Ex/PRN/PC/B/T/315/2024(S)

B.E. PRINTING ENGINEERING THIRD YEAR FIRST SEMESTER SUPPLEMENTARY EXAM – 2024

FLEXO AND GRAVURE PRINTING

Time : Three hours (50 Marks for each Part) Full Marks : 100

Use Separate Answer-scripts for each Part.

PART I (50 Marks)

(CO1, CO2) Answer Any two of the following questions:

1. Describe the components of a flexographic printing press. Discuss the function of each component in the printing process. Explain the advantages and disadvantages of flexography compared to other printing processes such as offset and gravure. Discuss the importance of cell count (lines per inch) and volume measurement (BCM) in anilox rollers. How do these parameters impact print quality and ink transfer efficiency? (5+5+5=15)
2. Compare ceramic vs. chrome-plated anilox rollers. Discuss the advantages and disadvantages of each type in terms of durability, ink release, and print quality. What are the signs of worn-out or damaged anilox rollers, and how can these issues be addressed? Describe the different types of flexographic plates and their applications. (6+5+4=15)
3. Describe the function and significance of the drying system in a flexographic printing press. Discuss different drying methods used in this process. Briefly Explain the challenges associated with drying water-based flexographic inks. Propose strategies to enhance the drying process without compromising print quality. Explain the difference between in-line and stack-type flexographic presses. (3+3+4 +5=15)
4. Discuss the importance of substrate selection in flexographic printing. How does the substrate wetting influence the printing quality on film and foil substrate printed by flexography printing. What are the inking systems used for flexographic printing process and among of which is mostly used and why?. (4+4+7=15)
5. Discuss the role of the doctor blade in flexography. How does the doctor blade control ink film thickness and ensure clean plate contact during printing? What are the parameters will you consider for doctor blade thickness? What is cushion sticky back? Discuss the impact of make-ready time on overall production efficiency in flexographic printing. (2+4+3+2 +4=15)

CO2, CO3 & CO4

Answer Any two of the following questions:

6. Why the color strength, fluidity and viscosity are important characteristics of the Flexographic ink? Give two examples of synthetic resins and waxes for flexographic ink. Identify current trends in flexographic printing technology, such as automation, and advancements in plate imagin.; (6+2+2=10)

7. Define the problems with cause and solution: Halo Effect , Bleeding, Ghosting effect .What are the various types of cellulose films? Name two polymer coated cellulose films (6+4=10)

8. Discuss the environmental impact of flexographic printing compared to other printing methods, taking into account factors such as solvent usage and waste generation. Describe the role of additives such as surfactants, dispersants, and defoamers in flexographic ink formulations. How do these additives contribute to ink stability and print quality? (5+5=10)

Ex/PRN/PC/B/T/315/2024(S)

B.E. PRINTING ENGINEERING THIRD YEAR FIRST SEMESTER SUPPLEMENTARY EXAM – 2024

FLEXO AND GRAVURE PRINTING

Time : Three hours | Full Marks : 100

Use Separate Answer-scripts for each Part.

PART - II

Answer ***question no. 1 and 5*** and any ***two*** from Group-B.

Group - A

1. Describe the gravure printing principle with diagram. Also describe the different cell characteristics. 6+4=10

Group - B

2. a) Show the different features which make gravure a natural choice for package printing. 7

b) Compare between sleeve cylinder and shaft cylinder in gravure printing. 5

c) How the surface treatment is done on film surface in gravure printing? 3

3. How does the laser cutting process differ from electromechanical process of gravure engraving? Describe briefly. Also cite the merits of laser cutting process. 12+3=15

4.a) What are the main wears caused by the wiping action of doctor's blade on a gravure cylinder? Discuss about their probable causes. 1+6=7

b) Discuss briefly the factors which influence drying in a gravure printing unit. 5

c) Mention various ingredients of gravure ink. 3

Group - C

5. Write short notes on any *two*: 2x5=10

a) Streaking and pigment settlement in gravure.

b) Colour strength and pinhole in gravure.

c) Cylinder wear and bleeding in gravure.