1) The ability of the moulding sand to withstand the heat of melt without showing any sign of softening is called as
   a. strength or cohesiveness
   b. refractiveness
   c. collapsibility
   d. adhesiveness

   ANS:- B

2) A model of casting, constructed to use for forming a mould in damp sand, is called as
   a. sand construction
   b. pattern
   c. cover
   d. none of the above

   ANS:- B

3) Which of the following is not a requirement of a good pattern?
   a. It should be light in weight to handle easily
   b. It should be smooth to make casting surface smooth
   c. It should have low strength to break it and to remove casting easily
   d. none of the above

   ANS:- C

4) The patterns which are made in two or more pieces are called as
   a. solid patterns
   b. split patterns
   c. loose piece patterns
   d. none of the above

   ANS:- B

5) Permeability can be defined as the property of moulding sand
   a. to hold sand grains together
   b. to allow gases to escape easily from the mould
c. to withstand the heat of melt without showing any sign of softening  
d. none of the above  
ANS: - B

6) The sand in its natural or moist state is called as  
   a. green sand  
   b. loam sand  
   c. dry sand  
   d. none of the above  
ANS: - A

7) What is the highest possible percentage of clay contents in loam sand?  
   a. 10  
   b. 20  
   c. 30  
   d. 50  
ANS: - D

8) Match the following contents of green sand in Group 1 with their approximate per cent in Group 2.

   1. Silica ------------------------ A. 5 to 10 per cent  
   2. Clay ------------------------- B. 2 to 5 per cent  
   3. Bentonite -------------------- C. 8 to 15 per cent  
   4. Coal dust --------------------- D. 7 to 8 per cent  
   5. Water ------------------------ E. up to 75 per cent  

   a. 1-(E), 2-(C), 3-(B), 4-(A), 5-(D)  
   b. 1-(E), 2-(A), 3-(B), 4-(C), 5-(D)  
   c. 1-(C), 2-(D), 3-(B), 4-(A), 5-(E)  
   d. 1-(C), 2-(A), 3-(B), 4-(D), 5-(E)  
ANS: - A

9) Which of the following sentences is/are correct for casting process?  
   a. Casting process is comparatively costly  
   b. Objects of large sizes cannot be produced easily by casting process
c. The time required for the process of making casting is quite long
d. All of the above sentences are correct

ANS: - C

10) The productivity of casting process is comparatively

a. lower than the productivity of other automatic processes like rolling
b. higher than the productivity of other automatic processes like rolling
c. similar to the productivity of other automatic processes like rolling
d. unpredictable

ANS: - A

11) Which casting process has no size and shape limits?

a. Sand casting
b. Shell-mould casting
c. Plaster-mould casting
d. none of the above

ANS: - A

12) Blow holes in casting are caused by

a. excessive moisture
b. low permeability
c. excessive fine grains
d. all of the above

ANS: - A

13) Semi-centrifugal casting

a. Is used to ensure purity and density at extremities of a casting
b. Is used to cast symmetrical objects
c. Is used to obtain high density and pure casting
d. Uses heavy cast iron mould to act as chill

e. Is not used for any purpose

ANS:- A

14) Sprue in casting refers to....... 

a. Gate  

b. Runner  

c. Riser  

d. Vertical passage

ANS:- D

15) In slush casting process......... 

a. Molten metal is fed into the cavity in metallic mould by gravity  

b. Metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity  

c. Cavity is filled with a precalculated quantity of metal and a core or plunger is inserted to force the metal into cavity  

d. Metal is forced into mould under high pressure

ANS:- B

16) In a permanent mould casting method....... 

a. Molten metal is fed into the cavity in metallic mould by gravity
b. Metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity

c. Cavity is filled with a pre calculated quantity of metal and a core or plunger is inserted to force the metal into cavity

d. Metal is forced into mould under high pressure

ANS:- A

17) Investment casting is used for.......  
   a. Shapes which are made by difficulty using complex patterns in sand casting  
   b. Mass production  
   c. Shapes which are very complex and intricate and can’t be cast by any other method  
   d. Stainless steel  

ANS:- C

18) The hot chamber die casting method is used to cast.......  
   a. Brass  
   b. Magnesium  
   c. Aluminium  
   d. Alloys of lead, tin, and zinc  
   e. All of the above  

ANS:- D

19) In hot chamber method of die casting.......
a. The melting pot is integral with die casting machine
b. The melting pot is separate from die casting machine
c. Melting pot location has nothing to do with such a classification
d. High temperature and low pressure alloys are used

ANS: - A

20) In cold chamber method of die casting.......  

a. The melting pot is integral with die casting machine
b. The melting pot is separate from die casting machine
c. Melting pot location has nothing to do with such a classification
d. High temperature and low pressure alloys are used

ANS: - B

21) In cold chamber method of die casting.......  

a. Only low melting point metals can be cast
b. High melting point metals can be cast
c. Die is kept hot by electrical heating
d. Die is kept cold by circulating water

ANS: - B

22) Which of the following casting methods utilises wax pattern.......  

