

098/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The level of management most involved in the function of planning and organising is :
(A) Top (B) Middle
(C) First (D) All of these
2. The function of management in which various duties are allotted to various persons is called :
(A) Planning (B) Organising
(C) Controlling (D) All of the above
3. The wages which fulfil the basic requirements of workers are called :
(A) Real wages (B) Nominal wages
(C) Living wages (D) Fair wages
4. In which system of wage payment, a fixed payment is made after a fixed period of time :
(A) Piece rate (B) Time rate
(C) Combination of the two (D) None of the above
5. At break even point :
(A) total cost is more than the sales revenue
(B) total cost is less than the sales revenue
(C) fixed cost is equal to variable cost
(D) total cost is equal to sales revenue
6. PERT stands for :
(A) Programme Evaluation and Review Technique
(B) Process Estimation and Review Technique
(C) Programme Estimation and Reporting Technique
(D) Process Evaluation and Reporting Technique
7. ABC analysis :
(A) is a basic technique of materials management
(B) is meant for relative inventory control
(C) does not depend up on the unit cost of the item but on its annual consumption
(D) all of the above

8. Work study is done by means of :
(A) planning chart (B) process chart
(C) stop watch (D) any one of the above
9. The simplex method is the basic method for :
(A) queuing theory (B) network analysis
(C) value analysis (D) linear programming
10. Statistical Quality Control is based on :
(A) probability (B) statistical inference
(C) sampling (D) none of the above
11. The term associated with the activity time is known as :
(A) slack (B) float
(C) dummy (D) none of the above
12. Production cost refers to prime cost plus :
(A) factory overhead
(B) factory and administrative overheads
(C) factory, administrative and sales overheads
(D) factory, administrative, sales overheads and profit
13. Military type organisation is known as :
(A) line organisation (B) functional organisation
(C) line and staff organisation (D) line, staff and functional organisation
14. The name of wage incentive plan which guarantees minimum wage to a worker and bonus is paid for the fixed percentage of time saved :
(A) Halsey plan (B) Gantt plan
(C) Rowan plan (D) Emerson's efficiency plan
15. In a network diagram :
(A) an activity and an event are represented by a circle
(B) an activity and an event are represented by an arrow
(C) an activity is represented by an arrow and an event by a circle
(D) an activity is represented a circle and an event by an arrow
16. Acceptance sampling is used in :
(A) batch production (B) mass production
(C) job production (D) none of the above

17. Iron-carbon equilibrium diagram :
- (A) is constructed by plotting temperature along y- axis and carbon percentage along x- axis
 - (B) establishes the correlation between the microstructure and properties of steel and cast iron
 - (C) indicates the phase changes that occur during heating and cooling
 - (D) all of the above
18. The body centred cubic space lattice is found in :
- (A) aluminium
 - (B) copper
 - (C) cadmium
 - (D) tungsten
19. The orthogonal cutting system is also known as :
- (A) one dimensional cutting system
 - (B) two dimensional cutting system
 - (C) three dimensional cutting system
 - (D) none of the above
20. The commonly used value of point angle for a standard twist drill is :
- (A) 12°
 - (B) 29°
 - (C) 118°
 - (D) 60°
21. Size of a lathe is specified by :
- (A) maximum job length in mm that may be held between centres
 - (B) the height of centres measured over the lathe bed
 - (C) maximum diameter that can be rotated over the bed
 - (D) all the above
22. The cutting tool in a milling machine is held in position by :
- (A) arbor
 - (B) spindle
 - (C) column
 - (D) knee
23. Which one of the following is an example of plastic welding?
- (A) Forge welding
 - (B) Arc welding
 - (C) Gas welding
 - (D) Thermit welding
24. Which of the following operations can be performed by a drilling machine?
- (A) drilling
 - (B) reaming
 - (C) boring
 - (D) all the above

25. Which of the following material is used for making drills?
(A) high speed steel (B) carbide tipped
(C) carbon steel (D) any one of the above
26. The property of moulding sand due to which the sand grains stick together :
(A) cohesiveness (B) collapsibility
(C) permeability (D) adhesiveness
27. Hack saw blade is specified by its :
(A) material (B) length
(C) width (D) number of teeth
28. In a planer :
(A) work is stationery and tool reciprocates (B) tool and work both reciprocate
(C) tool is stationery and work reciprocates (D) none of the above
29. In a plain milling machine ,the table can be moved :
(A) longitudinally (B) vertically
(C) crosswise (D) all of the above
30. The Brinell hardness number for mild steel lies in the range of :
(A) 50 to 70 (B) 70 to 100
(C) 110 to 150 (D) 150 to 300
31. Which of the following tests is a destructive test?
(A) radiography (B) tensile test
(C) ultrasonic inspection (D) none of the above
32. The property of a material to resist penetration by another material is called :
(A) toughness (B) stiffness
(C) hardness (D) resilience
33. Steady flow occurs when :
(A) velocity does not change
(B) pressure does not change
(C) conditions change gradually with time
(D) conditions do not change with time at any point

34. The pressure in metres of oil(having specific gravity 0.85) equivalent to 85 metres of water is :
- (A) 100 m (B) 85 m
(C) 8.5 m (D) none of the above
35. Pressure in Pascal at a depth of 0.5m below the free surface of water will be :
- (A) 0.5 Pa (B) 4905 Pa
(C) 9810 Pa (D) 981 Pa
36. Rain drops are spherical because of :
- (A) viscosity (B) air resistance
(C) surface tension (D) atmospheric pressure.
37. Newtons law of viscosity states :
- (A) shear stress is directly proportional to velocity
(B) shear stress is directly proportional to velocity gradient
(C) shear stress is directly proportional to shear strain
(D) shear stress is directly proportional to viscosity
38. Manometer is used to measure :
- (A) velocity at a point in a fluid (B) discharge of a fluid
(C) pressure at a point in a fluid (D) none of the above
39. The term $v^2/2g$ is known as :
- (A) velocity head (B) pressure head
(C) potential head (D) none of the above
40. The coefficient of discharge (C_d) in terms of coefficient of contraction(C_c) and coefficient of velocity (C_v) :
- (A) $C_d = C_v/C_c$ (B) $C_d = C_v C_c$
(C) $C_d = C_c/C_v$ (D) none of the above
41. Notch is a device used for measuring :
- (A) rate of flow through pipes
(B) rate of flow through small channels
(C) velocity through pipes
(D) velocity through small channels

