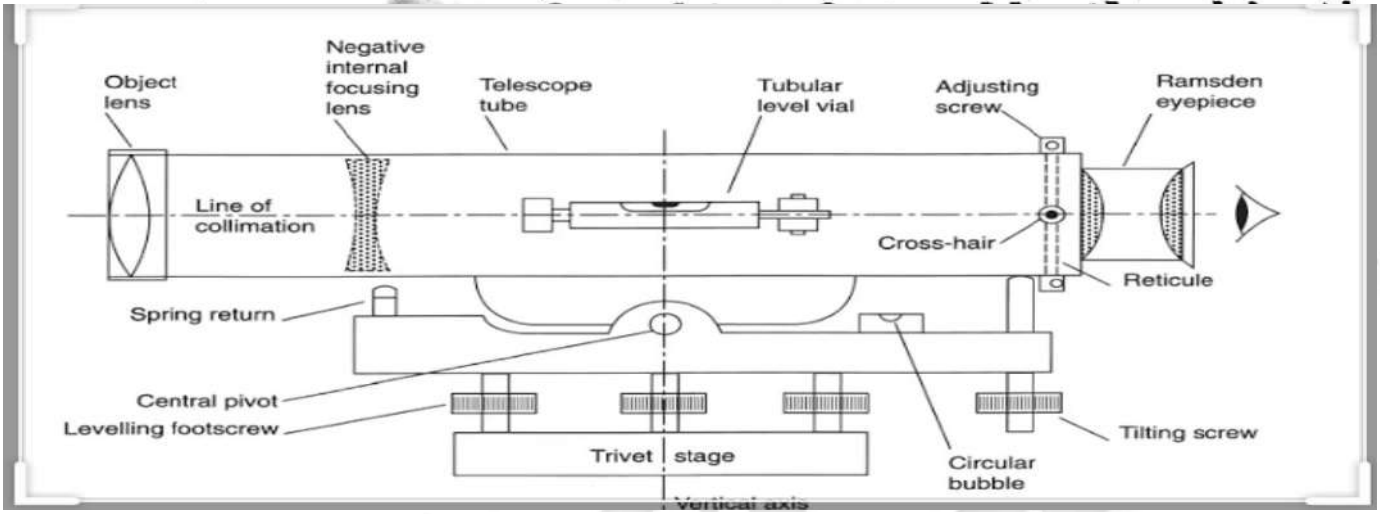
**.53.** Cross hairs in surveying telescopes, are fitted
(*a*) in the objective glass
(*b*) at the centre of the telescope
(*c*) at the optical centre of the eye piece
(*d*) in front of the eye piece.




**4.57.** The sensitiveness of a level tube decreases if
(*a*) radius of curvature of its inner surface is increased
(*b*) diameter of the tube is increased
(*c*) length of the vapour bubble is increased
(*d*) both viscosity and surface tension are increased.

**4.63.** The line of collimation method of reduction of levels, does not provide a check on
(*a*) intermediate sights
(*b*) fore sights
(*c*) back sights
(*d*) reduced levels.

**4.68.** Let angular value of one graduation of a tube of length $x$ be $\phi$ seconds and $R$ be the radius of its internal curved surface, then

(*a*) $\phi = \dfrac{x}{206265\ R}$ (*b*) $\phi = \dfrac{R}{206265\ x}$

(*c*) $\phi = \dfrac{206265}{x.R}$ (*d*) $\phi = \dfrac{x.\ R}{206265}$.

**4.66.** In reciprocal levelling, the error which is not completely eliminated, is due to

(*a*) earth's curvature

(*b*) non-adjustment of line of collimation

(*c*) refraction

(*d*) non-adjustment of the bubble tube.

**4.73.** For the construction of highway (or railway)

(*a*) longitudinal sections are required

(*b*) cross sections are required

(*c*) both longitudinal and cross sections are required

(*d*) none of these.

**75.** The boundary of water of a still lake, represents

(*a*) level surface (*b*) horizontal surface

(*c*) contour line (*d*) a concave surface.

**77.** The contour interval is kept inversely proportional to

(*a*) time and expense of field work

(*b*) steepness of the configuration of the area

(*c*) scale of the map

(*d*) all the above.

