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Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



VI SEMESTER B.TECH (PRINT AND MEDIA TECHNOLOGY)

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: PROGRAMME ELECTIVE III - PRINTRONICS [PME 326]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be suitable assumed.

- 1A. Explain the key attributes and opportunities of Printed Electronics. [3]
- 1B. With neat diagrams, explain the structure and working principle of Organic Light Emitting Diode. How is OLED advantageous over other conventional light sources? [3]
- 1C. Explain the aspects that make Gravure the most sought conventional process for Printed Electronics. What are the limitations of Flexography in comparison to Gravure? [4]
- 2A. With a neat diagram, explain the Plasma treatment process. How is Plasma beneficial over the other treatment process? Explain. [3]
- 2B. What are the key challenges for engineering substrates into Printed Electronic applications? Explain. [3]
- 2C. Explain the fabrication of OTFT (Organic Thin Film Transistor) by Optical Lithographic Process and Laser Thermal Transfer Process with diagram. [4]
- 3A. On what factor does the effect of Corona treatment depend upon? Explain. How do you calculate the treatment level for Corona? [3]
- 3B. Explain the advantages of Printed Electronics in terms of Printed Functionality. [3]
- 3C. With a neat diagram explain the operating steps of printed solar cell. [4]

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- 4A.** Write a note on following conductive inks: **[4]**
- a) Graphene
 - b) P3HT:PCBM
 - c) Silver
 - d) Copper and Copper Nanoparticles
- 4B.** a) Explain the important aspects of the stamp in Nanoimprint process. **[2+4]**
b) With neat diagram explain the features of any two approaches to Nanoimprint Lithography.
- 5A.** “Screen printing process has an edge for fabricating some of the Printed Electronic equipment’s”. Justify this statement with product examples. **[4]**
- 5B.** Answer the following: **[6]**
- a) Explain RFID constituents and working
 - b) Explain RFID tag memory and RFID readers
 - c) With the help of a flow chart, explain the construction of RFID
- 6A.** With neat diagrams, explain the Organic Vapor Phase Deposition and Organic Vapor Jet Printing process in detail. **[4]**
- 6B.** Explain the following for PEDOT:PSS **[6]**
- a) Oxidative chemical polymerization of EDOT based monomers
 - b) Electrochemistry of PEDOT
 - c) Charge transport mechanism