42. Hydraulic gradient line represents the sum of :
- (A) pressure head and kinetic head
 - (B) kinetic head and datum head
 - (C) pressure head, kinetic head and datum head
 - (D) pressure head and datum head
43. The specific speed (N_s) of a turbine is given by :
- (A) $N_s = NP^{1/2}/H^{5/4}$
 - (B) $N_s = NQ^{1/2}/H^{5/4}$
 - (C) $N_s = NQ^{1/2}/H^{3/4}$
 - (D) $NP^{1/2}/H^{3/4}$
44. The discharge through a single acting reciprocating pump having speed N rpm is :
- (A) $2 LAN/60$
 - (B) $LAN/60$
 - (C) $60 LAN$
 - (D) $120 LAN$
45. The force exerted by a jet of water on a stationery vertical plate in the direction of jet is given by :
- (A) $\rho AV^2 \sin^2 \theta$
 - (B) $\rho AV^2 (1 + \cos \theta)$
 - (C) ρAV^2
 - (D) none of the above
46. $3/2$ DCV stands for :
- (A) three port two position directional control valve
 - (B) two port three position directional control valve
 - (C) three port two position discharge control valve
 - (D) two port three position discharge control valve
47. Kaplan turbine is a propeller turbine having vanes on rotor are :
- (A) non-adjustable
 - (B) adjustable
 - (C) fixed
 - (D) none of the above
48. Hydraulic ram is a pump which works :
- (A) on the principle of centrifugal action
 - (B) on the principle of reciprocating action
 - (C) on the principle of water hammer
 - (D) none of the above

49. Young's modulus of a material which gives 2 kN/mm^2 stress at 0.01 strain is :
- (A) 20 kN/mm^2 (B) 0.02 kN/mm^2
 (C) 200 kN/mm^2 (D) 2000 kN/mm^2
50. Poisson's ratio is equal to :
- (A) linear strain / lateral strain (B) lateral strain/linear strain
 (C) tensile stress/ tensile strain (D) tensile strain/tensile stress
51. Factor of safety is :
- (A) the ratio of maximum stress and safe stress
 (B) the ratio of safe stress and maximum stress
 (C) the ratio of maximum stress and maximum strain
 (D) none of the above
52. Modulus of rigidity is the ratio of :
- (A) shear strain and shear stress (B) lateral strain and linear strain
 (C) linear strain and lateral strain (D) shear stress and shear strain
53. Coefficient of friction is equal to :
- (A) $\tan(\text{of angle of friction})$ (B) $\sin(\text{of angle of friction})$
 (C) $\cos(\text{of angle of friction})$ (D) $\tan^{-1}(\text{angle of friction})$
54. If angle of friction is equal to 5° , angle of repose is :
- (A) 10° (B) 5°
 (C) 2.5° (D) none of the above
55. The distance between the base and centre of gravity of a semi circular lamina having radius 'r' is :
- (A) $3r/4\pi$ (B) $3r^2/4\pi$
 (C) $4r/3\pi$ (D) $4r^2/3\pi$
56. Moment of Inertia of a circular section having diameter D about its centroidal horizontal axis is :
- (A) $\pi D^4/32$ (B) $\pi D^2/64$
 (C) $\pi D^4/16$ (D) $\pi D^4/64$

57. The moment of inertia of a rectangular section having breadth 2 cm and depth 1 cm, about its horizontal axis is :
- (A) $1/6 \text{ cm}^4$ (B) $1/12 \text{ cm}^4$
 (C) $1/2 \text{ cm}^4$ (D) $1/3 \text{ cm}^4$
58. Efficiency of a riveted joint is :
- (A) strength of rivet / strength of un riveted plate
 (B) strength of riveted joint/strength of rivet
 (C) strength of riveted joint/strength of un riveted plate
 (D) none of the above
59. The strength of single fillet weld, having length of weld l , weld size s and permissible stress σ is :
- (A) $0.707 s^2 l \sigma$ (B) $0.707 s l^2 \sigma$
 (C) $1.414 s l \sigma$ (D) $0.707 s l \sigma$
60. Power transmitted by a shaft having speed N rpm and average torque T in Nm is given by :
- (A) $2\pi NT/60$ watts (B) $2\pi NT$ watts
 (C) $\pi NT/60$ watts (D) none of the above
61. The maximum bending moment in a beam occurs at :
- (A) the middle of beam
 (B) a point where shear force diagram changes its sign
 (C) a point where shear force and bending moment are zero
 (D) none of the above
62. The maximum bending moment in a simply supported beam having effective span L subjected to central point load W is given by :
- (A) $WL^2/8$ (B) $WL/2$
 (C) $WL/4$ (D) none of the above
63. The width of sunk key having shaft diameter d is given by :
- (A) $d/6$ (B) $d/3$
 (C) $d/2$ (D) $d/4$
64. The diameters of driver and driven pulleys of a simple belt drive are 100 mm and 50 mm respectively. If the speed of driver pulley 1000 rpm, the speed of driven pulley is :
- (A) 1500 rpm (B) 500 rpm
 (C) 3000 rpm (D) 2000 rpm