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BE DEGREE END SEMESTER EXAMINATIONS MAY 2012

81

**MECHANICAL ENGINEERING BRANCH
SECOND SEMESTER
CY9162: Chemistry for Printing Technology**

Time: 3 hours

Max. marks: 100

Answer ALL questions

Part- A (10x2=20marks)

1. What are boiler scales? How are they formed? What are their problems?
2. Explain corrosion protection by sacrificial anode
3. Define polymerization. Name any three initiators for it
4. Explain vulcanization of rubber
5. Define fluorescence and phosphorescence
6. Explain photosensitization
7. What are alloys? How are they classified? Give examples
8. Write a note on heat treatment of alloys by annealing
9. Define octane number
10. Write a note on metallurgical coke

Part- B (5x16=80marks)

11. Discuss external and internal treatment of boiler feed water
12. a. What are the constituents of paints? Explain their functions

OR

- b. (i) Explain how water is desalinated by reverse osmosis
(ii) Write a note on caustic embrittlement and pitting corrosion
13. a. (i) Explain the principle of infrared spectroscopy. Discuss its applications for polymers
(ii). Describe the determination of aniline point of an oil

OR

- b. (i) What are lubricants? Indicate their constituents and explain their functions
(ii) Distinguish between thermoplastics and thermosetting plastics.

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- iii) Specify appropriate fits and tolerances for critical parts.
- iv) Dimension the views.

13. a)

Design a Milling fixture for milling the slot of 4mm width in the component shown in Fig. 3.

- i) Draw two views of the fixture.
- ii) Specify appropriate fits and tolerances for critical parts
- iii) Dimension the views.
- iv) Give a neat parts list.

(OR)

13. b)

Design a Turning Fixture for use when finish boring the $\phi 40$ bore in the shaft support shown in Fig. 4. Assume that this is the first operation on the rough casting.

- i) Draw two views of the fixture.
- ii) Specify appropriate fits and tolerances for critical parts.
- iii) Dimension the views.
- iv) Give a neat parts list.

14. a)

Design and draw two views of a progressive die for producing the component shown in Fig.5. The sheet metal is of 1.75mm thickness and width equal to the width of the component. The sheet is made of Cold Rolled Steel of Ultimate tensile Strength 580 N/mm^2 . The sequence of operations is piercing parting and edge bending.

- i) Determine the press tonnage and the various stations required
- ii) Design all the parts of the die.
- iii) Draw two fully dimensioned views of the die in engaged position.
- iv) Give a parts list

14. b)

(OR)

Design and draw 2 views of a combination Blanking and drawing die for the component shown in Fig. 6. Assume yield strength 45 kN/cm^2

Calculate the size of Blank required

Determine the press tonnage and the various stations required

Design all the parts of the die.

Draw two fully dimensioned views of the die in engaged position.

Give a parts list.

15.a)

Write short notes on the following:

- i) Center of Pressure
- ii) Direct and indirect piloting
- iii) Automatic stops

15.b)

(OR)

Write short notes on the following:

