Total No. of Questions :12]

SEAT No. :

P2848

[Total No. of Pages :3

[4958] - 1024

T. E. (Mechanical Sandwich)

MATERIALS AND MANUFACTURING ENGINEERING

(End Semester) (2012 Course) (Self Study - I) (302066) (Semester - II)

Time : 2½ Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer 3 questions from Section - I and 3 questions from Section - II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Assume suitable data, if necessary.***
5) ***Use of electronic pocket calculator is allowed.***
6) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What do you understand by the word 'polymer'? Classify *polymers.* **[8]**

b) Differentiate between thermoplastic polymers and thermosetting polymers. Give minimum two examples of each type. **[8]**

OR

Q2) a) Which are the factors affecting the properties of a polymer? Discuss. **[8]**

b) Explain in brief about composite materials and their applications? **[8]**

Q3) a) Discuss the properties of nano-materials and their applications. **[8]**

b) Classify biomaterials. Give any five applications of biomaterials. **[8]**

OR

P.T.O.

Q4) a) What is carbon Nanotubes? Discuss the technological advantages of nano materials. **[8]**

b) Discuss the role of advanced materials in modern manufacturing. **[8]**

Q5) a) List some common inhibitors and their applications. **[6]**

b) Compare and contrast the nature of protection given to steel by: **[12]**

i) Cadmium coating

ii) Zinc coating

iii) Tin coating

OR

Q6) Write short notes on **[18]**

a) Galvanic corrosion

b) Pitting corrosion

c) Corrosion prevention methods

SECTION - II

Q7) a) Describe the various steps involved in powder metallurgy process. **[8]**

b) Discuss oil impregnated porous bearings. **[8]**

OR

Q8) a) Describe the various methods used for the manufacture of metal powder. **[8]**

b) Explain detailed process of manufacturing cemented carbine cutting tools. **[8]**

Q9) a) Draw a neat block diagram of CNC machine system. Compare NC and CNC system. **[8]**

b) Differentiate between absolute and incremental positioning system in CNC with a suitable example.bb **[8]**

OR

Q10) a) Explain linear and circular interpolation with neat sketch. **[8]**

b) Write the function of following codes. **[8]**

i) G01

ii) G02

iii) M00

iv) G08

v) G70

vi) G71

vii) M03

viii) M08

Q11) a) List various types of broaching machines and explain any one of them. **[6]**

b) Discuss various gear finishing methods **[6]**

c) Write a note on - Thread Rolling. **[6]**

OR

Q12) a) Draw a neat sketch of a broach and name its parts. **[6]**

b) Differentiate between gear hobbing and gear shaping. **[6]**

c) Write a note on - Die threading. **[6]**