K20U 0893

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – Reg./Sup./Imp.) Examination, April 2020
(2014 Admn. Onwards)
COMPLEMENTARY COURSE IN PHYSICS
4C04PHY : Modern Physics and Electronics

Time : 3 Hours

Total. Marks : 32

SECTION – A

Very short answer, **each** carries **1** mark, answer **all** questions.

1. The unit of radio activity is _____
2. The criteria for a star to be a black hole is _____
3. The quark content of proton is _____
4. _____ is a type of crystal defect in which a line of atoms is not in its proper positions.
5. A circuit which produces electrical oscillations of any desired frequency is known as _____

(5×1=5)

SECTION – B

Short answer type, **each** carries **2** marks, answer **any 4** questions.

6. Explain nuclear Fission.
7. What is meant by Luminosity of a star ?
8. What is quark ?
9. Explain point defect.
10. What is Full adder ?
11. Explain NOT gate.

(4×2=8)

P.T.O.

SECTION – C

Short essay/problem type, **each** question carries **3** marks, answer **any 3** questions.

12. The atomic ratio between the Uranium isotopes ^{238}U and ^{234}U in a mineral sample is found to be 1.8×10^4. The half life of ^{234}U is $T_{1/2}(234) = 2.5 \times 10^5$. Find the half life of ^{238}U.

13. An amplifier has an open loop gain of 100. With a negative feedback, the voltage gain reduces to 20. Calculate the fraction of the output voltage that is fed back to the input.

14. What are the pair of leptons ? Give its symbol and spin of each leptons.

15. Explain edge and screw dislocations.

16. Describe the working of a Hartley oscillator. **(3×3=9)**

SECTION – D

Long answer type, **each** question carries **5** marks, answer **2** questions out of 4.

17. Explain the working of a single stage CE amplifier with a neat diagram.

18. Give an account of Stellar evolution.

19. Explain the law of radioactive disintegration.

20. Give a circuit diagram and truth table of OR and AND gates. **(2×5=10)**