



K16U 0569

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS-2014 Admn.-Regular)  
Examination, May 2016  
**COMPLEMENTARY COURSE IN PHYSICS**  
**4C04PHY : Modern Physics and Electronics**

Time : 3 Hours

Max. Marks : 32

SECTION – A

Very short answer. **Each** carries 1 mark. Answer **all 5** questions.

1. The reciprocal of mean life (T) is \_\_\_\_\_
2. The introduction of point defect into a crystal \_\_\_\_\_ its internal energy as compared to that of the perfect crystal.
3. Positive feedback is often used in \_\_\_\_\_ circuits.
4. In  $\alpha$ -decay mass number decreases by \_\_\_\_\_
5. The antiparticle of electron is \_\_\_\_\_ (5×1=5)

SECTION – B

Short answer type. **Each** carries 2 marks. Answer **any 4** questions.

6. State and explain Soddy Fajan's displacement law.
7. Explain how supernova explosion occurs.
8. Explain Schottky defect.
9. What are the advantages of ICs ?
10. What is Half Adder ?
11. What are the advantages of negative feedback ? (4×2=8)

P.T.O.



## SECTION - C

Short essay/problem type. **Each** carries **3** marks. Answer **any 3** questions.

12. In a negative feedback amplifier,  $A = 100$ ,  $\beta = 0.04$  and  $V_i = 50\text{mV}$ . Find
- Gain with feedback
  - Output voltage
  - Feedback factor
  - Feedback voltage.
13. What are the difference between nuclear fission and nuclear fusion ?
14. Write a short note on particles and antiparticles.
15. Explain surface defects.
16. Convert  $(1011.0101)_2$  into its decimal equivalent. (3×3=9)

## SECTION - D

Long essay type. **Each** carries **5** marks. Answer **any 2** questions.

17. State law of radioactive disintegration and derive expressions for number of atoms present at an instant, half life and mean life.
18. Explain Hartley oscillator in detail with a neat circuit diagram.
19. Give an account of the evolution of a star.
20. Draw the circuit diagram of a single stage common emitter amplifier and describe its working with necessary theory. (2×5=10)