Scheme - I

Sample Question Paper

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22501

Course Title : **Water Resources Engineering**

Max. Marks : **70** **Time: 3 Hours**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any FIVE of the following. **10 Marks**

a) State any four ill effects of irrigation
b) List four points considered for selection of site for a rain gauge station.
c) Define i) Base period ii) Intensity of irrigation
d) Explain a theoretical profile of a gravity dam
e) Discuss the importance of an emergency spillway
f) Draw a neat sketch of Hydrologic cycle
g) State two silt control measures of reservoir

Q.2 Attempt any THREE of the following. **12 Marks**

a) Explain any four factors affecting runoff
b) Draw the area capacity curve and state its significance.
c) Explain the meaning of i) duty ii) delta iii) GCA iv) crop period. State the unit of each.
d) Enlist and describe any four methods to improve duty.

Q.3) Attempt any THREE of the following. **12 Marks**

a) Enlist the types of hydraulic and seepage failures of earthen dam
b) Describe the concept of low and high gravity dam.
c) Find the base width of a solid gravity dam with HFL 85.00 m, river bed level at RL of 52.0 m. hard rock at RL 35.0 m. The mass concrete has a specific gravity of 2.4 and the coefficient of friction may be taken as 0.40
d) State advantages and disadvantages of Percolation tank. (Two each)

Q.4) Attempt any THREE of the following. **12 Marks**

a) Enlist components of a drip irrigation scheme stating the purpose of each.
b) State the components and use of the bandhara scheme.
c) Compare weir with barrage with respect to crest level, afflux, silting, maintenance.

d) Describe the construction of a K. T. Weir
e) Draw a neat sketch of a fish ladder and state its purpose.

Q.5) Attempt any <u>TWO</u> of the following. 12 Marks

a) The analysis of a storm yielded the following information regarding Isohyets. Calculate the average depth of rainfall

Isohyet interval in mm	70-80	80-90	90-100	100-110	110-120	120-130
Area in Km^2	10	85	113	98	136	67

b) Find the design discharge of a canal irrigating following crops:

Sr No	Crop	Area under irrigation (Ha)	Duty (Ha/cumec)
1.	Sugarcane	1000	500
2.	Rice	300	600
3.	Jowar (Kharif)	1000	2500
4.	Wheat	800	1600
5.	Vegetables(Hot weather)	300	600

Take transit losses as 20%

c) Derive the relation between duty and delta and write the values of delta for any four crops.

Q.6) Attempt any <u>TWO</u> of the following. 12 Marks

a) Find the diameter of an open well to give a safe yield of 4.8 lit/sec, assuming the working head as 3.5 m, sub soil consisting of fine sand for which C=0.50.
d) Find the balancing depth for the canal having a bed width of 8m,full supply depth of 3m,top width of banks 6m and 3m,side slope 1:1.5(Cutting) 1:2(Banking) and freeboard 1m.
e) Design a most economical canal section for the following data:-
1) Discharge = $20m^3$/sec, 2) Manning's coefficient of rugosity = 0.01, 3) Canal is in full cutting with side slopes = 1.5:1, 4) Longitudinal bed slope is 1 in 2000.

……

Scheme - I

Sample Test Paper -I

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22501

Course Title : **Water Resources Engineering**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any <u>FOUR</u> of the following. **08 Marks**

a) State the four functions of galleries in a gravity dam and enlist their types.

b) Write Inglis formula for run-off for Ghat area and Non- ghat area. Give the meaning of each term.

c) Depth of water supplied to a paddy (rice) field for a period of 100 days is 120 cm. Calculate duty.

d) Explain the terms- Dead storage, Live storage, FRL, Flood absorption capacity.

e) Enlist four modes of failure of gravity dams.

f) Describe the purpose of energy dissipators below spillways ?.

Q.2 Attempt any <u>THREE</u> of the following. **12 Marks**

a) Describe Theissen polygon method of calculating average rainfall.

b) Describe the two types of joints in gravity dams.

c) Draw a neat labeled sketch of Simon's rain gauge station.

d) Define the terms:- i) CCA ii) GCA iii)Average Bad year iv) Yield

e) Calculate the safe yield from a CA 9362 Km^2 based on an average bad year rainfall and using Inglis formula,if average rainfall is 150 cm with 80% dependability.