**4.81.** Straight, parallel and widely spaced contours represent

(*a*) a steep surface (*b*) a flat surface

(*c*) an inclined plane surface (*c*) curved surface.

**4.84.** Closed contours of decreasing values towards their centre, represent

(*a*) a hill (*b*) a depression

(*c*) a saddle or pass (*d*) a river bed.

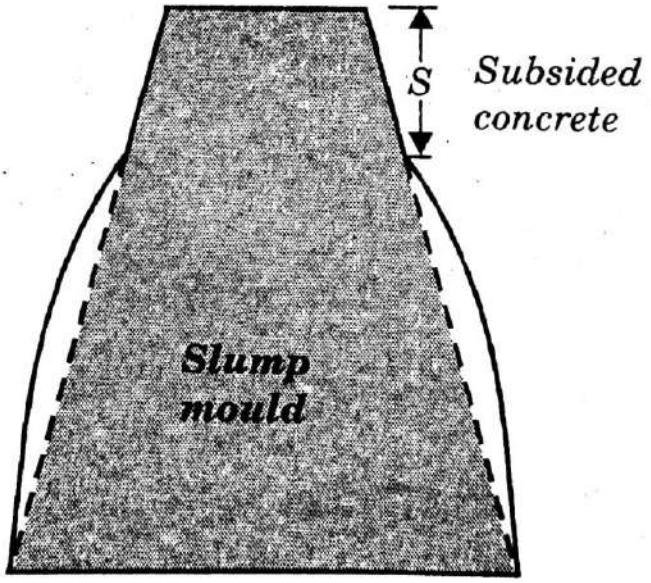
15.2. Study the following statements regarding the workability of fresh concrete

1. The extra water added to lubricate the concrete mix is not utilised in hydration and leaves voids on evaporation.
2. The concrete not fully compacted contains numerous air bubbles which create voids and decrease the strength.
3. The concrete mix with minimum volume of water to total voids provides the densest and strongest concrete.

Out of the above, which statements are correct?

(*a*) 1, 2 (*b*) 2, 3
(*c*) 1, 3 (*d*) 1, 2, 3

15.12. The subsided concrete(s) shown in Figure after removal of the slump mould, indicate




(*a*) true slump (*b*) shear slump
(*c*) collapse slump (*d*) cohesive slump
(*e*) none of these.

16.39. Which one of the following materials reduces the amount of air entrains in concrete?

(*a*) the fly ash (*b*) Calcium chloride

(*c*) both (*a*) and (*b*) (*d*) neither (*a*) nor (*b*)

16.2. The rocks formed by gradual deposition, are called:

(*a*) sedimentary rocks (*b*) igneous rocks

(*c*) metamorphic rocks (*d*) none of these.

**16.192.** Bitumen felt

(*a*) is used as water proofing material

(*b*) is used as damp proofing material

(*c*) is made from bitumen and hessian fibres

(*d*) all the above.

**16.194.** Mastic asphalt is normally used for

(*a*) sound insulation (*b*) water proofing

(*c*) fire proofing (*d*) none to these.

**16.448.** Match List I with List II and select correct answer by using codes given below the lists :

| *List I (Defect in painting)* | *List II (Causes)* |
|---|---|
| A. Blistering | 1. due to bad ventilation |
| B. Bloom | 2. due to poor adhesion of paint |
| C. Flaking | 3. due to insufficient opacity |
| D. Grinning | 4. due to entrapped water vapours in the painted surface |

Codes :

| | A | B | C | D |
|---|---|---|---|---|
| (*a*) | 4 | 1 | 2 | 3 |
| (*b*) | 1 | 2 | 3 | 4 |
| (*c*) | 3 | 4 | 2 | 1 |
| (*d*) | 1 | 3 | 4 | 2 |

**16.472.** Match List I with List II and select a correct answer by using the codes gives below the lists :

| *List I (Defect)* | *List II (Causes)* |
|---|---|
| A. Dry rot | 1. Conversio into dry po |
| B. Heart rot | 2. Growth of |
| C. Wet rot | 3. Conversio into greyi colour |
| D. Brown rot | 4. Conversic colour brov |

