27. A block of weight 20kN just begins to move along a horizontal surface on application of 5kN horizontal force. The coefficient of friction between block and surface is :

(A) 0.10 (B) 0.20

(C) 0.25 (D) 0.50

28. Which of the following is an incorrect assumption in the analysis of truss?

(A) All joints are pinned

(B) Loads applied at joints only

(C) All members are straight

(D) Weights of members are acting at their centres

29. During strain hardening :

(A) Material undergoes changes in atomic and crystalline structures

(B) Increased resistance to further deformation

(C) Stress strain diagram has positive slope

(D) All the above

30. Ability of a material to absorb energy within the elastic range :

(A) Toughness (B) Elasticity

(C) Stiffness (D) Resilience

31. A cantilever beam fixed at left end carries a udl w / unit length over the left half portion and a point load W at the free end. If L is the length of the beam, the bending moment at fixed end is :

(A) $WL/2 + wL^2/4$ (B) $wL/2 + WL^2/4$

(C) $wL + WL^2/8$ (D) $WL + wL^2/8$

32. A beam ABC, is simply supported at A and B and BC is overhanging. AB = L and BC = L/2 and it carries a point load P at C. The deflection at C is :

(A) $PL^2/24EI$ (B) $PL^3/8EI$

(C) $PL^3/48EI$ (D) $PL^2/16EI$

33. The Poisson's ratio of a material is 0.3 and Young's modulus is 200 GPa. Its Rigidity Modulus is :

(A) 77 GPa (B) 51 GPa

(C) 125 GPa (D) 333 GPa

34. Bending moment M and torque T are applied on a solid circular shaft. If the maximum bending stress is equal to the maximum shear stress developed, M is equal to :

(A) T (B) 2T

(C) T/2 (D) T/4

35. Surface tension is caused by a force of ———— at the free surface.

(A) Adhesion (B) Cohesion

(C) Both (A) and (B) (D) Either (A) or (B)

36. Find the height of a mountain if pressure measured at its base and top are 74 cm and 60 cm of mercury respectively. Specific weight of air is 11.97 N/m^3 :

(A) 1000 m (B) 1750 m

(C) 2600 m (D) 1560 m

37. A stable submerged body has :

(A) Centre of gravity below centre of buoyancy

(B) Centre of gravity below metacentre

(C) Centre of gravity above centre of buoyancy

(D) Centre of gravity above metacentre

38. Poise is the unit of:

(A) Density (B) Velocity gradient

(C) Kinematic viscosity (D) Dynamic viscosity

39. The velocity distribution at any section of a pipe for steady laminar flow is :

(A) Linear (B) Exponential

(C) Parabolic (D) Constant

40. In flow through pipe, the efficiency of transmission under conditions of maximum power transmission is:

(A) 50% (B) 66.67%

(C) 70% (D) 95.9%

41. A rectangular channel will be most economical when the flow depth and bottom width are in the ratio

(A) 2:1 (B) 1:1

(C) 1:2 (D) 1:4

42. Water flow in large sized pipes for large flow rates can be measured using :

(A) Orifices
(B) Notches
(C) Venturi meter
(D) Elbow meter

43. An inward flow reaction turbine :

(A) Impulse turbine
(B) Francis turbine
(C) Pelton turbine
(D) All the above

44. The amount of moisture present in the air expressed as mass per unit volume is:

(A) Absolute humidity
(B) Saturation rate
(C) Vapour pressure
(D) All the above

45. The salt concentration in irrigation water is generally measured by :

(A) SAR value
(B) Electrical conductivity value
(C) pH value
(D) BOD value

46. Optimum depth of kor – watering for rice is :

(A) 13.5 cm
(B) 16.5 cm
(C) 19 cm
(D) 20 cm

47. The crop period of a crop is 120 days. It requires 10 cm depth of water at every 10 days. Its delta is :

(A) 120 cm
(B) 60 cm
(C) 12 cm
(D) 6 cm

48. The water which cannot be extracted by the plants from the soil is called :

(A) Capillary water
(B) Hygroscopic water
(C) Available moisture
(D) Field capacity

49. The canal which is not supposed to do any irrigation is called :

(A) Major distributory
(B) Minor distributory
(C) Branch canal
(D) Main canal

50. The geological formation which contains and readily yields water to tube wells :

(A) Water table
(B) Aquifer
(C) Aquiclude
(D) Aquifuge

51. Type of cross – drainage work where canal is passed below the drainage is :

(A) Super passage
(B) Aqueduct
(C) Inlet
(D) Level crossing