Scheme - I

Sample Test Paper - II

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22501

Course Title : **Water Resources Engineering**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any <u>FOUR</u> of the following. **08 Marks**

a) State any four advantages of percolation tanks

b) Draw a sketch of a fish ladder and state its purpose.

c) Describe any one method of computing yield of a well.

d) State the purpose of marginal bunds and guide bunds.

e) Under what site conditions is a super-passage advisable?.

f) Enlist any four requirements of irrigation outlets.

Q.2 Attempt any <u>THREE</u> of the following. **12 Marks**

a) Prepare a checklist for of bandhara irrigation project.

b) Design a canal section to carry $3.5 m^3$/sec discharge with bed slope of 1 in 1500 and side slopes 1:1. Concrete lining (ordinary) is provided. Take N= 0.016.

c) Enlist advantages and disadvantages of canal lining.

d) Identify the need for drip and sprinkler irrigation scheme.

e) Describe construction procedure of K T weir.

Scheme – I

Sample Question Paper

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22502

Course Title : **Design of Steel and RCC Structures**

Max. Marks : **70** **Time : 4 Hrs.**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data, if necessary.
5) Preferably, write the answers in sequential order.
6) Use of non-programmable electronic pocket calculator is permissible.
7) Mobile phone, pager and any other electronic communication devices are not permissible in examination hall.

Q.1 Attempt Five of the following. **10 Marks**

a) Define the Limit state and state its types.
b) Enlist two loads to be considered as per IS 875:1987 while designing steel structures.
c) Explain the term – Pitch and Gauge related to bolted connection.
d) Define the terms - Characteristic Load and Characteristic Strength.
e) State two forms of shear reinforcement.
f) Define aspect ratio in case of slab and state its importance.
g) Write an expression for minimum eccentricity of axially loaded short column along with meaning of each term used in it.

Q.2 Attempt Three of the following. **12 Marks**

a) Write names of four steel structures along with their functions.
b) Draw stress and strain distribution diagram for a singly reinforced balanced section showing all important variables along with their meanings.
c) Define development length and enlist three factors affecting it.
d) Calculate the development length, if a 16 mm diameter bar of grade Fe 500 is used for resisting compression. Take the design bond stress (ζ_{bd}) is 1.2 N/mm^2 for plain bars in tension.

Q.3 Attempt Two of the following. **12 Marks**

a) Design suitable bolted connection for a single angle strut made up of ISA 100 x 100 x 10 mm using 12 mm gusset plate for a factored compressive load of 175 kN. Assume 20 mm bolts of grade 4.6. Draw connection details.
b) Design fillet weld to connect plates 60 mm x 10 mm and 150 mm x 12 mm thick for its full strength. Assume welding is on three sides. Take, shop weld, f_y = 250 MPa and f_u = 410 MPa.

c) (i) Define cover provided for reinforcement in RC section and state it's recommendations as per IS 456:2000.
(ii) Define over reinforced section and state two reasons due to which they are avoided in actual practice.

Q.4 Attempt Two of the following. 12 Marks

a) Calculate ultimate moment of resistance for a cantilever beam having effective span of 2.5 m and of size 230 mm x 450 mm deep effective. It is reinforced with 6 bars of 12 mm diameter bar on tension side only. Use M 20 concrete and Fe 500 steel. Also determine safe uniformly distributed load the beam can sustain.

b) Calculate depth and area of steel at mid span of a simply supported beam having a span of 6 m. The beam is carrying a udl of 20 kN/m including self weight. Use M 20 concrete and Fe 415 steel. Assume b = ½ d.

c) Design the shear reinforcement for a simply supported beam of span 5.0 m having size 230 x 450 mm effective. It carries a central point load of 30 kN. It is reinforced with 4 bars of 16 mm diameter out of which one bar is bent having grade of Fe 415. Use two legged vertical stirrups of 8 mm diameter. Take ζ_c = 0.57 N/mm^2 and $\zeta_{c\,max}$ = 3.1 N/mm^2.

