1. What is an estimate & its object & data required for est.
2. Different methods of preparing the estimate & main items of work.
3. Estimate the quantities of E shape & T type roomed building of E/W, Conc. & brick masonry.
4. Write the units of measurement & unit of payment of below:
5. Method used for calculation of E/W in hill area & the fig. Canal sections.
6. What is analysis of rate, its importance & steps for analysis.
   a. Outturn of Average of laboured per day, E/W, Brick, CC 1:4:8, D/L, Brick work, Plastering, White washing, Detergent, D/C floor.
7. Analysis of rate of ACC 1:2:4, D/L, Beam, C/M, White washing, E/W.
8. Types of specification, necessity & general specification of 1st class, 2nd & 3rd class building.
10. What is master bill, its parts & where used also rules to maintain M.B.
   a. What is cash book & how it is maintained.
   b. M.B. & quille dance, procedure for making paymet.
   c. Types of paymet made to contractor.
   d. Tender, procedure for calling & acceptance of tender.
12. What is valuation, its purpose & methods of Valuation principle of.
13. Explain the followig:
14. A property fetch a net annual income of Rs. 10,000 deducting all entropies, work out capitalized value of property if rate of interest is 6% per annum.
15. a. A machine has been instilled in a factory at a cost of Rs 10,000. Assume life of machine is 20 years. Calculate the amount of annual installment of depreciated merchandised is required to be accumulated the whole amount of 5% compound interest.
0:1 Explain Aquifer, its types and physical properties of Aquifer.

0:2 Explain eqn of motion for steady and unsteady ground water flow.

0:3 What do you mean by ground water exploration and what are the different methods to investigate?

0:4 Derive an expression for a flow system with recharge and tile drain problem.

0:5 What is Thiem’s equilibrium flow formula and Dupuit’s assumption for confined and unconfined aquifers.

0:6 What do you mean by partial penetration and spherical flow in a well?

0:7 Define Tube wells, and what do you understand by well screen installation assembly.

0:8 Types of Tubewells, with neat and clear sketch.
Q: 9 Construction and working of tube well (drilling, cable tool and hydraulic method).

Q: 10 What do you mean by pumping equipment and testing of pumps.

Q: 11 How you select a site for tubewell and how development is done in tubewell?

Q: 12 Define Recharge and its types and explain recharge pits.

Q: 13 Difference between Artificial and Natural Recharge in Groundwater.

Q: 14 Explain recharge techniques in irrigation, water spreading & flooding.
Q1. What is mitigation? What do you mean by disaster mitigation?

Q2. What do you mean by integrated approach? How integrated approach can be beneficial during a cyclone.

Q3. Describe role of civil engineer in disaster management.

Q4. What is man-made disaster? Give examples of war-time and peace time disaster.

Q5. How mitigation process can be carried out in coastal areas?

Q6. Name different types of hydrological disasters?

Q7. Give examples of Tsunami & give details about them.

Q8. What are atmospheric disasters? Give details about the Chernobyl disaster (1989) & how they can these disaster can be mitigated.

Q9. What is land mass movement & what are its types?

Q10. Give details about the disaster earthquake in Bhuj, Udhampur & Killari?

Q11. What are various forest related disaster? How forest fire can be spread & how it can be prevented from spreading.
Q12. What are wind and water disasters?
Give examples of these.
Q14. Give examples of three major earthquake happened. Also state what caused them. Describe in detail.
Q15. What causes cyclones and what are remedies for it.
Q16. What are qualities of earthquake resistant structures? (10 points)
Q17. What is mitigation process for landslides.
Q18. What are simple configuration in buildings.
Q19. What are soft floors? What are their benefits?
Q20. How the foundation reacts during earthquake of a building?
Q21. What is base isolation? What are its benefits.
Q22. As a civil engineer how will you can you benefit in outbreak of a fire in a building.
Q1. Write briefly 6/10 Syphon aqueduct & Super passage.

Q2. Design a syphon aqueduct for the following data:
(i) Discharge of canal: 60 cusecs
(ii) Bed width of canal: 20 m
(iii) High of Bed level of canal: 2 m 260 m
(iv) Bed depth of canal: 2 m
(v) High floods discharge of drain: 450 cusecs
(vi) High floor level of drain: 261 m
(vii) Bed level of the drain: 258 m
(viii) General ground level: 260 m
(ix) Silt factor: 0.9

Q3. What is cutoff? Describe briefly how cutoff may be used as river training measures.

