × 10 = 20]

1. What is the difference between an AC generator and a DC generator?
2. What are the properties of an ideal transformer?
3. For an ideal transformer of turns ratio K , what will be the ratio between the
(i) Input and output voltage, and
(ii) Input and output current.
4. What should be the internal resistance of an ideal ammeter and an ideal voltmeter?
5. Why is a three-phase supply more advantageous than a single-phase supply?
6. What do you mean by power factor?
7. What do you mean by a surge protector?
8. Briefly outline the working of a fuse.
9. Explain how to convert a voltage source to a current source.
10. A circuit has an impedance of $(3 + 4j)$. Find its admittance.
11. What is Wattmeter?
12. Calculate the r.m.s and average value for a pure sinusoidal voltage.
13. What is a circuit breaker? What are the common types of circuit breakers that are used in electrical networks?
14. What is Armature Reaction?
15. What is the utility of earthing of any power system?

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