Q.5 Attempt Two of the following. 12 Marks

a) Design the suitable slab for a 3 m wide passage, supported on 230 mm thick side walls. It carries a superimposed load of 3.75 kN/m^2 including floor finish. Take M.F.= 1.4. Use effective cover of 20 mm, M 20 concrete and Fe 415 steel. Do not apply check for shear and bond. Sketch the cross-section along shorter span.

b) Design a slab having internal room size 3 x 4.5 m. Take live load of 2 kN/m^2, floor finish of 1 kN/m^2. Assume width of support = 230 mm. Take BM coefficients as α_x = 0.104 and α_y = 0.046. Use M 20 concrete and Fe 415 steel. Draw the reinforcement details along longer span. Do not apply checks for shear, bond and deflection.

c) Design a chajja for a span of 1.5 m. Take L.L. = 2..2 kN/m^2 and F.F. = 0.5 kN/m^2. Size of support lintel is 230 x 230 mm. Use M 20 concrete and deformed steel of grade Fe 415. Sketch the c/s of chajja. (No checks required.)

Q.6 Attempt Two of the following. 12 Marks

a) Design a square column to carry an axial load of 1200 kN. The unsupported length of column is 3.5 m. Use M20 concrete and 1 % steel of grade Fe 415 as longitudinal reinforcement. Apply the check for minimum eccentricity and for short column.

b) Design a RC column square footing for a column of size 400 mm x 400 mm. Load on column is 1200 kN. Take safe bearing capacity of soil = 200 kN/m^2. Use M20 concrete and Fe 415 steel. Check for punching shear and one way action need not be given. Also, draw the c/s of footing showing reinforcement details.

c) Write IS 456: 2000 requirements for RC column and footing –
(i) Percentage, spacing and diameter of longitudinal steel
(ii) Diameter and pitch of transverse steel

Scheme – I

Sample Test Paper - I

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

22502

Semester : **Fifth**

Course Title : **Design of Steel and RCC Structures**

Max. Marks : **20** **Time : 1.15 Hrs.**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data, if necessary.
5) Preferably, write the answers in sequential order.
6) Use of non-programmable electronic pocket calculator is permissible.
7) Mobile phone, pager and any other electronic communication devices are not permissible in examination hall.

Q.1 Attempt Four of the following. **08 Marks**

a) Define Partial safety factor and write it's values for load and material.
b) State the meaning of – ISNT, ISMB, ISSC and ISLC.
c) Write two advantages and two disadvantages of steel as a construction material.
d) Write four advantages of bolted connection over welded connection.
e) Write four assumptions made in Limit state of collapse (flexure).
f) State two differentiations between Under reinforced and Balanced section.

Q.2 Attempt Two of the following. **12 Marks**

a) Design the bolted joint to transfer a design force of 750 kN. An inclined truss member consists of 2 ISA 100 x 75 x 10 mm connected back to back with longer leg connected to a gusset plate 12 mm thick. Use bolts of grade 4.6 and steel of grade Fe 410.
b) (i) Define bolt value and state its criteria to decide it. Also state its use in case of design of joint.
(ii) Calculate the weld length for a fillet joint of two plates having 120 x 10 mm each is subjected to a factored axial load of 250 kN. Use shop weld of size 6 mm using design weld strength equal to 410 MPa.
c) Design the smallest reinforced concrete section for a simply supported beam of 4 m clear span with bearing support of 300 mm. It carries a udl of 30 kN/m including self weight. The width of the beam is 250 mm and reinforced on tension side only. The materials used are M 20 concrete and Fe 415 steel.

Scheme – I

Sample Test Paper - II

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

22502

Semester : **Fifth**

Course Title : **Design of Steel and RCC Structures**

Max. Marks : **20** **Time : 1.15 Hrs.**

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data, if necessary.
5) Preferably, write the answers in sequential order.
6) Use of non-programmable electronic pocket calculator is permissible.
7) Mobile phone, pager and any other electronic communication devices are not permissible in examination hall.

Q.1 Attempt Four of the following. **08 Marks**

a) State two functions of bent up bars provided in flexure section.
b) State four factors affecting development length in RC design.
c) Define development length and anchorage length used in the theory of bond.
d) Differentiate between one way slab and two way slab with respect to aspect ratio, spanning direction, bending curvature and placing of steel.
e) Write an expression for design strength of axially loaded short column as per IS 456:2000 along with meaning of each term.
f) Enlist two different criteria to be considered while deciding depth of footing as per IS 456:2000.