a. Shell moulding  
b. Plaster moulding  
c. Slush casting  
d. Investment casting
ANS: - D

23) **Ornaments are cast by**.......  
   a. Die casting  
   b. Continuous casting  
   c. Pressed casting  
   d. Centrifugal casting  
   e. Gravity casting

24) **Large and heavy castings are made by**.......  
   a. Green sand moulding  
   b. Pit moulding  
   c. Dry sand moulding  
   d. Pressure moulding

ANS: - A

25) **In centrifugal castings, the impurities are**.......  
   a. Uniformly distributed  
   b. Collected in the centre of casting  
   c. Forced outside the surface  
   d. Present in the middle section of casting

ANS: - B

26) **The core in the centrifugal casting is made of**.......  
   a. Carbon steel  
   b. Properly treated sand
c. Plastic

d. No core is used

ANS:- D

27) Steel and cast iron pipes are cast by.......  
   a. Die casting
   b. Continuous casting
   c. Investment casting
   d. True centrifugal casting
   e. Centrifuging

ANS:- D

28) The sand is packed on pit moulds with.......  
   a. Manually
   b. Squeezers
   c. Jolt machines
   d. Sand slingers

ANS:- D

29) Ferrous alloys are usually cast by.......  
   a. Hot chamber machine
   b. Cold chamber machine
   c. Die casting machine
   d. None of the above
ANS:- D

30) The hot chamber die casting method is used to cast......
   a. Brass
   b. Magnesium
   c. Aluminium
   d. All of the above

ANS:- D

31) In centrifugal casting, cores are made of.......  
   a. Steel
   b. Cast iron
   c. Hard sand
   d. None of the above

ANS:- D

32) Water pipes of large length and diameter are made by....... 
   a. Semi-centrifugal casting
   b. Continuous casting
   c. Sand casting
   d. Forging

ANS:- A

33) Which of the following process would produce strongest components.........
   a. Die casting
   b. Hot rolling
c. Forging
d. Cold rolling

ANS: - C

34) Which of the following is not a casting process........

a. Carthias process
b. Extrusion
c. Semi-centrifuge method
d. Slush process
e. Shell moulding

ANS: - B

35) The dowels are

a. Wooden nails
b. Box nails
c. Wire nails
d. None of these

ANS: - A

36) Which of the following material can be used for making patterns?

a. Aluminum
b. Wax
c. Lead
d. All of these

ANS: - B
37) In general, the drift on castings is of the order of.......  
   a. 1-5 mm/m  
   b. 5-10 mm/m  
   c. 10-15 mm/m  
   d. 15-20 mm/m  
   e. 20-30 mm/m  

ANS: - C  

38) Advantage of using Casting as a manufacturing technique is  
   a. High mechanical strength  
   b. Quick and mass production process with low scrap  
   c. Excellent surface finish  
   d. No defects in the cast component  

ANS: - B  

39) Which of the following is the most widely used casting process for metals  
   a. Die casting  
   b. Permanent mold casting  
   c. Centrifugal casting  
   d. Sand mold casting  

ANS: - D  

40) Permanent mold casting has following advantage:  
   a. Mold and pattern need not be made again and again  
   b. Components of various geometries can be manufactured
c. Complex shape components can be manufactured
d. No defect in the cast component

ANS:- A

41) Which property of a material is used for Casting it into a desired shape

(a) Strength (b) Fluidity
(c) Ductility (d) Formability

ANS:- B

42) Which of the following property is required for good wax pattern

(a) High melting point (b) High wettability
(c) High ash content (d) Low hardness

ANS:- B

43) Muller is used for

(a) remove small pieces of metal or foreign particles
(b) remove iron particles from sand
(c) increase the flowability of sand
(d) mixing of sand

ANS:- D

44) Permeability of sand can be defined as

(a) Property of sand due to which sand grains stick together
(b) Ability to held firmly in the moulding box when lifted
(c) Property of sand due to which gases are escaped from sand
(d) Ability of sand to withstand heat of melt without fusing or breakdown
ANS:- C

45) Follow board pattern are used to cast

(a) Structurally weak portions
(b) Large axi-symmetric or prismatic shapes
(c) Product having protruding sections
(d) Bell shape or cylindrical shape products

ANS:- A

46) Which of the following materials are used for pattern making

(a) Thermosetting materials only
(b) Thermoplastic materials only
(c) Both thermosetting and thermoplastic materials
(d) None of the above

ANS:- C

47) Dowel pins are used for

(a) Aligning two halves of mold
(b) Withdrawal of cast from mold
(c) In a place of cores
(d) All of the above

ANS:- A

48) Percentage of water used in clay is

(a) 0 – 2%
(b) 2 – 8%
(c)8 –15%
(d)13 –20%
ANS:- C

49) Major function of vent wire is that
(a) To provide compressive strength to the mould
(b) To uniform flow of molten metal into the mould cavity
(c) To provide permeability to the mould
(d) To provide sufficient strength to core
ANS:- C

50) Drawspike is used to
(a) Remove the pattern from the mould
(b) Support the core inside the mould cavity
(c) Provide compressive strength to the mould
(d) Flow the molten metal inside the mould cavity
ANS:- A

