

**B.E/ B.TECH DEGREE EXAMINATIONS: MAY/JUNE 2014**

(Regulation 2013)

Second Semester

**U13CHT203:CHEMISTRY FOR CIRCUIT ENGINEERING**

(Common to ECE, EEE, EIE& IT)

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Which of the following is thermosetting polymer?
  - a) Polyethylene
  - b) Polyester
  - c) Nylon
  - d) Melamine
2. The physical property of a polymer dependent on.....
3. Choose the compound which is used as n-dopant to increase the conductivity of polypyrrole
  - a) Acetylene
  - b) Polyacetylene
  - c) Lewis base
  - d) Lewis acid
4. The unit of carrier mobility is.....
5. The copolymer used as an antistatic agent to prevent electrostatic discharge during film rewinding is
  - a) PTT-PSS
  - b) PEDOT-PSS
  - c) PQT-PSS
  - d) PVC-PSS
6. The ratio of the current in ON/OFF states is called.....
7. What will happen when pentacene is exposed to light.
  - a) Rapidly degrades
  - b) Slowly degrades
  - c) Stability increases
  - d) No reaction
8. Perfluoropentacene is an ..... organic semiconductor.
9. Which printing technique is based on a metal cylinder with an engraved pattern of cells?
  - a) Offset
  - b) Gravure
  - c) Screen
  - d) Jet
10. Radio frequency identification (RFID) tags are fabricated using .....

**PART B (10 x 2 = 20 Marks)**

**(Not more than 40 words)**

11. What is copolymerization? Give example.
12. State the factors that affect the polymer length?
13. Define doping in organo electronics. Give example.
14. Draw the structure of poly(paraphenylene vinylenes).
15. Mention the two OTFT architectures.
16. What are the requisites of a good 'Gate dielectrics'?
17. Bring out the advantages of Organic Semiconductors over Inorganic Semiconductors?
18. What are the short comings of pentacene used as organic electronics?
19. Define etching.
20. List four techniques in nanofabrication of transistors.

**PART C (5 x 14 = 70 Marks)**

**(Not more than 400 words)**

**Q.No. 21 is Compulsory**

21. (i) What is Organic thin film transistor? Illustrate its various classifications. (7)
- (ii) Explain electrical, environmental and chemical stability of OTFT (7)
22. a) (i) Discuss the various steps involved in free radical mechanism of polymerization. (7)
- (ii) Differentiate thermoplastic and thermosetting polymers. (7)
- (OR)**
- b) (i) Explain the mechanism of Zeigler Natta Polymerization. (7)
- (ii) Discuss about thermal transitions in plastics. (7)
23. a) (i) Describe the doping theory of polyphenylene and Polyacetylene (10)
- (ii) Discuss the applications of polymers containing transition methods (4)
- (OR)**
- b) (i) Enumerate the effect of dopant on stacked phthalocyanine (10)
- (ii) Draw an energy diagram for PANI using Band theory and explain (4)

24. a) (i) Explain the enhanced carrier mobility of perfunctionalized pentacene derivatives (7)  
(ii) Bring out the organic electronic characteristics of PTT transistor (7)  
(OR)
- b) i) Write a note on reversible functionalization of pentacene (7)  
ii) Paraphrase the Indolo[3,2-b]carbazole designs in OTFT (7)
25. a) (i) Describe the methodology in designing Reel to Reel vacuum metallization. (7)  
(ii) Enumerate various printing techniques employed in manufacturing of OTFTs. (7)  
(OR)
- b) (i) How does OVPD help to improve the device performance in OLEDs? (7)  
(ii) Write a note on thermal imaging fabrication techniques. (7)

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