Q.2 Attempt Two of the following. **12 Marks**

a) Design verandah slab supported along two longer edges having effective span of 3.0 m. Take live load = 4 kN/m^2, floor finish = 1 kN/m^2. Use M 20 concrete and Fe 415 steel. Take M. F. = 1.4. Also sketch c/s of slab along longer span showing reinforcement details. (No checks required.)
b) An axially loaded column of size 500 x 500 mm is carrying factored load of 1500 kN. Design a RC square footing supported by foundation strata having its safe bearing capacity as 200 kN/m^2. Use M20 concrete and Fe 415 steel. Decide footing depth using bending moment criteria only. Also, draw the c/s of footing showing reinforcement details.
c) (i) Calculate anchorage length of 45° and 90° bend for 20 mm diameter bar.
(ii) Draw the cross section of cantilever slab with supporting end beam showing reinforcement details.

Scheme – I

Sample Question Paper

Program Name : **Civil Engineering Program Group**
Program Code : **CE/CR/CS**
Semester : **Fifth**
Course Title : **Estimating and Costing**
Max. Marks : **70**

22503

Time: 3 Hours

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any FIVE of the following. **10 Marks**

a) State the necessity of Administrative Approval and Technical Sanction.
b) State the circumstances under which Revised and Supplementary Estimate is prepared.
c) Mention the unit of measurement for i) Skirting up to 150 mm height ii) Partition wall 100mm thick iii)Hand Railing iv)Woodwork for door frame.
d) State the data required for detailed estimate.
e) State four factors which affects rate analysis.
f) List four relevant software's for preparing estimate.
g) State the most accurate method for calculation of earthwork.

Q.2 Attempt any THREE of the following. **12 Marks**

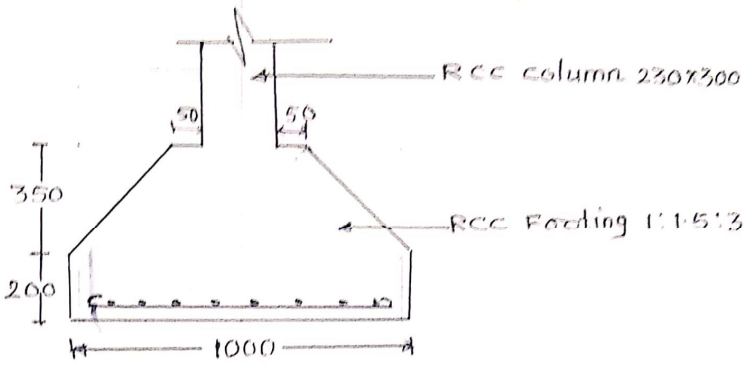
a) Explain the role and responsibility of estimator.
b) Prepare a check list of items of work in chronological order for construction of load bearing structure.
c) Explain the rules for deduction of opening in masonry and plastering work as per I.S.1200.
d) Prepare approximate estimate of a building from following data
   i) Plinth area -- 180sqm.
   ii) Plinth area rate -- Rs.3500/sqm.
   iii) Special architectural treatment--1% of cost of building
   iv)Electrification charges--8% of cost of building
   v) Water supply and sanitary installation—5% of cost of building
   vi)Contingencies—3% of cost of building
   vii) Supervisor charges--3% of cost of building

Q.3) Attempt any THREE of the following. **12 Marks**

a) Describe the procedure of preparing approximate estimate for road project.
b) Explain the data required for preparation of detailed estimate..

c) Describe the long wall and short wall method of estimating with suitable example.