51) In which of the following method of ramming, a stream of sand is thrown downward onto pattern with high velocity?
(a) Jolting
(b) Squeezing
(c) Jolting and squeezing
(d) Slinging
ANS:- D

52) Which of the following is used for making cavities and hollow projections in casting?
(a) Core
(b) Core print
53) Recess provided in the material for locating and positioning of cores is called as
(a) Chill  (b) Slinging
(c) Core print  (d) Core
ANS: - C

54) In gating system, sprue is usually tapered to
(a) Avoid air aspiration effect  (b) Quick fill the mould cavity
(c) Minimize the temperature  (d) All of the above
ANS: - A

55) In which of the gating system molten metal flows into the mould cavity due to the adverse effect of gravity?
(a) Top gating  (b) Bottom gating
(c) Parting gating  (d) All of the above
ANS: - B

56) The major function of choke is that
(a) It controls the flow rate of molten metal
(b) It does not control the flow rate of molten metal
(c) It avoids the air aspiration effect
(d) It controls the solidification time
ANS: - A

57) The connecting passage between bottom of sprue and ingate is
(a) Pouring basin
(b) Sprue
(c) Runner
(d) Ingate

ANS: C

58) The height of sprue is selected such that velocity of molten metal in gating system must always ensure

(a) Laminar flow
(b) Turbulent flow
(c) May be laminar or turbulent
(d) None of these

ANS: A

59) mould has a down sprue whose length is 20 cm and the cross-sectional area at the base of down sprue is 1 cm². The down sprue feeds a horizontal runner leading into the mould cavity of volume 1000 cm³. The time required to fill the mould cavity will be

(a) 4.05 sec
(b) 5.05 sec
(c) 6.05 sec
(d) 7.25 sec

ANS: B

Solution: Time required to fill the mould cavity = \( t_m = \frac{\text{Volume of mould cavity}}{\text{Flow rate}} \)

Volume of mould cavity = 1000 cm³

Flow rate = \( A_s \sqrt{2ghA_s} \) Cross sectional area at the base of down sprue = 1 cm²\( h \) = length of down sprue

Putting the values in (1), we get that \( t_m = 5.05 \) sec

60) In a sand casting process, a sprue of 10 mm base diameter and 250 mm height leads to a runner which fills a cubical mould cavity of 100 mm size. The volume flow rate (in mm³/sec) and the mould filling time (in second) are

(a) 0.8 \( \times \) 105, 2.8
(b) 1.1 \( \times \) 105, 7.54
(c) $1.7 \times 10^5, 5.78$

(d) $2.3 \times 10^5, 8.41$

ANS:- C

Solution: Given, $D = 10 \text{ mm}, h = 250 \text{ mm}$

Velocity of molten metal at the sprue end = $V_1 = \sqrt{2gh}$

Cross sectional area of sprue = $A_1 = \frac{\pi d^2}{4}$

Where $d$ = diameter of sprue base

Flow rate = $A_1V_1 = \text{173942.13 mm}^3/\text{sec}$

Volume of mould = $100 \times 100 \times 100 \text{ mm}^3$

Mould filling time = Volume of mould / Flow rate = $5.75 \text{ s}$

Chills are used in moulds to

(a) Achieve directional solidification

(b) Reduce possibility of blow holes

(c) Increase the freezing time

(d) Smoothen the metal for reducing spatter

ANS:- A

61) For a constant volume, the shape of riser that has minimum surface area exposed for heat transfer is

(a) Cylindrical

(b) Cubical

(c) Rectangular

(d) Hexagonal

ANS:- A

62) Riser is designed so as to

(a) Freeze after the casting freezes
(b) Freeze before the casting freezes

(c) Freeze at the same time as the casting

(e) Minimize the time of pouring

ANS: - A

63) Chaplets are placed between moulds in order to

(a) Promote directional solidification

(b) Help alloying the metal

(c) Facilitate easy removal of core from casting

(d) Prevent core movement due to buoyancy

ANS: - D

65) Freezing ratio is defined as

(a) Modulus of riser/ Modulus of casting

(b) Modulus of casting/ Modulus of riser

(c) Modulus of riser + Modulus of casting

(d) Modulus of riser – Modulus of casting

ANS: - A

66) Modulus of casting is evaluated as

(a) Volume of casting/ surface area of casting

(b) Surface area of casting/ Volume of casting

(c) Surface area of riser/ Volume of casting

(d) Volume of casting/ Surface area of rise

ANS: - A
67) In continuous casting process, the mould is generally made of
(a) Cast iron (b) Bronze
(c) Copper (d) Tungsten carbide
ANS: - C

68) Which of the following statement is true regarding density of Centrifugal cast component?
(a) Maximum at the outer region
(b) Maximum at the inner region
(c) Maximum at the midpoint between outer and inner surfaces
(d) Uniform throughout

ANS: - A

69) Which of the following is an example of permanent mould casting process?
(a) Investment casting process (b) Die casting process
(c) Full mould process (d) Vacuum casting process

ANS: - B