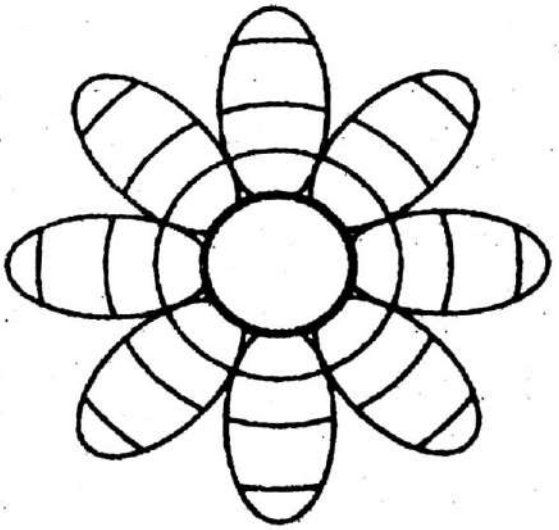
**Codes :**

| | A | B | C | D |
|---|---|---|---|---|
| (*a*) | 4 | 3 | 2 | 1 |
| (*b*) | 1 | 2 | 3 | 4 |
| (*c*) | 4 | 2 | 3 | 1 |
| (*d*) | 2 | 4 | 1 | 3 |

**16.474.** The peculiar curved swellings found on the body of a tree, are called

(*a*) knots
(*b*) hearts rots
(*c*) rindgalls
(*d*) None of these.

## 16.476. The figure indicates



**(*a*) Star shakes**
**(*b*) Wind cracks**
**(*c*) Heart shakes**
**(*d*) None of these.**

**2.52.** Sedimentation analysis is based on the assumption :

(*a*) soil particles are spherical
(*b*) particles settle independent of other particles
(*c*) walls of the jar do not affect the settlement
(*d*) all the above.

**12.55.** Pick up the correct statement from the following :

(*a*) In hydrometer method, weight $W_d$ per ml of suspension is found directly

(*b*) In pipette analysis, weight $W_d$ per ml of suspension is found indirectly

(*c*) In pipette analysis, weight $W_d$ per ml of suspension is found directly

(*d*) None of these.

**12.58.** The minimum water content at which the soil just begins to crumble when rolled into threads 3 mm in diameter, is known

(*a*) liquid limit
(*b*) plastic limit
(*c*) shrinkage limit
(*d*) permeability limit.

**12.59.** The minimum water content at which the soil retains its liquid state and also possesses a small shearing strength anginst flowing, is known

(*a*) liquid limit
(*b*) plastic limit
(*c*) shrinkage limit
(*d*) permeability limit.

**12.60.** The maximum water content at which a reduction in water content does not cause a decrease in volume of a soil mass, is known

(*a*) liquid limit
(*b*) plastic limit
(*c*) shrinkage limit
(*d*) permeability limit.

**12.66.** For general engineering purposes, soils are classified by

(*a*) particle size classification system
(*b*) textural classification system
(*c*) High Way Research Board (HRB), classification system
(*d*) unified soil classification system.

**12.72.** The soil moisture driven off by heat, is called

(*a*) free water
(*b*) hydroscopic water
(*c*) gravity water
(*d*) none of these.

**12.74.** The property of a soil which permits water to percolate through it, is called

(*a*) moisture content
(*b*) permeability
(*c*) capillarity
(*d*) none of these.

**12.75.** The capillary rise of water

(*a*) depends upon the force responsible

(*b*) increases as the size of the soil particles increases

(*c*) decreases as the size of the soil particles decreases

(*d*) is less in wet soil than in dry soil.

**12.78.** When the seepage pressure becomes equal to the pressure due to submerged weight of a soil, the effective pressure is reduced to zero and the soil particles have a tendency to move up in the direction of flow. This phenomenon is generally known

(*a*) quick condition (*b*) boiling condition

(*c*) quick sand (*d*) all the above.

**11.2.** The sludge does not contain waste water from

(*a*) bath rooms (*b*) wash basins

(*c*) kitchen sinks (*d*) toilets.

**11.6.** The sewer which transports the sewage to the point of treatment, is called

(*a*) house sewer (*b*) out-fall sewer

(*c*) branch sewer (*d*) lateral

(*e*) main sewer.