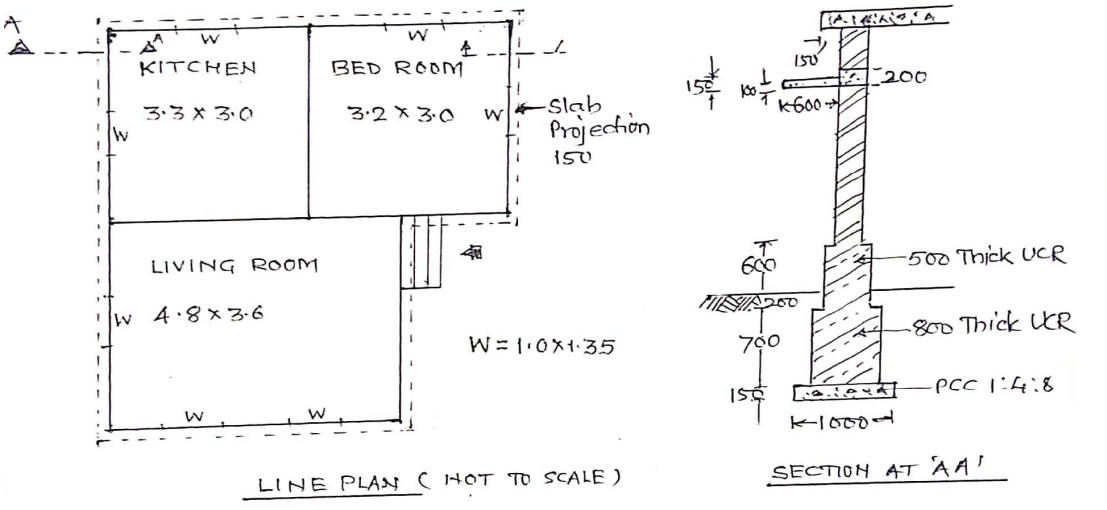
d) Fig no. 1 shows details of RCC column and footing. Work out the quantity of steel in footing on the basis of % steel.



Q.3 (d) Fig No. 1

Q.4) Attempt any <u>THREE</u> of the following. 12 Marks

a) Calculate the quantity of concrete in slab and chhajja on windows from fig. no2.



Q.4 (a), (b) Fig No.2

b) Calculate the quantity of UCR masonry in C.M.1:6 in foundation and plinth. from fig. no2.

c) A simply supported beam resting on two wall supports of 300mm thick with clear distance between supports 4500mm. The reinforcement provided in the beam is as follows. Calculate quantity of steel in beam.

Top bar	Bottom bar	Bent up bar	Stirrup
2Nos-10 Ø	3Nos-12 Ø	2Nos-16 ø	8 ø @150 c/c

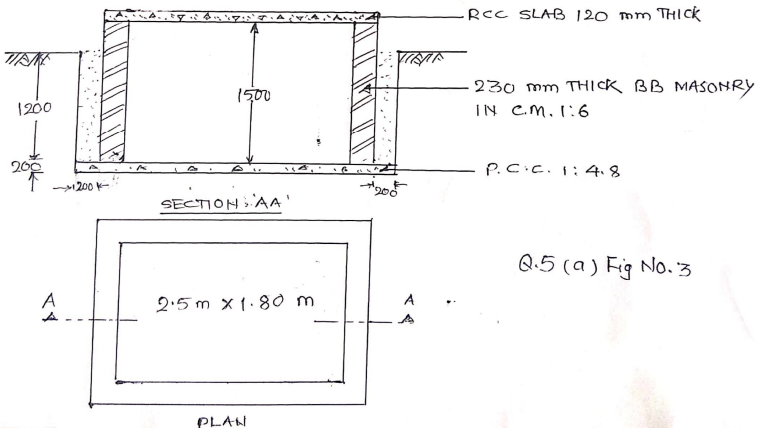
d) Calculate the quantity of earthwork for bank of canal from following data.
i) Top width: 1.8m. ii) R.L. of top of bank: 104.00m
iii) Side slope 2:1 on one side & 2.5:1 on other side

Chainage	30	60	90	120	150
Ground Level	101.50	101.30	101.150	101.00	99.00

e) Define task work and state the factors affecting task work.

Q.5) Attempt any <u>TWO</u> of the following. 12 Marks

a) Calculate the quantity of following items in respect of underground tank. Refer fig.no.3.
i)Earthwork in excavation
ii) P.C.C bed concrete 1:4:8
iii) BB masonry in C.M.1:6
iv) Internal cement plaster in C.M.1:6



Q.5 (a) Fig No. 3

b) Prepare the rate analysis for R.C.C slab in C.C.1:1.5:3.

c) A R.C.C. roof slab of overall size 6100mmX3300 mm and thickness 120 mm is provided with 12 mm diameter main bars bent up alternately and placed at 150mm c/c. The distribution bar of 8mm diameter is provided at 200mm c/c. The all-round cover is 15mm. Workout the quantity of plain steel. Prepare the bar bending schedule.

