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[5352]-514

**S.E. (Mechanical/Automobile Engg.) (I Sem.) EXAMINATION, 2018**  
**MATERIAL SCIENCE**  
**(2015 PATTERN)**

**Time : Two Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4,  
Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Use of calculator is allowed.

(v) Figures to the right indicate full marks.

(v) Assume suitable data, if necessary.

**Q 1. A) what is coordination number ? write the coordination number for [04]**

bcc, fcc And HCP in sequence.

**B) Define the following**

**[04]**

1. Lattice Angle

2. Cold working

**C) With a neat diagram explain frankel and schottky defets .**

**[05]**

**OR**

**Q.2 .**

**A) In plastic deformation of metals, property variation takes place,**

**[06]**

explain with a neat graph all property variations . Can it be recovered? If

yes only name the process.

**P.T.O.**

b) Show the following planes on a cubic structures [04]

1. (212) 2. (001)

c) Draw a self-explanatory diagram showing lattice angles and lattice parameters [03]

Q. 3

A) Write true or false and justify your answer (any four) [12]

1. Vickers Hardness number is independent of load.
2. For detecting the cracks in bronze metal part magnetic particle test can be used.
3. The fracture in creep is always intergranular in nature .
4. Stress relieving heat treatment can reduce the probability of corrosion.
5. The bottom of water storage tank gets corroded due to differential aeration corrosion.
6. Corrosion resistance is higher for an Alloys than pure metals.

OR

Q.4

A) Write short note on differential Aeration Corrosion . [03]

B) What is Pilling Bedworth Ratio and what is its importance in corrosion ? [03]

C) Explain fatigue fracture with neat labelled diagram and how it can be avoided. [06]

Q5.

A) Explain with neat diagram Chemical vapour deposition ? State its advantages, disadvantages & applications over other processes . [06]

B) What are the advantages of PVD over CVD process? [06]

methods used before surface coating . explain

OR

Q6) write a short note on ( any three) [12]

i) Powder Coating

ii) Plasma Nitriding

iii) Ion vapour deposition

Q.7)

A) With a neat diagram explain the process of cold compaction. [07]

B) Explain different powder manufacturing processes and explain  
any one in detail. [06]

OR

Q8)

A) Define the following [04]

i) Green strength ii) Apparent density.

B) Write flow chart of production of Electrical contact material? [03]

B) List important advantages and disadvantages of Powder metallurgy [06]  
over other processes.