**11.31.** The value of Chezy's constant

$$C = \frac{\left(23 + \frac{0.00155}{s}\right) + \frac{1}{n}}{1 + \left(23 + \frac{0.00155}{s}\right)\frac{n}{\sqrt{r}}}$$

is used in

(*a*) Chezy's formula (*b*) Bazin's formula

(*c*) Kutter's (*d*) Manning's formula.

**11.35.** If $\gamma_w$ is the unit weight of water, $r$ the hydraulic mean depth of the sewer and $S$ the bed slope of the sewer, then the tractive force exerted by flowing water, is

(a) $\gamma_w . r.S$ (b) $\gamma_w r^{1/2} . S$

(c) $\gamma_w r \sqrt{S}$ (d) $\gamma_w r^{2/3} \sqrt{S}$.

**11.45.** The drop man holes are generally provided in sewers for

(a) industrial areas (b) large town ships

(c) hilly town ships (d) cities in plains.

**11.46.** With self cleansing velocity in sewers

(a) silting occurs at bottom

(b) scouring occurs at bottom

(c) both silting and scouring occur at bottom

(d) neither silting nor scouring occurs at bottom.

**11.68.** For trunk and out-fall, the type of sewers generally used, is

(a) standard egg shaped (b) circular shaped

(c) horse shoe shaped (d) parabolic shaped

(e) semi-elliptical shaped.

**11.76.** Stoneware sewers are available in size

(a) 10 cm (b) 15 cm

(c) 20 cm (d) 25 cm

(e) all the above.

**11.84.** A manhole is generally provided at each
(*a*) bend (*b*) junction
(*c*) change of gradient
(*d*) change of sewer diameter
(*e*) all the above.

**11.85.** The spacing of man holes along a straight portion of a sewer is 300 m, the diameter of the sewer may be
(*a*) 0.9 cm (*b*) 1.2 m
(*c*) 1.5 m (*d*) > 1.5 m.

**17.5.** Indian Road Congress (I.R.C.) was founded and constituted with its head quarters at New Delhi, in
(*a*) 1924 (*b*) 1927
(*c*) 1930 (*d*) 1934
(*e*) 1942.

**17.8.** The inventor of road making as a building science, was
(*a*) Sully (*b*) Tresguet
(*c*) Telford (*d*) Macadam.

**17.10.** The head of public works department of any Indian state, is
(*a*) Transport Minister (*b*) Chief Engineer
(*c*) Superintending Engineer (*d*) Executive Engineer.

**17.12.** For Indian conditions, the water bound macadam roads, are suitable if daily traffic does not exceed
(*a*) 2000 tonnes (*b*) 2500 tonnes
(*c*) 3000 tonnes (*d*) 3500 tonnes.

**17.17.** According to the recommendations of Nagpur Conference, the width formation of an ideal National Highway in hard rock cutting, is

(*a*) 8.9 m
(*b*) 7.9 m
(*c*) 6.9 m
(*d*) 6.5 m
(*e*) 7.5 m.

**16.3.** The field capacity of a soil depends upon

(*a*) capillary tension in soil
(*b*) porosity of soil
(*c*) both (*a*) and (*b*)
(*d*) neither (*a*) nor (*b*).

**16.5.** The state of the soil when plants fail to extract sufficient water for their requirements, is

(*a*) maximum saturated point

(*b*) permanent wilting point

(*c*) ultimate utilisation point

(*d*) none of these.

**16.6.** For a standing crop, the consumptive use of water is equal to the depth of water

(*a*) transpired by the crop

(*b*) evaporated by the crop

(*c*) transpired and evaporated by the crop

(*d*) used by the crop in transpiration, evaporation and also the quantity of water evaporated from adjacent soil.

**16.9.** The depth of rice root zone, is

(*a*) 50 cm (*b*) 60 cm

(*c*) 70 cm (*d*) 80 cm

(*e*) 90 cm.

**16.10.** The field capacity of a soil is 25%, its permanent wilting point is 15% and specific dry unity weight is 1.5. If the depth of root zone of a crop, is 80 cm, the storage capacity of the soil, is

(*a*) 8 cm (*b*) 10 cm

(*c*) 12 cm (*d*) 14 cm

(*e*) 16 cm.