Q.6) Attempt any <u>TWO</u> of the following. 12 Marks

a) Calculate the quantity of cement and sand for following.
i) 35 cum. of P.C.C. in 1:3:6
ii) 180 sqm of cement plaster 20mm thick in C.M. 1:4

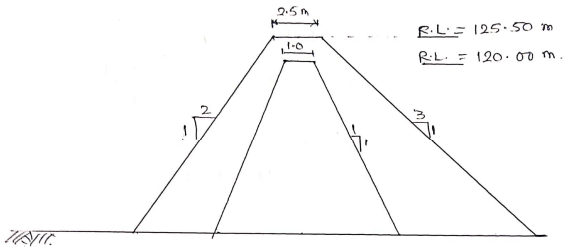
b) The formation level at starting chainage of a road is 530.00m. The road surface has rising gradient of 1in 100. The side slopes are 2:1 for embankment and 1.5:1 for cutting. Work out the quantity of earthwork for road using following data .

Chainage	0	30	60	90	120	150	180	210	240
R.L.of Ground	535.0	534.0	534.6	532.0	534.0	535.5	534.0	532.0	531.50

Use mean sectional area method

c) Work out the quantity of earthwork in hearting and casing for earthen dam from fig.no.4 using following data.

Chainage	50	100
Ground Level	102.30	109.00



Q. 6 (C) Fig No.4 (NOT TO SCALE)

.....

Scheme – I

Sample Test Paper

Program Name : **Civil Engineering Program Group**
Program Code : **CE/CR/CS**
Semester : **Fifth**
Course Title : **Estimating and Costing**
Max. Marks : **20**

22503

Time: 1 Hours

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR of the following. **08 Marks**

a) Prepare checklist of items of work for framed structure.
b) Rule out measurement sheet and abstract sheet.
c) State the unit of measurement for following
i) Tile flooring ii) Barbed wire fencing iii) Formwork iv) W/C pan.
d) List the types of detailed estimate .State the methods of approximate estimate
e) State service units for Hospital building, Theatre, school and auditorium.
f) Define contingencies and work charged establishment along with their %.

Q.2 Attempt any THREE of the following. **12 Marks**

a) Explain the rules for deduction in masonry and plastering work.
b) Prepare the approximate estimate of residential building having plinth area 900sqm. If the cost of construction of similar existing structure in locality is Rs.7200000 for plinth area of 1200sqm.
c) Fig. No.1 shows the line plan and section of a wall of small building. Work out the quantity of UCR masonry in foundation and plinth using centerline method
d) Refer Fig.No.1. Calculate quantity of BB masonry in C.M. 1:4 using long wall and short wall method
e) Refer Fig.No.1. Calculate quantity of concrete in slab and lintel on doors and windows.

Scheme – I

Sample Test Paper

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Fifth
Course Title : Estimating and Costing
Max. Marks : 20

22503

Time: 1 Hours

Instructions:

1) All questions are compulsory.
2) Illustrate your answers with neat sketches wherever necessary.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR of the following. 08 Marks

a) Define centage charges with its provision.
b) Define Prime Cost and provisional sum.
c) Rule out format for bar bending schedule.
d) State four factors affecting rate analysis.
e) Define task work.
f) List four types of software for detailed estimate.

Q.2 Attempt any THREE of the following. 12 Marks

a) A R.C.C.slab of overall size 6600mm x3300mm having thickness 150mm reinforced with 12mm diameter main bars bent up alternately and placed @150mm c/c. The distribution bar of 8mm dia. Is provided @ 200mm c/c. Assume all-round cover 15mm .Find quantity of steel in slab
b) Prepare the face sheet for the detailed estimate of residential building with following data.
   i) Construction cost of building - Rs.12,60,500.
   ii) Contingencies - 4%
   iii) Work charged establishment - 2%
   iv) Electrification - 8%
   v) Water supply and sanitation - 10%
c) Describe the procedure of rate analysis of an item of work with example.
d) Calculate the quantity of cement and sand for 35 cum P.C.C .1:4:8
e) Calculate quantity of earthwork for a road with following data
   i)Formation width .- 10.0m
   ii) Slope in cutting - 1.5:1
   iii)Slope in banking - 2:1

Chainage	0	50	100	150	200
Ground Level	500.00	499.30	498.45	494.9	494.5
Formation Level	496.5	496.0	496.5	495.00	494.50

Scheme - I
Sample Question Paper

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

Course Title : **Public Health Engineering**

22504

Max. Marks : **70** **Time: 3 Hrs.**

Instructions:
(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.
(6) Use of Non-programmable calculator is permitted.