Q4. The following data pertain to river bridge site.
Maximum discharge = 24000 cusecs
Highest flood level = 292 m
River bed level = 284 m
Avg. dia. of river bed material = 0.10 m

Design a guide bank including launching apron.

Q5. Give difference 6/10 sande type fall & Straight glacis fall.

Q6. Explain all the design steps of sande type fall.
Q7 Design a sandia type fall for following data:

(i) Full supply discharge \(\frac{u/s}{cfs} = 4.5 \text{ cusecs}\)

(ii) Full supply level \(\frac{u/s}{cfs} = \frac{118.80 \text{ m}}{116.80 \text{ m}}\)

(iii) Full supply depth \(\frac{u/s}{cfs} = \frac{1.8 \text{ m}}{1.8 \text{ m}}\)

(iv) Beel width \(\frac{u/s}{cfs} = \frac{2.8 \text{ m}}{2.8 \text{ m}}\)

(v) Beel level \(\frac{u/s}{cfs} = \frac{116.50 \text{ m}}{115.00 \text{ m}}\)

(vi) Drop 1.5 m

Q8 Write down design steps of Ogee or overflow spillway.

Q9 What are benefits of Ogee or overflow spillway.

Q10 Design a vertical drop weir with following data:

(a) Max. flood discharge = 2.585 cusecs

(b) H.F.L before construction = 255 m

(c) Min. water level = 248 m (cfs beel level)

(d) F.S.L of canal = 254 m

(e) Allowable Eflux = 1 m

(f) C (Coefficient of Creep) = 12

Assume any data not given.

Q11 What is barrage? How it is built in weir?

Q12 What is utility of launching apron? How are these designed?

Q13 Describe briefly with neat sketches the various types of weir.

Q14 What are two diff. conditions for transition design in Egyptian aqueduct? Also describe them.
9-1 Numerical problems on square and rectangle for finding the shape factor?

9-2 What is shape factor and load factor?

9-3 Numerical problems on beams for finding the collapse load?

9-4 Numerical problems for beam and sway mechanism for finding the moment?

9-5 Numerical and design procedure of circular water tank?

9-6 Numerical and design steps of rectangular water tank?

9-7 Explain staging in water tank, different types of codes used in water tank. Also explain the stand pipe and stiffening Angle?

9-8 Numerical and design steps of industrial building for load in roof and truss? [Example]

9-9 Different types of elements in Industrial building. Explain briefly?

9-10 Explain the design loads which acts on the transmission line and microwave towers?

9-11 Numerical and design steps of steel stack?

9-12 Numerical on the microwave lattice tower and also the design steps of lattice towers?
Q-13 Explain various types of shapes of cold-formed steel structures?

Q-14 Define: Stiffened, Unstiffened, Single-stiffened, and multi-stiffened element and explain the procedure of effective design width?

Q-15 Find the column section properties and allowable load for column section?

Q-16 Determine the allowable load in two channel section per (m) run on the beam where the column acts as a beam?
Some Important Questions:

Q1. Compare hydropower with thermal power w.r.t. Indian conditions. What are the advantages of hydropower?

Q2. Discuss the status of hydropower worldwide. Also, discuss the sources of energy.

Q3. What is load duration curve? Explain with sketch. Discuss its use.

Q4. What is a pumped storage plant? Explain the advantages of a pumped storage plant for short peak load duration.

Q5. What are various types of surge shafts? Explain each.

Q6. Write short note on:
   i) Water hammer
   ii) Types of valves
   iii) Anchor blocks
   iv) Classification of penstocks.

Q7. Explain the design theory of the draft tube.

Q8. What are various types of powerhouse? Discuss them with the help of advantages & disadvantages of underground power-houses.

Q9. What are the various types of hydraulic turbines? Briefly explain the various considerations.
in the selection of a proper type of turbines for a hydro power station.

Q10 Define the following terms:

i) Load factor.
ii) Plant factor.
iii) Utility factor.
iv) Diversity factor.
v) Load curve.

Q11 Explain run-off-river plants. Why these plants have not been adopted in this country.

Q12 What is difference b/w storage & pondage? Support your answer with a neat sketch.

Q13 Classification of hydro-power plants.

Q14 Discuss the various types of pumped storage power plant.

Q15 Discuss the firm power & net power in brief.

Q16 Discuss the method of prediction of loads.

Q17 Write a note on:
   a) reversible turbines
   b) efficiency of pump storage plants.