Q.25 What is the effect of grain size on mechanical properties of metals?

Q.26 Explain Lever Rule in detail.

Q.27 What are requisite qualities of bearing metals?

Q.28 Describe any four properties of high carbon steel.

Q.29 Describe the annealing process in detail.

Q.30 Describe the Bessemer process of steel production.

Q.31 Give a flow diagram of production of iron and steel.

Q.32 Explain the manufacturing of stainless steel.

Q.33 Write short notes on

a) Quenching b) Cyaniding

Q.34 What is Glass wool? What is its use?

Q.35 What are Smart materials? What are their different types?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 What are Point defects? Explain Schottky and Frankel defect with sketches.

Q.37 How are plastics classified? Differentiate between thermoplastics and thermosetting plastics giving examples.

Q.38 Explain the construction of Thermal Equilibrium Diagram.

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Roll No. .....

1st Year / Advance Diploma in Tool & Die Making

Subject:- Material Science

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 The ability of the material to deform without breaking is called

a) Resistance b) Plasticity

c) Creep d) Fatigue

Q.2 Cast iron has the property of

a) Ductility b) Plasticity

c) Brittleness d) Malleability

Q.3 The tiny block formed by the arrangement of a small group of atoms is called

a) Unit cell b) Space lattice

c) Bravais lattice d) None of the above

Q.4 Which of the following is an amorphous material?

a) Glass b) Mica

c) Brass d) Copper

Q.5 The atomic packing factors for F.C.C, B.C.C and S.C structure are

a) 0.52, 0.68, 0.73 b) 0.73, 0.68, 0.52

c) 0.52, 0.73, 0.68 d) None of the above

Q.6 Which of the following has better creep strength and better machinability?

a) Fine grain metals b) Coarse grain metals

c) Both (a) and (b) d) Neither (a) nor (b)

Q.7 Which of the following is an alloy?

a) Cast iron b) Steel

c) Brass d) All of the above

Q.8 The purest form of iron is

a) Pig iron b) Cast iron

c) Steel d) Wrought iron

Q.9 The best quality of steel is produced in

a) Cupola b) Bessemer convertor

c) Open hearth furnace d) Induction furnace

Q.10 The essential constituent of hardened steel is

a) Martensite b) Troostite

c) Pearlite d) None of the above

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 A _____ is a material which has electrical conductivity between a conductor and that of an insulator.

Q.12 In extrinsic semiconductors, the number of excited electrons and the number of holes are equal. (True/False)

Q.13 Absolute crystals are formed at _____ temperature.

Q.14 Slip is a surface defect or grain boundary defect. (True/False)

Q.15 Fine grain steels have lesser fatigue resistance. (True/False)

Q.16 The mechanical mixture of two or more phases which solidify simultaneously from a liquid alloy is called _____.

Q.17 Brass is an alloy of _____ and _____.

Q.18 Pig iron is the basic material from which the other forms such as wrought iron and steels are manufactured. (True/False)

Q.19 The TTT diagram is also known as the _____.

Q.20 Nuclear reactors require enrichment to about _____% of U-235.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain how Elastic Deformation occurs?

Q.22 Explain any four mechanical properties of materials.

Q.23 Write short notes on Stress and strain.

Q.24 Explain the following

a) FCC structure b) BCC Structure