Q.1 Attempt FIVE of the following. **10 Marks**

a. Enlist Surface and Sub-surface sources of water.

b. Define-Intake Structure and enlist types of intakes.

c. List different types of pipes used for conveyance and distribution of water

d. Define: Sewage and Sullage.

e. Define anaerobic process.

f. State the functions of sluice valve and air relief valve.

g. Enlist any four sanitary fittings.

Q.2 Attempt Three of the following. **12 Marks**

a. Explain various factors affecting the rate of water demand.

b. Explain the procedure of collection of water sample for biological test.

c. The population data for a town is given below. Forecast the population after three decades by Geometrical Increase method.

Year	1980	1990	2000	2010
Population	67500	85350	107500	138000

d. Define aeration and state its objects.

Q.3) Attempt Three of the following. **12 Marks**

a. Draw flow diagram of water treatment plant for metropolitan city.

b. Give Comparison between rapid sand and slow sand filter on any eight points.

c. Explain Pumping method of distribution of water with neat sketch.

d. Explain break point chlorination with neat sketch.

Q.4) Attempt Three of the following. **12 Marks**

a. Draw a neat labeled sketch of cross section of "Rapid sand Gravity Filter".

b. Draw layout of grid iron system of distribution of water and explain its suitability.

c. Explain the functions of service reservoirs provided for water distribution network.

d. Explain the principles of building drainage arrangement.

e. Explain the term "Recycling and Reuse" of domestic waste.

Q.5) Attempt Two of the following. **12 Marks**

a. Explain the method of Water softening and Defluoridation technique.

b. Draw a neat sketch of two pipe plumbing system to be provided for multistoried building and state its advantages.

c. Draw a neat labelled sketch of manhole when two sewers meet at different levels below the ground. State the functions of various components of such manhole.

Q.6) Attempt Two of the following. **12 Marks**

a. Compare separate and combined system of sewerage on any six points.

b. Draw a neat labeled sketch of Trickling filter and explain its working.

c. Draw flow diagram of activated sludge process and explain the function of each unit.

Scheme - I

Sample Test Paper - I

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22504

Course Title : **Public Health Engineering**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.
(6) Use of Non-programmable calculator is permitted.

Q.1 Attempt any FOUR. **08 Marks**

a) Define Intake structure.

b) Define “Design Period”.

c) State the principle of coagulation.

d) State the objects of aeration.

e) State the importance of residual chlorine.

f) State the function of air relief valve.

Q.2 Attempt any THREE. **12 Marks**

a) List various methods of forecasting of population. Explain Geometrical Increase method.

b) Explain the necessity of analysis of water.

c) Describe theory of filtration.

d) Draw flow diagram of conventional water treatment plant.

e) Explain with sketch, the working of rapid sand gravity filter.

Scheme - I

Sample Test Paper - II

Program Name : **Civil Engineering Program Group**

Program Code : **CE/CR/CS**

Semester : **Fifth**

22504

Course Title : **Public Health Engineering**

Max. Marks : **20** **Time: 1 Hour**

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.
(6) Use of Non-programmable calculator is permitted.

Q.1 Attempt any FOUR. **08 Marks**

a) List the types of joints used in water supply pipe line.

b) Name the types of layouts provided for distribution of water.

c) Define: Rainwater pipe and soil pipe

d) List four sanitary fittings.

e) State the purpose of traps used in sanitary arrangement of building.

f) Define BOD

Q.2 Attempt any THREE. **12 Marks**

a) Draw layout of circular system of distribution of water.

b) Explain the procedure for laying of sewer.

c) Draw neat sketch of deep manhole and label the components.

d) Explain the necessity of building sanitation.

e) Draw flow diagram for conventional sewage treatment plant.

