Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**

BSMS1209

4th Semester Back Examination 2017-18

MATERIAL SCIENCE

BRANCH : BIOTECH, CHEM

Time : 3 Hours

Max Marks : 70

Q.CODE : C1105

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

Q1 **Answer the following questions :** **(2 x 10)**

a) Why does conductivity of metal decrease at higher temperature?

b) What is dielectric breakdown?

c) Give two examples of soft magnetic materials?

d) How do you determine the temperature of a hot working metal?

e) Differentiate between intrinsic and extrinsic semiconductors?

f) Why electrical resistivity of metals and alloys increases with degree of cold working?

g) Mention two applications of ferrites?

h) Distinguish between thermosetting and thermo plastics polymers?

i) How is glass distinguished from ceramic material?

j) What is Piezoelectric? How does it work?

Q2 **a)** Write short notes on free electron theory of metals? **(5)**

b) Explain the term magnetic permeability, magnetic susceptibility, paramagnetism and diamagnetism? **(5)**

Q3 **a)** What are superconductors? Explain are Type I and II super conductors? Mention its applications? **(5)**

b) FCC metals are often recommended for use at low temperature – Justify the statements? **(5)**

Q4 **a)** What is LASER ? Discuss the mechanism of LASER action of He-Ne laser. **(5)**

b) What are the advantages of composite material over other engineering alloys? Clearly distinguish between particle reinforced and fibre reinforced composites? **(5)**

Q5 **a)** Explain mechanism of the electrochemical corrosion. What are the various factors which influence the corrosion of iron and steel? **(5)**

b) Briefly explain method of corrosion prevention? **(5)**

Q6 **a)** Define Curie temperature? Write about property of ferromagnetic materials **(5)**

b) The magnetic susceptibility of a material at room temperature is 0.82 x 10-8.Calculate its magnetization under the action of magnetic induction of 0.25 Tesla. **(5)**

Q7 What are ceramics? Explain the types, structure, mechanical properties and dielectric strength of ceramics with examples? : **(10)**

Q8 **Write short notes on (Any TWO) :** **(5 x 2)**

a) Band theory of Solids

b) Laminated plastic sheets

c) Blow moulding

d) Application of optical fibre