Scheme – I

Sample Question Paper

Program Name : **Civil Engineering Program Group**
Program Code : **CE/CR/CS**
Semester : **Fifth**
Course Title : **Traffic Engineering (Elective)**
Max. Marks : **70**

22507

Time: 3 Hours

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any <u>FIVE</u> of the following. **10 Marks**

a. List the objectives of traffic engineering.
b. Give the essential vehicular characteristics to be considered in traffic engineering.
c. Name the different types of traffic studies.
d. Write the role of road signs in traffic flow.
e. Define traffic signal.
f. List out the factors affecting reaction time of driver.
g. Classify the traffic markings.

Q.2 Attempt any <u>THREE</u> of the following. **12 Marks**

a. Explain the purposes of traffic volume study of a road section.
b. Explain the points to be considered while designing the road sign.
c. Draw the following traffic signs for the urban area.
   (i) U-turn prohibited (ii) Height limit 3m (iii) School ahead (iv) Hospital.
d. Explain the following carriage way marking (i) Traffic lane lines (ii) Cross walk lines.

Q.3) Attempt any <u>THREE</u> of the following. **12 Marks**

a. Enumerate the advantages and disadvantages of traffic actuated signals.
b. Describe the channelizing islands with neat sketch.
c. Explain the factors affecting the street lighting.
d. Discuss the factors affecting selection of type of roadside trees.
e. Discuss the basic requirements of a good intersection at grade.

Q.4) Attempt any <u>THREE</u> of the following. **12 Marks**

a. State the objectives of road arboriculture.

b. Explain various points to be considered for road safety.

c. Enumerate the road user causes of road accidents.

d. Suggest the preventive measures for avoiding the road accidents.

e. Explain the method of reporting and recording of road accident.

Q.5) Attempt any <u>TWO</u> of the following. **12 Marks**

a. Explain the method of representing traffic volume count with neat sketch.

b. Draw a neat and labeled layout of carriage way markings at unsignalised intersection..

c. Explain the method of origin and destination studies stating the necessity of it.

Q.6) Attempt any <u>TWO</u> of the following. **12 Marks**

a. Draw a labeled sketch of clover-leaf pattern of grade separated intersection.

b. Describe the method of computing signal time by fix time cycle.

c. Explain the following type of traffic segregation. (i) Plain segregation (ii) Time segregation.

Scheme – I

Sample Test Paper - I

Program Name : **Civil Engineering Program Group**
Program Code : **CE/CR/CS**
Semester : **Fifth**
Course Title : **Traffic Engineering (Elective)**
Max. Marks : **20**

22507

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any <u>FOUR</u> of the following. **08 Marks**

a) Define traffic engineering.
b) List the road characteristics to be considered in traffic engineering.
c) Define (i) traffic volume (ii) traffic capacity
d) State the necessity of parking study.
e) List out the types of traffic control devices useful in traffic engineering.
f) Define traffic marking.

Q.2 Attempt any <u>THREE</u> of the following. **12 Marks**

a) Explain manual counting method of traffic volume.
b) Justify the need of parking study for analysis of traffic.
c) Explain the necessity of various traffic control devices for smooth traffic flow.
d) Draw the traffic signs (i) No parking (ii) Stop (iii) One way (iv) Overtaking prohibited
e) Explain the points to be considered while erecting the traffic signs.

Scheme – I

Sample Test Paper - II

Program Name : **Civil Engineering Program Group**
Program Code : **CE/CR/CS**
Semester : **Fifth**
Course Title : **Traffic Engineering (Elective)**
Max. Marks : **20**

22507

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any <u>FOUR</u> of the following. **08 Marks**

a) List the various types of road signals.

b) Define traffic island.

c) Give various types road intersection.

d) State different types of street lighting.

e) Define (i) Collision accident (ii) Non-collision accident

f) State the use of condition diagram.

Q.2 Attempt any <u>THREE</u> of the following. **12 Marks**

a) Describe the points to be considered while deciding the location of signal.

b) Differentiate between grade intersection and grade separated intersection.

c) Explain the factors affecting the visibility at night.

d) Enumerate the sources of road accidents due to road structural defects.

e) Justify the need of law enforcement regarding accident and safety.
